

Yorkshire Forest District

Langdale Forest Plan

FP 15

2021



Forestry England - Property

Forest District:	Yorkshire
Woodland or property name:	Langdale
Nearest town, village or locality:	Scarborough
OS Grid reference:	SE 900950
Local Authority district/unitary Authority:	North York Moors National Park

Areas for approval

	Conifer	Broadleaf	Open
Felling	390.6		
Lower Impact Silvicultural Systems regeneration felling	40.5		
Restocking	367.4	24.0	39.7

1. I apply for Forest Plan approval for the property described above and in the enclosed Forest Design Plan.
2. I apply for an Opinion under the terms of the Environmental Impact Assessment (Forestry) (England & Wales) Regulations 1999 for afforestation as detailed in my application.
3. I confirm that the pre-consultation, carried out and documented in the Consultation Record attached, incorporated those stakeholders which FS agreed must be included. Where it has not been possible to resolve specific issues associated with the Plan to the satisfaction of consultees, this is highlighted in the Consultation Record.
4. I confirm that the proposals contained in this Plan comply with the UK Forestry Standard.
5. I undertake to obtain all permissions necessary for the implementation of the approved Plan.

CONTENTS

1. Background

2. Describing the Site

- 2.1 Geology and Soils
- 2.2 Tree Species
- 2.3 Wind Damage
- 2.4 Landscape
- 2.5 People and Community
- 2.6 Natural Heritage
- 2.7 Cultural Heritage

3. Describing the Project

- 3.1 Project Brief
- 3.2 Objectives
- 3.3 Opportunities & Constraints
- 3.4 Implementation
 - 3.4.1 Conservation
 - 3.4.2 Timber Harvesting
 - 3.4.3 Landscape
- 3.5 Plan
- 3.6 Areas
 - 3.6.1 Breakdown of felling areas within the period of the plan
 - 3.6.2 Breakdown of constituent areas
- 3.7 Methods/Forest Operations
 - 3.7.1 Planning
 - 3.7.2 Standards
 - 3.7.3 Harvesting
 - 3.7.4 Haulage
 - 3.7.5 Restocking
 - 3.7.6 Wildlife Management

4. Monitoring

- 4.1 Clearfells
- 4.2 Restock
- 4.3 Lower Impact Silvicultural Systems
- 4.4 Wooded Heath
- 4.5 Habitat Condition
- 4.6 Forest Plan
- 4.7 UKWAS Compliance

5. Determination of Impact Significance and Mitigation

- 5.1 Ancient and Native Woodland
- 5.2 Flora
- 5.3 Other Objectives

Appendices

- 1. Priority woodland bird species
- 2. Lower Impact Silvicultural Systems Justification

3. Restock species by soil type
4. Monitoring Plan
5. Agreed Tolerance Table for Yorkshire Forest District

Langdale

2993.8 Hectares (Ha)

Period of Plan: 2021 - 2031

1. Background

Langdale Forest is part of a network of forests managed by Forestry England (FE), Yorkshire Forest District, located within the North Riding Beat. It is situated approximately 14 km north west of Scarborough on the eastern fringe of the North York Moors National Park.

The forest is a freehold property where planting began in the 1930's but more significantly over the 1960's and 1970's and remains extensively coniferous in composition.

2. Describing the Site

2.1 Geology and Soils (FP Map 01)

Bedrock geology is primarily sedimentary, comprising sandstone, siltstone and mudstone formed in the Jurassic period and occupies the majority of the forest area. Superficial deposits can be found at May Moss where organic accumulations formed deep peat, and alluvium deposits are associated with the course of the River Derwent along the eastern boundary and Black Beck along the southern boundary, of the Quaternary period.

The soils at Langdale are heavily influenced through a combination of geology and slope resulting in a variety of soil types; typical ironpan soils dominate the flatter, more elevated parts of the forest and significant deposits of blanket bog are situated at Allerston High Moor (May Moss SSSI), extending south along Black Holes. In parts, peat depth exceeds 5m across May Moss. Podzolic peaty surface water gleys occupy lower elevations associated with minor watercourses and the upper reaches of the River Derwent. A range of brown earth soil types occupy sites either side of the prominent ridge known locally as Langdale Rigg, extending into Barns Cliff valley.

Based on Forest Research Ecological Site Classification, soils range between; 'wet' soil moisture regime (SMR) and 'very poor' soil nutrient regime (SNR) across gley and deep peat sites, 'moist' SMR and 'poor' SNR across ironpan sites, 'fresh' SMR and 'poor to rich' SNR across brown earth soils. The difference between SMR and SNR impacts on the range of 'suitable' species that can be considered for restocking/regenerating although objectives and silvicultural management may be different between site types.

2.2 Tree Species (FP Map - 02)

Over the past 11 years the more notable changes are the reduction in area of spruce and pine and the notable increase of broadleaf species as an overall percentage. Most significant is the increase in the 'other/open' category. This can be attributed to the removal of over 70 ha of spruce and pine crops as part of the Peatland Programme restoration project at May Moss and subsequent amendments to the previous plan highlighted additional opportunities associated with this project, resulting in the further removal of over 30 ha of plantation conifer.

Species	2009		2021	
	Ha	%	Ha	%
Spruce	1120.95	37	921.57	31
Pine	900.58	30	721.75	24
Larch	210.18	7	171.92	6
Other conifer	56.9	2	87.94	3
Broadleaf	46.71	2	218.62	7
Felled	246.57	8	111.86	4
Other/open	412.11	14	760.14	25

Open is mainly split between 352.5 ha of permanent open space designated as SSSI/SPA/SAC and 115 ha of additional open space associated with the Peatland Programme described above. Agricultural land accounts for 49 ha and the remaining 244.6 ha is made up of successional open space associated with archaeological sites, habitat corridors and unplanted streamsides.

2.3 Wind Damage

The Windthrow Hazard Classification classes 1 to 2 occupies 12% of the forest where thinning options are least limited and 88% in the intermediate classes 3 to 4, where thinning options can be more limiting and particular care needs to be taken to avoid precipitating the onset of serious windthrow. Significant windblow events have previously occurred across parts of the forest, namely Cess Banks where unthinned, even-aged spruce stands on gley soils suffered during the 2006 storms.

Opportunities to carry out timely thinning has increased over recent years over which 417 ha has been carried out across a range of conifer stand types.

