Forestry England



Yorkshire Forest District

Guisborough Forest Plan

FP 31

2020



Forestry England - Property

Forest District:	Yorkshire
Woodland or property name:	Guisborough Forest
Nearest town, village or locality:	Guisborough
OS Grid reference:	NZ 603135
Local Authority district/unitary Authority:	North York Moors National Park

Areas for approval

	Conifer	Broadleaf	Open
Felling	51.69		
Restocking	43.43	7.44	0.82
Lower Impact Silvicultural Systems regeneration felling	6.00		

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Guisborough

478.2 Hectares

Period of Plan: 2020 - 2030

1. Background

Guisborough Forest is part of a network of forests managed by Forestry England (FE), Yorkshire Forest District, located within the Cleveland Beat. It is situated adjacent the market town of Guisborough on the northern fringe of the North York Moors National Park.

The forest is a mixture of freehold and leasehold land, the majority of which was planted in the 1950's and 60's.

2. Describing the Site

2.1 Geology and Soils (FP Map – 01)

Underlying geology is a complex range of sedimentary sandstones, mudstones and ironstones of a marine origin formed in the mid-Jurassic period. The rich industrial heritage throughout Guisborough Forest owes its origins to the Cleveland Ironstone Formation running across the site.

The soils at Guisborough are heavily influenced through a combination of geology and slope resulting in a variety of soil types; brown earth, surface water gley, peaty surface water gley, ironpan and mining scree. Based on Forest Research Ecological Site Classification, soils range between very wet soil moisture regime (SMR) and very poor soil nutrient regime (SNR) across the upper slopes and plateau, and moist SMR and medium SNR across the middle to lower slopes. The difference between SMR and SNR impacts on the range of 'suitable' species that can be considered for restocking/regenerating.

2.2 Tree Species (FP Map - 02)

Species composition has changed significantly over the last 12 years as shown in the table overleaf. This has been particularly influenced by the planned felling across the visually prominent upper slopes at Hanging Stone Wood, Highcliff Wood, Belmanbank Gate and adjacent Westworth Wood.

Species	2019 Ha	2019 %	2007 %
Broadleaf	137.26	28	15
Larch	108.55	23	41
Pine	69.35	14	31
Spruce	17.95	3	5
Other conifer	19.58	4	5
Open/wooded heath*, felled **, burnt ***	126.73	26	3

* 14% Open (inc. temporal and permanent)/Wooded heath, ** 7% Felled, *** 5% Burnt

Recent forest fires have resulted in 25 ha of fire damage across the eastern end of the forest between Cass Rock Gate and Cass Rock Quarry. This area previously comprised of planted 6-year old conifer crops, 12-year old naturally regenerated mixed woodland and open heath of gorse, bracken and heathland vegetation.

2.3 Wind Damage

The Windthrow Hazard Classification ranges from 1 to 3 with almost 70% of the forest in the lower hazard classes 1 and 2 where thinning regimes are relatively unconstrained. The remaining area across the upper slopes is in the intermediate hazard class 3 where thinning options can be more limiting and particular care needs to be taken over the timing, pattern and intensity of thinning to avoid precipitating the onset of serious windthrow. Previously delayed conifer thinning across the moorland plateau subsequently restricted silvicultural options across even-aged, single species stands. Opportunities to carry out timely thinning have increased over recent years with approximately 40% by area being thinned since 2007, of which 50 hectares (ha) was carried out across stands currently designated for management by Lower Impact Silvicultural Systems (LISS).

2.4 Landscape (Photographic montage)

The forest is situated in the 'Upland Fringe – Cleveland Foothills' landscape character area[1] on the northern boundary of the North York Moors National Park. The forest is referenced in the document with the following description; *'Very well treed with often extensive and sometimes blocky coniferous or mixed plantations clothing the steeper slopes with the top edge of the escarpment almost continuously wooded for considerable stretches.'*

'Cropping (felling) offers opportunity for replacement with broadleaves or return to other habitats'.

Under the previous plan significant areas of clearfelling has been carried out across numerous locations as described at 2.2. The size of clearfells ranges from 0.7 ha at Wards Bank to over 27 ha adjacent to Westworth Wood. Increased structural diversity has been achieved by reducing the peak of P1951 – 1960 crops and maintaining restocking with a range of conifer species and mixed conifer and broadleaf natural regeneration along the moorland plateaux. Fixed-point photographs of both external and internal views support the changing structure across the forest and demonstrate how this provides a positive contribution to the overall landscape.