2.4 Landscape (Photographic montage)

The forest is covered by the; 'Forest character type - Langdale character area¹' and is located toward the south-east corner of the North York Moors National Park. The forest is referenced in the document with the following descriptions;

- *The River Derwent and a number of its tributaries drain Langdale Forest, cutting deeply incised valleys.*
- *Landcover is primarily coniferous forest planted in regular geometric blocks, separated by a grid iron pattern of unplanted rides and firebreaks, including large areas of recently felled or/and recently planted areas. Deciduous species have been planted in some fringe areas e.g. adjacent to roads. Mixed woodland (replanted ancient woodland) is present along Barns Cliff, adjacent to the River Derwent. Other small areas of replanted ancient woodland occur within the east of the Langdale Forest. In some areas there is an abrupt geometric edge to the forest.*
- *Apart from isolated properties at High Langdale End and Birch Hall, settlement is almost completely absent from the area.*
- *Sites of archaeological importance are dotted throughout Langdale Forest.*

¹ North York Moors Landscape Character Assessment - 2010

Under the previous plan significant areas of clearfelling have been carried out, creating more irregular boundaries that respond better to landform when seen from a number of different viewpoints. Felling and restocking coupes no longer follow the original grid iron pattern, reducing the impact of geometric boundaries. Fixed-point photographs of both external and internal views support the changing structure across the forest and demonstrate how this is providing a more positive contribution to the overall landscape.

2.5 People and Community (FP Map - 03)

The whole of the forest is freehold which is dedicated as Open Access land through the Countryside Rights of Way Act (2000). In addition, the forest supports a network of forest roads, rides and public rights of way and links to the Moor to Sea cycle route.

Although one the largest forest blocks within the District, Langdale Forest experiences low-key access by walkers, cyclists and horse riders. Competitive motor rally events are held periodically within the forest. Unauthorised use by four-wheel drive vehicles and trail bikes can be an issue across specific locations within the forest.

2.6 Natural Heritage (FP Map - 03)

Langdale Forest hosts a range of international, national and regional important flora, fauna and bio-diverse habitats. Moorland margins are contiguous with the North York Moors Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Special Area for Conservation (SAC) cited for Atlantic Upland Heath and important for ground nesting birds such as golden plover and merlin, details for which may be found at; <http://www.sssi.naturalengland.org.uk>. The majority of Unit 85 and a small part of unit 178 SSSI sits within the land owned and managed by Forestry England, both of which are classed as being in 'favourable' condition by Natural England. May Moss is the only extensive area of undisturbed water-shedding blanket mire on the North York Moors. The majority of unit 85 is unique as the largest area of moorland in the National Park not managed under a traditional/grazing regime and is part of Natural England's Long-Term Monitoring Scheme.

Following recent felling of conifer crops, an important ecotone is developing along parts of the moorland edge, particularly adjacent May Moss and also along the northern boundary running contiguous with the River Derwent and Saltergate Moor.

In addition to the botanical interest on May Moss SSSI, Langdale is host to a network of botanically rich verges in which over 200 species of plant were recorded during Sykes/Atherden survey of 2014 including the extremely rare Yellow-wort along Barley Carr verge. An account of the increasing diversity and complex range of species and habitats is described in greater detail in 'Langdale Forest: A case of mistaken identity 2014'².

The eastern edge of the forest sits within the deeply incised valley known as Barns Cliff where there are 48 ha of Ancient Woodland, the majority of which is plantation conifer. Within the valley, Northern hairy wood ant colonies are well established, some of which may host the Shining Guest Ant, a species of conservation interest.

The forest supports a wide range of national and regionally important bird species across different habitat types (see Appendix 1):

Wooded heath/clearfell - Nightjar, Turtle dove, Tree pipit

² People, Landscape and Cultural Environment of Yorkshire. 2014

Woodland edge/ride/glade - Willow warbler, Dunnock, Redstart, Song thrush, Garden warbler, Marsh tit, Willow tit, Lesser redpoll, Bullfinch
Developed shrub layer - Woodcock
Mature conifer woodland - Crossbill

The forest supports a number of Schedule 1 birds and the Great grey shrike is also a winter visitor to the forest.

Adders are regularly seen across coniferous parts of the forest, particularly recently felled sites through to thicket stage stands where heathland flora and light levels provide suitable habitat.

A network of rivers, streams, water courses and forest drains pass through and adjacent to the forest, providing a large area of riparian habitat. These sites typically support a more diverse woodland structure where native broadleaf tree species, shrubs and semi-natural ground flora can naturally regenerate. They provide ecologically diverse habitat corridors across the forest supporting populations of keystone species including Water vole, European otter and White-clawed crayfish.

Besides Small pearl-bordered fritillary, the regionally important Large heath and Dingy skipper butterfly species are also present. Historical data indicates several locally rare moth species have been recorded across Langdale and where associated food plants are present, may still be found in the more open parts of the forest (see Appendix 1). Glow worm are also present in the forest in the area around Birch Hall.

2.7 Cultural Heritage (FP Map 03)

The forest contains a diverse resource of historic features and records. Features include Mesolithic flints, Iron and Bronze Age cairn fields and burial mounds, medieval warrening sites, 18th century Enclosure boundary marker stones and WWII artefacts. There are 18 Scheduled Monuments (SM's) covering a range of these features, all of which have agreed management plans with Historic England, and none are currently categorised as 'high risk'. Ongoing vegetation management programmes help maintain or improve their condition status.

The Forest District maintains an extensive Historic Environment Record (HER) in conjunction with the NYMPNA and all identified features are considered during the forest plan process. Of particular note are the two extensive areas of prehistoric cairn and burial mound activity. The largest of the two sites at Maw Rigg is of a size to impact on forest design and is given due consideration within the plan. Works carried out through the previous plan include conifer removal from the northern end of the cairnfield. Also, conifer removal was carried out across the smaller cairnfield above High Greens.

3. Describing the Project

3.1 Project Brief

- manage natural and cultural heritage sites in accordance with their requirements as per agreed management plans and district policy,
- work with partners to identify appropriate work and funding to build on the peatland/blanket mire restoration associated with May Moss,
- increase the proportion of native broadleaf cover, particularly along riparian buffer zones and areas of conifer plantation ancient woodland sites.
- consider the selection of alternative main tree species that will contribute toward a greater range of species diversity to maintain or increase timber productivity and increase resilience to plant health and biosecurity threats,

- increase the diversity of the forest age structure and landscape impact by use of appropriate silvicultural systems.

3.2 Objectives

Nature

- Improve the resilience of the natural environment and realise the potential of these woods for nature and wildlife, to be measured by Natural England, NYMNP Authority and FC systems.
- Maintain the cultural and ecological heritage value of these woods, to be measured by Natural England, Historic England, NYMNP Authority and FC systems.

Economy

- Maintain the land within our stewardship under UKWAS certification, to be measured by independent surveillance audits.
- Improve the economic resilience of these woods from a more diverse range of site appropriate conifer and broadleaf species, to be measured by FC systems.

People

- Encourage communities to become involved across these woods, its management and direction through consultation in planning and participation in volunteering. To be measured by FC systems.
- Maintain and improve the woodlands contribution to the landscape character within the North York Moors National Park 'Forest landscape type - Langdale Forest character area'. To be measured by fixed-point photography.

3.3 Opportunities & Constraints

- Managing 2nd rotation spruce stands on nutrient-poor sites where options for managing heather check and nutrient status are limited.
- The retention and management of windfirm conifer stands, mainly Scots pine and Lodgepole pine, on extended rotations that will allow the development by LISS strip shelterwood system to facilitate species and structural diversity.
- Limited infrastructure to access conifer crops within Barns Cliff as part of our PAWS restoration programme will require significant investment to manage these sites.
- Consider additional opportunities to connect May Moss SSSI with adjacent areas of deep peat deposits and work with partners to halt further peat degradation and create suitable conditions for the reestablishment of *Sphagnum* mosses and other peatland vegetation.

3.4 Implementation

3.4.1 Conservation

Protect and, where appropriate, enhance all known sites of archaeological and ecological importance:

Archaeological sites

All sites, regardless of their designation, will receive the same level of care during the planning and execution of forest operations. The operational planning system will ensure they are recognised and the proper measures for their protection are in place before work begins. This planning system also ensures that, where possible, opportunities to enhance the condition of archaeological interest are taken during routine forest work.

An example of this includes the two cairnfields where conifer trees have already been removed. These sites will be managed toward the development of heathland habitat with low density native tree cover.

Ecological sites

All work sites are surveyed prior to any operations being carried out, both to audit the accuracy of information already held on record and to identify opportunities to further improve the ecological value of the woodlands. For Langdale this will include:

- Managing North York Moors SSSI Unit 85 and part 178 in line with the management plan agreed with Natural England to ensure they remain in target condition. Work with partners to halt further peat degradation on and adjacent the SSSI.
- Increase and improve the deadwood resource as set out in - 'Deadwood - Policy, Procedures, Guidance (PPG) 51 (2018)'. Areas of high ecological value across which deadwood resources could be encouraged include; Ancient Woodland, riparian zones, Long Term Retention sites and areas of broadleaf woodland.
- Managing Veteran trees and PAWS as set out in - 'Ancient Woodland on the Forestry Commission Estate in England (March 2002)' and 'FEE Operations Instructions No. 3 (rev.2012), Ancient Woodlands'.

'FC - Managing England's woodlands in a climate emergency' provides guidance to implement adaptation actions including the acceptance of naturalised species and assisted migration.

- Increase the diversity of tree species and age structure that will maintain and improve favourable conditions for target species and identified habitats. This is particularly beneficial for the range of habitats and species recorded at Langdale from which a selection has already been mentioned at 2.6 - Natural Heritage.
- The various in-forest streams and watercourses that pass through the property were classed as 'poor' status through the Water Framework Directive (WFD) assessment (2012 data). Work undertaken through this plan will continue the process of improving the water quality and aquatic ecology where they pass through the forest, replacing immediately adjacent conifer crops with predominantly broadleaf species and considering opportunities to address known issues. Phasing of felling will avoid significant lengths of watercourse being felled at any one time throughout the approval period of the plan. Targeted watercourse clearance will be considered where these contribute to priority BAP/HAP targets. Careful planning and appropriate mitigation will be adopted where harvesting is carried out in the Barns Cliff valley system that will provide protection for White-clawed crayfish and otter habitat along the Yorkshire Derwent.

Minimum Intervention - Natural Reserves

Natural Reserves are sites that are predominantly woodland which have been set aside where biodiversity is the prime objective. As far as reasonably practicable this is a permanent designation and will be managed on a minimum intervention system.

There are no Natural Reserves at Langdale Forest.

Minimum Intervention - Candidate Natural Reserve

These are sites which have the potential to deliver greatest biodiversity benefit but without the formal designation as defined by UKWAS. There are 42.4 ha located at Barns Cliff.

Long Term Retentions (LTR)

These are stable stands or clumps of trees that are important to retain for landscape or biodiversity reasons and will be retained beyond their economic rotation but still managed under an appropriate silvicultural system i.e. thinning may still be carried out.

Through this plan 151.1 ha are designated LTR.

Invasive species

Rhododendron ponticum is recorded across a number of sites in the forest. A programme of vegetation management will be carried out over the duration of this plan where this is likely to impact on high value conservation sites or could act as a vector for *Phytophthora ramorum*.

3.4.2 Timber Harvesting

We will continue to sustainably harvest timber from clearfelling, Lower Impact Silvicultural Systems (LISS) and thinning's. These operations will be planned and controlled to ensure due regard for all other objectives of management at Langdale.

3.4.3 Landscape

Langdale Forest lies within the North York Moors National Park, a protected and designated landscape where felling as seen from prominent viewpoints under the previous plan has reduced the negative impacts of hard geometric boundaries and even-aged plantation forest. This is particularly noticeable adjacent external boundaries; May Moss, Saltergate Moor, Thompson's Rigg, Allerston High Moor and High Moor adjacent the River Derwent. The mosaic of habitats developing across these sites provides opportunities to manage a more diverse forest with variable proportions of open space.

Appropriate scale felling across the forest will continue the process of restructuring, moving away from even-aged, single species stands to a more mixed conifer/broadleaf woodland. This will look at opportunities to link blanket mire restoration at May Moss with similar deep peat deposits within the headwaters of Grain Slack and linking other riparian corridors, creating a landscape-scale network of semi-natural habitats across the forest.

Over time LISS with associated smaller-scale felling will contribute toward a more varied and intimate internal forest landscape, where simple and complex stand structures create a more diverse visitor experience within the forest.

On a scale of low/medium/high, landscape sensitivity is considered to be medium.

3.5 Plan (FP Map 04)

The design concept map shows the key factors we need to address. These are taken forward and used to form the basis of a practical plan set out in the fell and restock maps.

3.6 Areas (FP Maps 05, 06 and 07))

3.6.1 Breakdown of felling areas within the period of the plan.

A map showing the location of felling sites can be found in the Forest Plan folder.

Felling	Area - hectares	% of total area (excl. SSSI)	Projected volume (m ³)
2022 - 2026 Clearfell	233.0	9	82345
2027 - 2031 Clearfell	157.6	6	53200
LISS*	40.5	1	12150

* A proportion of Langdale will be managed using LISS through the Strip Shelterwood silvicultural system. During the plan period, it is proposed areas of LISS where crops are over 25 years old will receive a silvicultural intervention (thinning/regeneration felling). As a result of this intervention, the above area of woodland cover will be strip-felled and regenerated through a combination of restocking and natural regeneration, removing no more than 25% of the stems within any single compartment over the plan period.

3.6.2 Breakdown of constituent areas.

A Future Habitat and Species map showing the location and detail of the constituent areas can be found in the Forest Plan folder.