2.5 People and Community (FP Map – 05)

Part 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 waymarked walking trails through Hutton Lowcross Woods, forest roads and rides and public rights of way with links to the Cleveland Way national trail.

The forest is a popular destination for visitors with strong links to the Redcar and Cleveland District Council Pinchinthorpe visitor centre.

2.6 Natural Heritage (FP Map – 05)

Guisborough Forest hosts a range of flora, fauna and bio-diverse habitats. The 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. An important ecotone is developing along this

[1] North York Moors National Park LCA Report 2003

moorland edge, where recent felling and subsequent regeneration with mixed-species woodland and heathland ground flora are replacing the pure stands of even-aged conifers.

There are 54 ha of ancient woodland located at Bousdale, Hutton Lowcross and East Banks. Under the previous plan the majority of Plantation on Ancient Woodland Sites (PAWS) at Bousdale has been thinned at least once, whereas large parts at Hutton Lowcross and East Banks have been felled and are awaiting regeneration.

The forest supports a wide range of national and regionally important species across different habitat types (see Appendix 2):

Wooded heath/clearfell – Nightjar, Tree pipit
Woodland edge/ride/glade – Willow warbler, Dunnock, Spotted flycatcher, Willow tit, Linnet, Lesser redpoll, Bullfinch
Developed shrub layer – Woodcock

The varieties of habitat types recorded above are also host to a wide-range of lepidoptera as set out in Appendix 1, a number of which a rare to Yorkshire and northern counties.

A network of streams, water courses and 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 ground flora can naturally regenerate, providing ecologically diverse habitat corridors across the forest.

2.7 Cultural Heritage (FP Map 06)

There are two scheduled Bronze Age round barrows at Ryston Bank and two scheduled features along the southern boundary at Pinchinthorpe Moor and Belmanbank. Other unscheduled features include round barrows, medieval holloways and ridge and furrow field systems. The forest also contains an abundance of industrial heritage associated with sandstone, alum, jet and ironstone mining, the latter forming part of the Heritage Lottery funded Our Industrial Heartland project https://ourindustrialheartland.co.uk/our-project/

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,
- increase the proportion of native broadleaf cover, particularly across areas of PAWS, riparian zones and along steep-sided scarp slopes,
- 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.
- consider opportunities for communities to become involved with Guisborough Forest and take part in activities that improve quality of life, health and learning.

3.2 Objectives

People

- Maintain and improve the woodlands contribution to the landscape character within the North York Moors National Park 'Upland Fringe – Cleveland Foothills character area'. To be measured by fixed-point photography.

- Gain insight of woodland users and encourage engagement with these and partner organisations to shape the future management and direction of the woodland and its facilities. To be measured through surveys.

- Work with and provide volunteering opportunities that derive benefits to both the participants and the woodland. To be measured through FC systems.

Nature

- Improve the resilience of the natural environment to pests, diseases and wildfires and realise the potential of these woods for nature and wildlife, to be measured by FC systems accordingly.

- Improve and maintain the cultural and heritage value of these woods, to be measured by Historic England, NYMNP Authority and FC systems accordingly.

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 accordingly.

3.3 Constraints and Opportunities

- Potential forest health issues on stands of larch (P*hytophthora ramorum*).

- Challenges of managing expectations for public access across the forest.

- The retention of windfirm conifer stands on extended rotations that will allow the development of management by LISS to facilitate species and structural diversity.

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.

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 Guisborough this will include:

- 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; 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 habitats for target species and identified habitats. This is particularly beneficial for the range of habitats and species recorded at Guisborough from which a selection has already been mentioned at 2.6 - Natural Heritage.

- A number of watercourses currently identified as poor status through the Water Framework Directive (WFD) assessment are located downstream of Guisborough. Work undertaken through this plan will contribute to improving their water quality and aquatic ecology, through replacing existing conifer crops with predominantly broadleaf species and considering opportunities to address known issues. Management using LISS and phasing of felling will avoid significant lengths of watercourse being felled at any one time throughout the approval period of the plan.

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 in Guisborough Forest.

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 6.44 ha are designated LTR.

Invasive species

Rhododendron is known to grow within the forest. These sites will be managed to reduce their spread and eradicate where possible during the lifetime of the plan, particularly by prioritising ancient woodland sites.

3.4.2 Timber Harvesting

We will continue to sustainably harvest timber from clearfell, Lower Impact Silvicultural Systems (LISS) and thinning's. Where appropriate we will develop broadleaf stands to increase their contribution to timber production. These operations will be planned and controlled to ensure due regard for all other objectives of management at Guisborough.