Habitat type - (based on principal species established)	Area - hectares			% age of total area		
	2021	2031	2051	2021	2031	2051
Conifer	1903.2	1856.7	1831.1	64	62	62
Broadleaf	218.6	242.6	256.5	7	8	8
Open inc. blanket mire agriculture, felled, wooded heath, riparian corridors etc	518.6	541.1	552.8	17	18	18
Blanket mire SSSI/SAC/SPA	353.4	353.4	353.4	12	12	12

3.7 Methods / Forest Operations

3.7.1 Planning

Before any major forest operations are undertaken an "Operational Site Assessment" is completed. This document details the proposed work and outlines all known environmental, social and operational considerations. The "Operational Site Assessment" then becomes an important reference document during the planning phase, at the pre commencement meeting before scheduled works begin and for supervisory visits during the operation. The "Operational Site Assessment" is kept along with other documents relating to the operation in the main office.

For routine maintenance operations (e.g. fencing, ride mowing, survey work etc.) the Yorkshire District policy on timing of operations to minimise wildlife disturbance will be followed.

Regarding wildfire, we will follow guidance as set out in 'FC Practice Guide - Building wildfire resilience into forest management planning'. This will be applied proportionately dependant on a particular forest or woodland.

3.7.2 Standards

All operations within the forest will be carried out in accordance with the certification standard for the U.K. Woodland Assurance Standard and the U.K Forestry Standard 2017, version 4.

3.7.3 Harvesting

See 3.4.2. Forestry Commission staff will monitor work through regular site visits to ensure all guidelines and contract conditions are adhered to.

Clearfell V's LISS

All plans are required to consider LISS in windfirm conifer plantations as opposed to traditional clearfell systems. This decision is based upon the methodology provided in FC Information Note 40 - 'Transforming Even-aged Conifer Stands to Continuous Cover Management'. Where existing coupes are not identified for LISS management, we may consider managing these on an extended rotation basis to be thinned and monitored for future consideration for conversion to LISS.

Using the FC Forest Research Agency, Ecological Site Classification system (ESC), a range of conifer species are considered 'optimum' to 'suitable' for LISS where timber production is considered as an objective. Through this plan the area to be managed under LISS has increased from 61 ha to 472 ha. Sites range from; mature pine stands important for timber production or managing vegetation across scheduled cairn fields, mixed woodland along riparian corridors, recently restocked mixed conifer stands. See Appendix 2 - LISS Justification.

3.7.4 Haulage

As in our other woodland blocks we will continue discussions with the relevant Highways Authority to agree haulage routes and discuss annual tonnages.

All timber traffic will be managed in line with the Road Haulage of Round Timber Code of Practice, Fifth Edition (2020), which aims to improve the safety and environmental standards of the timber haulage industry.

3.7.5 Restocking

Conifer

The areas of felling carried out as part of management by LISS and clear felling will be established through a combination of restocking using alternative productive conifer species to diversify age structure and species and natural regeneration to continue to provide a sustainable timber resource, whilst mindful of the projected impacts of climate change. The FC Forest Research Agency, Ecological Site Classification system (ESC) will aid species choice and selection. A range of timber producing conifer species as set out in Appendix 2 and Appendix 3 'Species by soil type' will help inform restocking options.

Areas of LISS will be managed to encourage natural regeneration, although it is accepted that replanting will be required to maintain and further diversify the current range of species.

Reference to Predominantly Mixed Conifer on the Future Habitat & Species Map will be used to describe those areas where a range of species will be planted and/or regenerated, where conifer species will comprise at least 80% of the component mix.

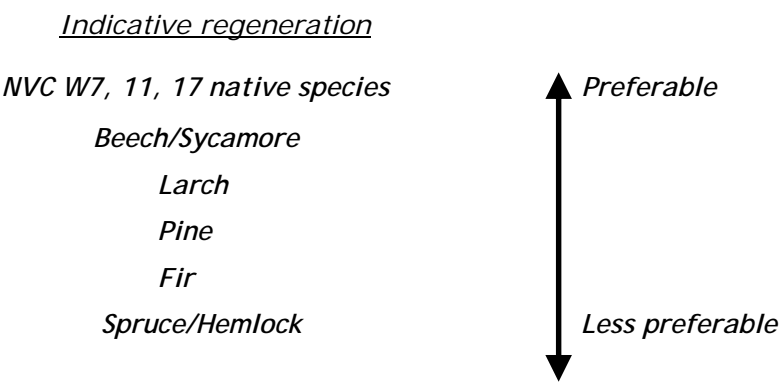
As indicated at 3.7.1, the Operational Site Assessment will provide site-specific data on soils and other site factors that will help inform the correct choice of species on a site-by-site basis.

All sites will achieve at least 2500 conifer stems per hectare through planting, natural regeneration or a combination of both.

Broadleaf

There are 48 ha Ancient Woodland Sites across Langdale Forest of which 14.14 ha are currently semi-natural class 1 (see section 4.1 Habitat Condition) and the remaining area is either SN 3 or 4 . Through this plan we are proposing to improve access into the deeply incised valley of Barns Cliff to allow the gradual restoration of conifer PAWS through the classes, toward SN 1. Regeneration of these sites will primarily be through natural regeneration. We will accept ‘naturalised’ species i.e. beech and sycamore and the principles of assisted migration where these can enhance resilience to impacts of climate change.

Natural regeneration across ancient woodland will be assessed and the risk it poses to the objectives of the plan considered. Where dense shade or invasive species (i.e. Western hemlock, Sitka spruce) threatens the native woodland community, it will be removed as part of routine felling or thinning operations.



Reference to Predominantly Mixed Broadleaf on the Future Habitat & Species Map across non-PAWS will be used to describe those areas where a range of species will be planted and/or regenerated, with the exception of ancient woodland as described above, where broadleaf species will comprise at least 60% of the component mix.

Targeted enrichment planting will be considered across sites that fail to develop sufficient natural regeneration of broadleaf species.

All sites will achieve at least 1100 broadleaf stems per hectare though natural regeneration, planting or a combination of both.

Wooded heath

It is proposed to develop a mosaic of successional habitat through natural regeneration across conifer sites, particularly adjacent the recently felled sites at May Moss SSSI through Black Holes and Grain Beck. This will create an ecotone of wooded heath, combining elements of heathland flora with broadleaf and conifer tree cover and create a significant habitat corridor between upland moorland

and the valley system between Langdale and Dalby forests. The development of these sites will be beneficial for a range of species including Water vole and the wide range of woodland and ground-nesting bird species. We shall aim for a target composition of >20% - <50% tree cover with tree cover split between broadleaf and conifer species at a ratio of 70:30 respectively. Where significant conifer natural regeneration poses a risk to achieving plan objectives, trees will be felled when at a commercial size to avoid areas becoming conifer-dominant thicket.

3.7.6 Wildlife Management

The successful establishment of future restocking sites through planting and/or natural regeneration will require effective control of crop damaging mammals. Langdale forest supports a population of Roe deer and Red deer. Besides being managed in line with the Yorkshire Forest District Deer Management Strategy 2019, opportunities will be taken to develop a network of related infrastructure such as deer glades, high seats, shooting mounds and access tracks to ensure effective control can be carried out.