3.4.3 Landscape

Guisborough Forest lies within the North York Moors National Park, a protected and designated landscape where felling across the visually prominent upper slopes at Hanging Stone Wood, Highcliff Wood, Belmanbank Gate and adjacent Westworth Wood under the previous plan has reduced the negative impacts of hard geometric boundaries between upland forest and heather moorland. The mosaic of habitats developing across these sites provides opportunities to manage mixed woodland with variable proportions of open space. Developing and maintaining a mosaic of mixed woodland and wooded heath across this part of the forest will not be achieved over a single rotation but future management will aim to maintain a mixed species composition through thinning and felling.

The Cleveland Way national trail runs through parts of the forest. Where the ground falls steeply away along sections of the trail and recently felled or proposed coupes offer long-distance views, there will be no planting or ground preparation promoting natural regeneration directly adjacent to help maintain views in the short to medium term. This will equate to one tree-length, approximately 30m, below the path.

Appropriate scale felling across parts of the lower and middle slopes will continue the process of restructuring, moving away from even-aged, single species stands to a more mixed broadleaf/conifer woodland.

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 high.

3.4.4 Recreation

This is considered as part of the North York Moors FC NPA Joint Action Plan.

3.5 Plan (FP Map 07)

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 08 - 10)

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	Projected volume (m^3)
2020 – 2021 Clearfell	**18.6**	**4**	**4234**
2022 – 2028 Clearfell	**33.1**	**7**	**4792**
LISS*	**6.0**	**1**	**1800**

* A significant proportion of Guisborough will be managed using LISS. Where advanced regeneration is present, canopy gaps up to 0.6 ha will be created to release the regeneration. 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 felled through the processes of group felling and shelterwood systems and restocked primarily by natural regeneration.

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		
	2020	2030	2070	2020	2030	2070
Conifer	215.3	234.7	196.3	45	49	41
Broadleaf	137.6	187.2	224.8	29	39	47
Open/wooded heath	39.8	56.3	57.1	8	12	12
Recently felled, burnt, awaiting regeneration etc	85.5	-	-	18	-	-

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 and broadleaf species are considered 'optimum' to 'unsuitable' for LISS where timber production is considered as an objective. Through this plan the area to be managed under LISS has increased from 136 ha to 255 ha.

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, Fourth Edition (2012), which aims to improve the safety and environmental standards of the timber haulage industry.

3.7.5 Restocking

Conifer

The areas of small group felling carried out as part of management by LISS will be established through a combination of natural regeneration and restocking using alternative productive conifer species to diversify age structure and species 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.

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 up to 60% of the component mix. We aim to manage conifer-dominant stands across Belman Bank and West Banks from SN Class 4 to Class 3, aiming toward at least 40% broadleaf species, as highlighted on FP Map 10 – Proposed Future Habitat and Restock.

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 or 1100 broadleaf stems per hectare through planting, natural regeneration or a combination of both by year 5 after clear felling or group felling.

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

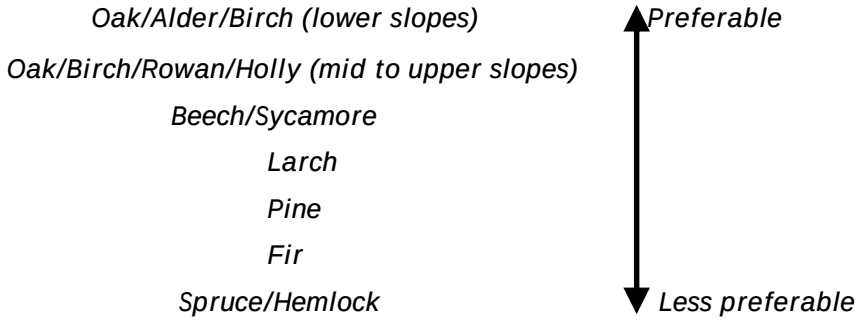
There are 54 ha Ancient Woodland Sites across Guisborough Forest.

On PAWS sites planned for conversion to broadleaf woodland, we will accept natural regeneration of both native and non-native species i.e. beech, sycamore and may include no more than 19% conifer species. Across these sites our long term objective is to progressively move stands to SN Class 1 with a target of 80% native broadleaf species canopy cover (see section 4.1 Habitat Condition).

On non-PAWS planned for conversion to broadleaf woodland, we will progressively move stands to SN Class 2 with a target of 50-80% native broadleaf species canopy cover.