4. Monitoring

See Appendix 5 – Monitoring Plan

4.1 Habitat condition

Over the lifetime of the plan where maintaining semi-naturalness is important such as Ancient Woodland Sites, we will monitor and record levels of change through the Sub-Compartment Database and the resulting Semi Natural Class scores. Across these sites we will maintain stands to SN Class 1 and 2 as set out in 3.7.5 Broadleaf.

Class 1	Semi-Natural Woodland	Includes native coppice woodland and high forest or site-native plantation with a relatively high percentage of native self-sown or coppice understorey.
Class 2	Reasserting Semi-Natural Woodland	Plantation or ex-plantation with 50-80% site-native species. Includes coppice regeneration and/or strong natural regeneration amongst planted trees.
Class 3	Plantation	Plantation with 20-50% site-native trees under established plantation stands
Class 4	Plantation	Plantation with less than 20% site-native species. Includes all non-native broadleaves and beech planted outside its natural range in England.

4.2 Forest Plan

All forest plans are formally reviewed as part of a “5-year mid-term review” and the plan’s aims and objectives and its success at achieving those aims and objectives. This plan will be formally reviewed in 2026 with opportunity to share information where requested. This time period can be shortened if circumstances change significantly or if parts of the plan prove detrimental to the overall aims and objectives.

Where an amendment to the Forest Plan is required, the Forestry Commission Practice Delivery Note 01 - Tolerance Table will be applied as set out in Appendix 5.

4.7 UKWAS Compliance Table

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	2,994	100	20,971	100
Total Wooded area	2,016	67	17,553	84
Natural Reserves - Plantation (1%)	Nil	Nil	169	1
Natural Reserves - Semi-natural (5%)	Nil	Nil	171	12
Long-term Retentions and Low Impact Silvicultural Systems (>1% wooded area)	624	21	7,617	43
Area of conservation value(>15% Total area)including designations; PAWS, ASNW, NR, LTR, LISS	977	33	8,863	42

5. Determination of Impact Significance and Mitigation

5.1 Native Woodland

Threats to our native woodlands can be immediate and absolute (e.g. loss to infrastructure or development) or slower and subtler (e.g. shading from conifer species or invasive species such as Rhododendron). There are also more widespread environmental changes, such as diffuse pollution and climate change, which may threaten in the long term. (www.forestry.gov.uk/keepersoftime) Major threats to native woodland are:

- Climate change and fragmentation
- Excessive browsing and grazing by deer & livestock
- Inadequate or inappropriate management
- Invasive and problem species
- Diffuse pollution
- Loss

Through this plan, we will continue to apply local and national policy and best practice guidance for the management and development of our existing and new native woodlands.

5.2 Flora

Blanket bog and heathland are UKBAP Priority Habitats.

Within woods, concentrate on open space habitat expansion and management, developing heathland, neutral grassland and acid mires.

(G. Peterken - Native Woodland Development in the North York Moors and Howardian Hills)

As highlighted in section 2.6, Langdale is noted for its importance regarding the maintenance and improvement of the blanket bog habitat associated with May Moss SSSI. Through this plan we will continue to work with partner organisations to build on this work and consider further opportunities where appropriate.

This plan will continue the management and development of heathland and wooded heath where this will improve habitat networks across Langdale forest. Maintaining a mixed resource of temporary and permanent open space with heathland flora will provide suitable habitat for Nightjar, Tree pipit, Woodcock and other priority species including Small pearl-bordered fritillary and large heath butterfly and adder.

5.3 Other Objectives

Concentrate on developing habitat-rich riparian corridors with marshes, meadows, woodlands, trees in farmlands. These would pass through both woodland and farmland.

(G. Peterken - Native Woodland Development in the North York Moors and Howardian Hills)

We will continue to apply local and national policy and best practice guidance to the management of riparian corridors across Langdale. This will improve and enhance the habitat network within the woodlands and benefit protected species. Continuing development of both species and structural diversity will benefit habitats for priority woodland bird species throughout the woodland (Appendix 2 - Priority woodland bird species).

Appendix 1 - Priority species

Bird Species ¹	Forest location	Habitat enhancement
Woodcock Dunnock	Developed shrub layer	Continue selective thinning and strip-shelterwood felling as part of LISS management, this will allow the development of shrub layer structure and increased structural and species diversity. Expand diverse riparian woodland habitat, create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Nightjar Tree pipit Turtle dove	Wooded heath, Clearfell sites	Continue sequential conifer felling and heavy thinning adjacent to open areas; maintain a mosaic of open structure woodland/wooded heath.
Willow warbler Garden warbler Redstart Song thrush Marsh tit Willow tit Lesser redpoll Bullfinch	Woodland edge, ride, glade	Continue selective thinning and strip-shelterwood felling as part of LISS management, this will allow the development of shrub layer structure and increased structural and species diversity. Expand diverse riparian woodland habitat, create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Crossbill	Mature conifer woodland	Continue thinning conifer stands to develop canopy and subsequent seed production across a range of conifer species.

Lepidoptera ²	Forest location	Habitat enhancement
Large heath	Heathland/wooded heath with heather and bilberry.	Continue sequential conifer felling and heavy thinning adjacent to open areas; maintain a mosaic of open structure woodland/wooded heath, wide rides and forest road verges.
Dingy skipper	Woodland rides and clearings.	Maintain open rides, roadside verges and margins that will retain foodplants such as Bird's-foot trefoil and Horseshow vetch.
Small pearl-bordered fritillary	Damp grassy habitats and woodland clearings supporting <i>viola</i> species.	Maintain the known sites in suitable condition through vegetation management to prevent scrub development. Increase connectivity of these habitats by improving riparian corridor habitat through thinning operations.
<i>Anania fuscalis</i> Gold Spangle Angle-striped Sallow Wood Tiger Dark Spinach Heath Rustic	Yellow-rattle larval foodplant Range of low herbs <i>Betula</i> species <i>Calluna</i> and range of low herbs Various <i>Atriplex</i> and <i>Chenopodium</i> <i>Calluna</i>	Maintain open spaces where favourable conditions will allow a broad range of associated plant species to be present across the forest.
Cloaked Pug	<i>Picea</i> species	Maintain spruce species across the forest.
Reptile ³	Forest location	Habitat enhancement
Adder	Heathland/verges	Maintain the known sites in suitable condition through vegetation management. Plan operations to minimise damage to known hibernacula sites. Increase the connectivity of these habitats through thinning operations and maintain a mosaic of open structure woodland/wooded heath, wide rides and forest road verges.

Invertebrates	Forest location	Habitat enhancement
Glow worm ³	Verges around Birch Hall	Maintain the known sites in suitable condition, ensuring longer tussock grass and scrub. Increase suitable habitat through thinning operations and limit disturbance to verges.
Northern Hairy Wood ant ⁴	Barnscliffe Valley	Increase connectivity of suitable habitats by maintaining a mosaic of open structure woodland, wide rides and forest road verges.
White Clawed Crayfish ⁵	River Derwent and watercourses	Maintain the known sites in suitable condition, continue felling/thinning conifer stands alongside River Derwent to reduce shading and maintain/improve water quality.
Mammals ³	Forest location	Habitat enhancement
Water vole	Riparian areas	Maintain the known sites in suitable condition through vegetation management to prevent conifer regeneration and excessive scrub development. Increase the connectivity of these riparian habitats through thinning operations.
Otter	Riparian areas	Increase the connectivity of these riparian habitats through thinning operations. Continue sequential conifer felling and heavy thinning adjacent to riparian zones to encourage woodland of a more diverse structure.

¹ Source – BTO Bird Atlas and Breeding Bird Survey data for NZ80 grid square.

The Breeding Bird Survey is run by the British Trust for Ornithology (BTO) and is jointly funded by the BTO, the Joint Nature Conservation Committee (JNCC) (on behalf of the statutory nature conservation bodies: Department of Agriculture, Environment and Rural Affairs - Northern Ireland, Natural England, Natural Resources Wales and Scottish Natural Heritage), and the Royal Society for the Protection of Birds (RSPB).

² Source – Butterfly Conservation Group

³ Source – FE wildlife monitoring volunteers

⁴ Source – University of York PhD studies

⁵ Source – North Yorkshire Crayfish forum

Appendix 2 - LISS justification

Site Appraisal

Site Factor	Suitability Score	Comment
Wind Hazard Classification: Class 3 across all areas to which LISS will be applied.	2	ESC indicates rooting depth ranges between 40cm to 60cm depending on soil type.
Soil fertility: Typical ironpan, Podzolic peaty surface-water gley	1	Competing ground vegetation is generally that associated with heathland communities and very poor sites.
Current species suitability: LP, SS, Rowan SP, NS, WH, Birch (downy, silver)	(very moist SMR/medium SNR) 1 - Very suitable 2 - Suitable	Lodgepole pine and Scots pine are well suited to the site and already regenerate within current stand structures where light levels allow and across clear fell sites.

With a combined score of 4 and 5, initial analysis indicates stands of mature LP and SP respectively achieve a 'Good' and 'Moderate' site ranking respectively for transformation to LISS. Although not optimal for transformation, the choice of strip shelterwood can incorporate low thinning of the existing stand to develop existing seed trees and provide side shelter for the development of adjacent crops.

Stand Appraisal

Stand form - Overall stand form for Lodgepole and Scots pine is good. Crown development is better across SP stands although there is currently no evidence of regeneration, probably due to its age and having not yet reached age of maximum cone production (80+ years). There is good evidence of advanced regeneration of LP across the property.

Thinning history - Thinning operations have been variable across a range of species and site types. Where access is not an issue Scots pine stands are well developed but elsewhere there has not been a continuity of thinning and stands less developed. The majority of Lodgepole pine stands have had a 10 to 15-year break in thinning. This has recently been resumed across all 1st rotation stands. Currently there is good evidence that LP, SS, birch and willow are capable of developing through natural regeneration across sites.

Access - This is not a limiting factor as good infrastructure exists across the majority of Lodgepole pine stands and the majority of 1st and 2nd rotation productive coniferous areas. A number of sheltered 1st rotation Scots pine sites have limited access where situated at the head of watercourse systems.

On the basis of the above information, we will consider transformation to LISS across LP, SP and mixed pine/spruce stands with the aim of increasing species diversity through enrichment planting using a wide-range of conifer species identified as Very Suitable and Suitable on the attached ESC report, aiming for a simple stand structure.

We will adopt a Strip Shelterwood system, where strips will aim to be between 20 to 25 m wide, retaining seed trees within strips where stability is not a significant threat.

Some areas of high forest/clearfell coupes will be managed on an extended rotation basis and will be monitored for development of natural regeneration. Where appropriate these will be considered for developing toward LISS management as set out above.

The Forest Research ESC table below supports the range of target species considered for natural regeneration and those identified as very suitable (dark green) and suitable (light green) where enrichment planting will increase species diversity. For Langdale, enrichment planting could consider the introduction of Macedonian pine, Norway spruce, Western red cedar, European silver fir, Hybrid larch, Western hemlock, Coast redwood, Lawson's cypress, Aspen and Red, Grey, Italian, Common alder.

Future wildlife management issues may arise where deer browsing could impact across strips as more palatable species are introduced. Site monitoring, the development of deer management infrastructure as set out in Forest Plan, section 3.7.6 and adherence to the District Deer Management strategy will help inform future management.

Ecological Site Classification Report												
Eastings(m)	Northings(m)	Grid Reference		Climate Scenario	Site Class	Filter	Brush	Drainage	Fertiliser/Nurse			
490000	490000	SE900900		Medium-High 2050 (A1b/Sp0) AWC method	Warm - Moderately exposed - Slightly dry	All species	Brush present aged less than 18 months	No drainage installed	Mixture applied			
Site Description and Variables												
The site has a warm, highly exposed and slightly dry climate. Exposure constraints may limit species options and the ability to thin woodlands without significant risk of windthrow. The soils are moist moisture status and poor nutrient status. The analysis assumes that site management (e.g. CCF), the use of deep rooting species and/or soil properties will help mitigate climatic moisture deficits. Brush will be redistributed evenly across the site to provide nutrients and avoid uneven growth. Nutrient deficiencies are primarily due to nitrogen availability, and will be ameliorated through planting target species in an intimate mixture with one or more of Scots pine, Alaskan Lodgepole pine, Larch, Birch or Alder. The site exposure is anticipated to be higher than modelled values.												
Modifications		AT		CT		DAMS		MD		SMR		SNR
Default		2332.0		8.0		14.0		215.0		4.0(Moist)		2.0(Poor)
Brush												0.5
Nursing mixture												0.5
Dams Modifier						2						
Final		2332.0		8.0		16.0		215.0		4.0(Moist)		3.0(Medium)
Species	Abbr.	Suit(Eco)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Corsican pine	CP	●	●	14	DAMS	●	●	●	●	●	●	3.3(A)
Lodgepole pine	LP	●	●	12	DAMS	●	●	●	●	●	●	3.1(A)
Macedonian pine	MCP	●	●	11	DAMS	●	●	●	●	●	●	3.1(C)
Maritime pine	MAP	▲	▲	6	DAMS	●	●	▲	●	●	●	3.1(C)
Monterey/Radiata pine	RAP	●	●	15	DAMS	●	●	●	●	●	●	3(C)
Scots pine	SP	●	●	10	DAMS	●	●	●	●	●	●	3.3(A)
Weymouth pine	WEP	●	▲	6	SMR	●	●	●	●	●	●	3(C)
Norway spruce	NS	●	▲	10	DAMS	●	●	●	●	●	●	3.3(A)
Oriental spruce	ORS	▲	▲	10	DAMS	●	●	▲	●	●	●	3(C)
Serbian spruce	OMS	●	●	11	DAMS	●	●	●	●	●	●	3(B)
Sitka spruce	SS	●	●	21	DAMS	●	●	●	●	●	●	3.4(A)
Sitka spruce (Imp.)	Imp.SS	●	●	24	DAMS	●	●	●	●	●	●	3.4(A)
Douglas fir	DF	▲	▲	10	DAMS	●	●	▲	●	●	●	3.1(A)
Hybrid larch	HL	●	●	10	DAMS	●	●	●	●	●	●	3(A)
Japanese larch	JL	●	●	9	DAMS	●	●	●	●	●	●	3(A)
European larch	EL	●	●	7	DAMS	●	●	●	●	●	●	3(A)
Western red cedar	RC	▲	▲	11	DAMS	●	●	▲	●	●	●	3.1(A)
Japanese red cedar	JCR	▲	▲	10	DAMS	●	●	▲	●	●	●	3(B)
European silver fir	ESF	●	●	12	DAMS	●	●	●	●	●	●	3(B)