Sites will achieve at least 1100 broadleaf stems per hectare though natural regeneration, planting or a combination of both by year 5 after clear felling or group felling.

Broadleaf regeneration on PAWS areas



Natural regeneration in PAWS 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 through felling or thinning operations before expected age of first seed crop.

Wooded Heath

It is proposed to develop a mosaic of successional habitat through natural regeneration across conifer sites, particularly those adjacent North York Moors SSSI/SPA/SAC, shown as 'Other/Open land' on FP Map 09 – Management Type. This will create an ecotone of wooded heath, combining elements of heathland flora with broadleaf and conifer tree cover. Habitat networks will be maintained and established across parts of the forest that will enhance and maximise the movement of flora and fauna by increasing the permeability both within and outwith the forest area. The development of these sites will be beneficial for a range of species including the wide range of woodland and ground-nesting bird species. Through this plan we aim to manage approximately 57 ha of recently felled conifer toward establishing wooded heath habitat with a target composition of 20 - <70% tree cover and >30% open with tree cover split between broadleaf and conifer species at a ratio of 60:40 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.

4. Monitoring

See Appendix 4 – Monitoring Plan

4.1 Habitat condition

Over the lifetime of the plan, areas where increasing semi-naturalness is important i.e. existing conifer dominant areas (SN Class 4) including Belman Bank, and West Banks, 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 progressively move stands to SN Class 3 with a target of 40% native broadleaf species canopy cover. This will take several thinning cycles whereby existing broadleaf trees will be managed to increase crown development and allow successive broadleaf regeneration to establish.

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 2023 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.

4.3 UKWAS Compliance Table

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	478.2	100	20,971	100
Total Wooded area	366.1	77	16,535	79
Natural Reserves – Plantation (1%)	Nil	Nil	170	1
Natural Reserves – Semi-natural (5%)	Nil	Nil	85	6
Long-term Retentions and Low Impact Silvicultural Systems (>1%)	261.4	55	6,909	33
Area of conservation Value (15%)Including Designations; PAWS, AW, ASNW, NR, LTR,LISS	261.4	55	8,666	41

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 native woodlands.

5.2 Flora

Heathland is a UKBAP Priority Habitat

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)

This plan will continue the management and development of heathland where this will improve habitat networks across Guisborough forest. Maintaining a mixed resource of temporary and permanent open space will provide suitable habitat for Nightjar, Woodcock and other priority flora and fauna species within the forest area.

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 Guisborough. 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 woodland bird species, open forest bird species and lepidoptera species

Bird Species [1]	Forest location	Habitat enhancement
Nightjar Tree pipit	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 Dunnock Spotted flycatcher Willow tit Linnet Lesser redpoll Bullfinch	Woodland edge, ride, glade	Continue selective thinning and small-scale 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.
Woodcock	Developed shrub layer	

[1] Source – BTO Bird Atlas and Breeding Bird Survey data for NZ51, NZ61 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).

Lepidoptera [2]	Forest location	Habitat enhancement
Scarce silver Y Anomalous	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.
Angle-striped sallow Scarce Prominent Red Sword-grass Square spotted clay	Birch woodland	Continue selective thinning and small-scale 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)/scrub habitat and standing deadwood. Maintain birch within restock sites and develop successional sites along road/ride edges and wetter sites.
White-letter hairstreak	Broadleaf woodland with elm	Continue selective thinning and small-scale felling as part of LISS management particularly where this retains and promotes the development of elm as a woodland component. Identify potential sites for limited enrichment planting across mixed broadleaf woodland sites.

[2] Source – Butterfly Conservation Group

Appendix 2 – Lower impact silvicultural systems justification

Site Factor	Suitability Score	Comment
Wind Hazard Classification: class 1 to 3 across all but upper margins adjacent moorland boundary	1	Tree stability should not be an issue across these WHC classes where crops have a regular thinning history.
Soil fertility: medium (typical Brown earth, SWG)	2	The two main soil types support soft grasses, bracken and bramble on the lower to mid-slopes.
Current species suitability: LP, SP, NS, SS, DF, JL, HL, WH, Silver birch, Beech, Sycamore, Oak, Holly, Rowan, Willow, Common alder Downy birch	1 – Optimal 2 – Suitable	Existing species offer a broad selection that can be developed for natural regeneration with advanced regeneration of larch, WH, SS, LP and birch, beech, sycamore, holly, rowan, willow and common alder.