Ecological Site Classification Report										
Grand fir	GF	<div><div></div><div></div></div> 15	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(A)				
Noble Fir	NF	<div><div></div><div></div></div> 3	ATS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(A)				
Nordmann fir	NMF	<div><div></div><div></div></div> 15	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(C)				
Pacific fir	PSF	<div><div></div><div></div></div> 18	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.4(C)				
Leyland cypress	LEC	<div><div></div><div></div></div> 11	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Western hemlock	WH	<div><div></div><div></div></div> 12	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(A)				
Giant redwood	WSQ	<div><div></div><div></div></div> 18	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Coast redwood	RSQ	<div><div></div><div></div></div> 15	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Lawson's cypress	LC	<div><div></div><div></div></div> 9	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Downy birch	PBI	<div><div></div><div></div></div> 3	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(A)				
Silver birch	SBI	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(A)				
Big leaf maple	AMA	<div><div></div><div></div></div> 4	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(C)				
Norway maple	NOM	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Sycamore	SY	<div><div></div><div></div></div> 9	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.3(A)				
Beech	BE	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(A)				
Roble beech	RON	<div><div></div><div></div></div> 10	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(B)				
Ash	AH	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(A)				
Pedunculate oak	POK	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(A)				
Red oak	ROK	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Sessile oak	SOK	<div><div></div><div></div></div> 5	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(A)				
Aspen	ASP	<div><div></div><div></div></div> 7	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(A)				
Black poplar	BPO	<div><div></div><div></div></div> 10	SNR	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(A)				
Rauii beech	RAN	<div><div></div><div></div></div> 7	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(B)				
Common alder	CAR	<div><div></div><div></div></div> 7	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(A)				
Red alder	RAR	<div><div></div><div></div></div> 7	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(B)				
Grey alder	GAR	<div><div></div><div></div></div> 8	ATS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.1(B)				
Italian alder	IAR	<div><div></div><div></div></div> 6	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.2(B)				
Shining gum	ENI	<div><div></div><div></div></div> 25	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(C)				
Cider gum	EGU	<div><div></div><div></div></div> 15	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3(C)				
Rowan	ROW	<div><div></div><div></div></div> 4	DAMS	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	3.3(A)				

Appendix 3 - Restock species by soil type

Site type		Species														
Upland sites	Lowland sites	SP	LP	MCP	DF	ESF	GF	WH	WRC	Ley/Law C	Coast R	Giant R	HL	SS	NS	Oriental S
Gley						y		y	y	y				Y	Y	y
Iron pan/podzol		Y	y	y	y	y	y				y	y	y		y	y
BE/intergrade		Y		y	Y	y	y	y	y	y	y	y	y	y	Y	y
Calcareous				y		y			y	y						y
	Gley					y		y	y	y	y	y		Y	Y	y
	Podzol	Y	y	y	y	y	y	y	y	y		y	y		y	y
	BE/intergrade	Y		y	Y	y	y		y	y	y	y		y	Y	y

BOLD CAPITAL (Y)/BOLD INFILL COLOUR	Cat A Major species - currently widely used with no supply problems and should continue to play an important role
<i>Bold, lower case italics (y), pastel infill colour</i>	Cat B Minor species - Species that either currently play a minor role but have demonstrated their suitability being part of a species range to diversify our forests. Climate change may increase or reduce their use
Normal lower case (y), pastel infill colour	Cat C Secondary species - Species with little information on forest performance but possible choice based on Arboreta. Use on small-scale experimental basis for now but may increase if favourable results

Refer to cell comments for specific species notes

No planting where >50cm peat depth

Pacific coast associated forest cover - consider in mixtures as part of underplanting for CCF					
DF	GF	WH	Law C	Coast R	ESF

Appendix 4 - Langda

Appendix 4 - Langda	
Objective	Method
People	
Maintain and improve the woodlands contribution to the landscape character within the North York Moors National Park 'Forest character type - Langdale character area'.	Fixed-point photography
Encourage communities to become involved across these woods, its management and direction through consultation in planning and participation in volunteering.	Input data and analyse results through RazorsEdge secure database.
Nature	
Improve the resilience of the natural environment to pests, diseases and wildfires and realise the potential of these woods for nature and wildlife.	Update Forester Web GIS; subcompartment database, Conservation module.
	Review sample of Operational Site Assessments.
Maintain the cultural and ecological heritage value of these woods.	Liaise with and review Historic England - At risk Register, NYMNPA shared monuments data, update Forester Web GIS Heritage module.
	Liaise with Natural England (NE) re management of SSSI (May Moss) to maintain in favourable condition.
	Monitor Priority habitat condition by visual assessment.
	Monitor Priority species; Schedule 1 birds, Water vole, Small pearl-bordered fritillary.
	Review sample of Operational Site Assessments.
Economy	
Maintain the land within our stewardship under UKWAS certification.	Independent surveillance audit across the organisation.
	Independent surveillance audit across the District.
Improve the economic resilience of these woods from a more diverse range of site appropriate conifer and broadleaf species.	Update Forester Web GIS; subcompartment database, Operational Thinning Layer, Management Coupe Layer.
Site-specific	

Clearfell coupes - ensure boundaries are accurately reproduced and within agreed tolerances as set out in Forestry Commission Practice Delivery Note 01 (FC PDN 01).	GPS unit or equivalent data recorders.
Restock & Future Habitat Coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by planting and natural regeneration by year 5 since date of initial planting (allowing 2 years fallow for <i>hylobius</i>).	On-site stocking density plot surveys.
Restock & Future Habitat Coupes - Mixed broadleaf habitat. Establish at least 1100 broadleaf stems per ha through natural regeneration by year 10 since date of felling.	On-site stocking density plot surveys.
Restock & Future Habitat Coupes - Wooded heath habitat. Establish tree crown cover of at least 20% of the ground as per Action Note 93 - Definition of woodland and trees, with overall composition 70% broadleaf and 30% conifer species.	
LISS coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by year 10 after final removal overstorey.	On-site stocking density plot surveys.
PAWS regeneration.	Monitor change through abbreviated stocking density assessments and repeat condition surveys.
Wildlife management - Identify problem sites where mammal damage is affecting crop establishment or degrading woodland flora.	On-site stocking density plot surveys. Damage, Impact and Activity Assessments as set out in YFD Deer Management Strategy.
Plan specific	
Forest Plan mid-term review. Review the plan's aims and objectives and the progress of their implementation.	Apply a variety of measures as described in the above table.

le Forest Monitoring Plan	
Frequency/Timings	Actions
Year 0 baseline, 5-year review, 10-year review.	Review visual impact of coupes within the landscape and adjust future coupe shape if necessary.
Quarterly	Review activity across the forest and wider District to measure activity and to provide insight into gaps and future opportunities through volunteering.
As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species, age structure, conservation siting's/records and broad habitat types; conifer, broadleaf, open. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Annually	Provide feedback where management is not compliant with recommendations.
Annually or as data becomes available. At time of Year 0 baseline, 5-year review, 10-year review.	Review progress of annual maintenance programmes and adjust where At Risk status may decline from target condition.
Management Plan and site every 3 years.	Carry out management as agreed with NE.
5 years	Provide feedback where habitat is not in favourable condition and recommend programme of works to achieve favourable status.
Annual	Provide feedback where habitat is not in favourable condition and recommend programme of works to achieve favourable status that will benefit target species.
Annually	Provide feedback where management is not compliant with recommendations.
Annually	Implement corrective actions as required.
As per audit sample.	Implement corrective actions as required.
As recordable changes occur within the forest environment and End Of Year updates. Year 0 plan renewal, 5-year review, 10-year review.	Review long-term changes in productive capacity through the Production Forecast at the point of plan renewal and across the wider District.

Upon completion of all harvesting activity.	If significant coupe variation, apply for appropriate ammendment to FC as required as per FC PDN 01 prior to felling. Update Forester Web for completed clearfells.
Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out beating up where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Beat-up surveys between years 1 to 5 year assessment.	Monitor change from current Semi natural class toward target SN 1 (>80% native). Consider future changes in management that can achieve target score.
To be informed from results of beat-up surveys between years 1 to 4 and year 5 stocking assessment, internal guidance OGB4.	Target deer control in line with District strategy.
2026	Modify the plans aims and/or objectives where these are no longer compatible with National or District Policy. Significant plan changes will require consultation and formal amendment from the Forestry Commission.

Appendix 5 Agreed Tolerance Table for Yorkshire Forest District, England

	Adjustment to felling coupe boundaries	Swapping of felling coupes	Adjustment to felling operation	Clearance of standing trees associated with wind-blown areas	Timing of restocking - including natural regeneration	Species choice	Tree health
Formal approval by area team required	>25% of the coupe area	Where changes to the felling sequence is likely to result in a significant breach ¹ of the UKFS adjacency rules	Thinning to selective felling or clear felling	Clearance of >1 Ha or 10% of the area (whichever is less) in sensitive ² areas, >5 ha or 25% of the area (whichever is less) in non-sensitive areas	Where this is > 4 planting seasons from the date of felling	From mixed, predominantly Broadleaves to evergreen conifer	Where no SPHN issued and felling required
Written approval only required from area team,³	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach ⁴ of the UKFS adjacency rules			Where this is at least 2 but no more than 4 planting seasons from the date of felling	Deciduous conifers to evergreen	Thinning >50% but < 65%
Formal approval by area team <u>not required</u>⁵	< 10% of the coupe area	Where changes to the felling sequence does not result in a breach of the UKFS adjacency rules.	Clear felling to selective felling or thinning	Clearance of <1 Ha or 10% of the area (whichever is greater) in sensitive areas, <5 ha or 25% of the area (whichever is greater) in non-sensitive areas	Where this is < 2 planting seasons from the date of felling	Any other changes	Where SPHN is issued or thinning up to 50%

¹ Greater than 20% of the coupe boundary

² Definition of sensitive areas is as per the EIA guidance

³ Approval letter retained for compliance inspection purposes

⁴ 20% or less of the coupe boundary

⁵ District team must retain all relevant documentation for compliance inspections



Title: Photograph Locations
Date: 24 March 2021
Author: Judith Simpson
Scale @ A0: 1:15,000



Forestry England
forests and woodlands
have been certified in
accordance with the UK
Woodland Assurance
Standard (UKWAS)



© Crown copyright and database rights 2021 OS 100021242.
© Bluesky International Ltd and Getmapping Plc 2021

External

Forest restructuring over the past ten years has seen significant parts of even-aged, single species conifer crops felled across a wide range of sites. Felling sites range in shape and scale, where subsequent regeneration either by planting or natural regeneration is creating a more diverse forest by increasing the range of different species and age structure.

Future management through appropriately designed felling coupes will continue the process of restructuring. Low impact silvicultural management will contribute to the development of more varied and intimate internal forest landscapes.



1. **View from Blakey Topping.** Although not obvious, two minor watercourses run north to south from May Moss SSI feeding eventually into Crosscliff Beck. Over the course of the plan some of the mature conifer crops will be removed, creating successional open habitat that will develop riparian corridors linking the designated open moorland with agricultural land south of the forest.

2. **View from council road at North Side.** Significant parts of this forest landscape will be managed through Lower Impact Silvicultural Systems, where windfirm pine crops will develop while introducing other conifer species adapted to projected climate change impacts. Although beyond the timescale of this plan, the straight-edged evergreen conifer boundary across Langdale Rigg will be softened by the introduction of broadleaf species.



3. **View from Jerry Noddle, Dalby across the lower slopes of Langdale.** As the process of restructuring continues, increasing proportions of broadleaf regeneration and open space across second rotation sites create opportunities for semi-natural habitats to develop.

4. **Looking across from Fylingdale Moor toward the northern boundary of Langdale Forest.** The source of the Yorkshire River Derwent runs between the northern edge of the forest and the adjacent open moorland. Recent conifer felling has presented opportunities for subsequent restocking to increase the unplanted buffer between the two. In addition, unplanted riparian corridors from within the forest create corridors of successional open habitat.





5. Hipperley Beck. Following the removal of mature spruce from along this riparian corridor, an extensive area of predominantly birch and willow woodland has developed with associated heath-land and wetland ground flora. Elements of standing and fallen deadwood provide niche habitats for fungal and invertebrate communities to develop.



6. Thorn Hill Slack riparian restoration. Recent conifer felling has provided an ideal opportunity to develop a riparian corridor along this tributary to Keldy Grain. Where previously the site was devoid of ground flora; mosses, grasses, rush and heather have become established and slow the flow of water, capturing sediment before it is transported further downstream.