With a combined score ranging from 4 to 5, initial analysis indicates significant areas of Guisborough achieve a Good (4) to Moderate (5) site ranking for transformation to LISS.

Stand form - Form is good across a range of species.

Thinning history - Thinning operations are broadly consistent where crops have been managed over a regular cycle, developing crowns that can act as potential seed-bearing trees. First rotation crops that have been thinned regularly and second-rotation crops that can be thinned will be identified for LISS management on FP Map 09 – Management Type.

Currently there is good evidence that larch, SS, LP, WH and a range of broadleaf species are capable of developing as natural regeneration across suitable sites.

Access – The majority of the block has a good network of forest roads and rides although steep terrain can be limiting across parts for mechanical harvesting.

On the basis of the above information, we will consider LISS within conifer stands across Guisborough using a range of conifer species including enrichment planting with Macedonian pine, Coast redwood, Western red cedar and European silver fir where conditions allow, aiming for a simple stand structure. Although we don't currently restock with larch, we will accept this where it appears as natural regeneration. Where it is our objective to increase the proportion of broadleaf species as a component of mixed woodland we will accept the current range of species and consider enrichment planting with oak, alder and aspen.

We will adopt a Group Shelterwood system through a combination of thinning, group felling (0.25 to 0.60 ha) and replanting with suitable species.

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 where enrichment planting will increase species diversity:

NZ615143

Ecological Site Classification Report

Eastings(m)	Northings(m)	Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser/Nurse
461500	514300	NZ615143	Baseline climate 1961-1990	Warm - Sheltered - Moist	All species	No brash present	No drainage installed	No fertiliser

Site Description and Variables

The site has a warm, sheltered and moist climate. The soils are fresh moisture status and medium nutrient status.

Modifications	AT	CT	DAMS	MD	SMR	SNR
Default	1349.0	8.0	8.0	147.0	5.0(Fresh)	3.0(Medium)
Final	1349.0	8.0	8.0	147.0	5.0(Fresh)	3.0(Medium)

Species	Abbr.	Suit(Eco)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Corsican pine	CP	●	●	16	ATS	●	●	●	●	●	●	3.3(A)
Lodgepole pine	LP	●	●	14	ATS	●	●	●	●	●	●	3.1(A)
Macedonian pine	MCP	●	●	14	ATS	●	●	●	●	●	●	3.1(C)
Maritime pine	MAP	●	●	9	ATS	●	●	●	●	●	●	3.1(C)
Monterey/Radiata pine	RAP	▲	▲	7	ATS	▲	●	●	●	●	●	3(C)
Scots pine	SP	●	●	14	ATS	●	●	●	●	●	●	3.3(A)
Weymouth pine	WEP	●	●	13	ATS	●	●	●	●	●	●	3(C)
Norway spruce	NS	●	●	24	ATS	●	●	●	●	●	●	3.3(A)
Oriental spruce	ORS	●	●	18	ATS	●	●	●	●	●	●	3(C)
Serbian spruce	OMS	●	●	19	SNR	●	●	●	●	●	●	3(B)
Sitka spruce	SS	●	●	22	MD	●	●	●	●	●	●	3.4(A)
Sitka spruce (Imp.)	Imp.SS	●	●	24	MD	●	●	●	●	●	●	3.4(A)
Douglas fir	DF	●	●	26	ATS	●	●	●	●	●	●	3.1(A)
Hybrid larch	HL	●	●	16	ATS	●	●	●	●	●	●	3(A)
Japanese larch	JL	●	●	13	MD	●	●	●	●	●	●	3(A)
European larch	EL	●	●	12	DAMS	●	●	●	●	●	●	3(A)
Western red cedar	RC	●	●	24	ATS	●	●	●	●	●	●	3.1(A)
Japanese red cedar	JCR	●	●	23	MD	●	●	●	●	●	●	3(B)
European silver fir	ESF	●	●	17	ATS	●	●	●	●	●	●	3(B)
Grand fir	GF	●	●	26	ATS	●	●	●	●	●	●	3(A)
Noble Fir	NF	●	●	16	MD	●	●	●	●	●	●	3(A)
Nordmann fir	NMF	●	●	18	ATS	●	●	●	●	●	●	3(C)
Pacific fir	RF	●	●	24	CT	●	●	●	●	●	●	3.4(C)

Ecological Site Classification Report												
Leyland cypress	LEC	●	●	24	ATS	●	●	●	●	●	●	3(B)
Western hemlock	WH	●	●	22	CT	●	●	●	●	●	●	3(A)
Giant redwood	WSQ	●	●	30	DAMS	●	●	●	●	●	●	3(B)
Coast redwood	RSQ	●	●	22	ATS	●	●	●	●	●	●	3(B)
Lawson's cypress	LC	●	●	22	ATS	●	●	●	●	●	●	3(B)
Downy birch	PBI	●	●	6	SMR	●	●	●	●	●	●	3.2(A)
Silver birch	SBI	●	●	10	SNR	●	●	●	●	●	●	3.2(A)
Big leaf maple	AMA	●	●	10	CT	●	●	●	●	●	●	3.1(C)
Norway maple	NOM	●	●	12	SNR	●	●	●	●	●	●	3(B)
Sycamore	SY	●	●	11	SNR	●	●	●	●	●	●	3.3(A)
Beech	BE	●	●	10	SNR	●	●	●	●	●	●	3.1(A)
Roble beech	RON	●	●	15	ATS	●	●	●	●	●	●	3.1(B)
Ash	AH	●	●	8	SNR	●	●	●	●	●	●	3(A)
Pedunculate oak	POK	●	●	7	ATS	●	●	●	●	●	●	3.1(A)
Red oak	ROK	●	●	7	ATS	●	●	●	●	●	●	3(B)
Sessile oak	SOK	●	●	8	SMR	●	●	●	●	●	●	3.2(A)
Aspen	ASP	●	●	12	SMR	●	●	●	●	●	●	3.2(A)
Black poplar	BPO	●	●	9	SNR	●	●	●	●	●	●	3.1(A)
Raull beech	RAN	●	●	19	ATS	●	●	●	●	●	●	3.1(B)
Common alder	CAR	●	●	7	SMR	●	●	●	●	●	●	3.2(A)
Red alder	RAR	●	●	11	CT	●	●	●	●	●	●	3(B)
Grey alder	GAR	●	●	12	ATS	●	●	●	●	●	●	3.1(B)
Italian alder	IAR	●	●	7	ATS	●	●	●	●	●	●	3.2(B)
Shining gum	ENI	●	●	36	ATS	●	●	●	●	●	●	3(C)
Cider gum	EGU	●	●	30	ATS	●	●	●	●	●	●	3(C)
Rowan	ROW	●	●	4	SNR	●	●	●	●	●	●	3.3(A)
True service tree	TST	●	●	7	ATS	●	●	●	●	●	●	3(A)
Wild service tree	WST	●	●	5	ATS	●	●	●	●	●	●	3(A)
Black walnut	JNI	▲	▲	4	ATS	▲	●	●	●	●	●	3(B)
Common walnut	JRE	▲	●	2	ATS	▲	●	●	●	●	●	3(B)

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	**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***
BE/intergrade		**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***
	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
Bold, lower case italics (y), pastel infil colour	**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

soucre data http://www.forestry.gov.uk/fr/treespecies

source data http://www.forestry.gov.uk/forestry/infd-8mad67

Refer to cell comments for specific species notes

No planting where >50cm peat depth

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

Appendix 4 - Guisboro

Objective	Method
People	
Maintain and improve the woodlands contribution to the landscape character within the North York Moors National Park 'Upland Fringe – Cleveland Foothills character area'.	Fixed-point photography
Gain insight of woodland users and encourage engagement with these and partner organisations to shape the future management and direction of the woodland and its facilities.	Visitor surveys
Work with and provide volunteering opportunities that derive benefits to both the participants and the woodland.	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.
Improve and maintain the cultural and heritage value of these woods.	Liaise with and review Historic England - At risk Register, NYMNPA shared monuments data, update Forester Web GIS Heritage module.
	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 - boundaries as per approved plan and in compliance with Forestry Commission Practice Delivery Note 01 (FC PDN 01).	GPS unit or equivalent data recorders.
Restock & Future Habitat clearfell coupes - Productive mixed conifer sites. Stocking at least 2500 conifer stems per ha by planting and natural regeneration by year 5 since date of clearfell.	On-site stocking density plot surveys.

Restock & Future Habitat clearfell/group fell coupes - Mixed broadleaf habitat. Stocking at least 1100 broadleaf stems per ha through natural regeneration by year 5 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 60% broadleaf and 40% conifer species.	Fixed point photography and on-site stocking density plot surveys.
LISS coupes - Productive mixed conifer sites. Stocking at least 2500 conifer stems per ha by year 5 after final removal overstorey.	On-site stocking density plot surveys.
PAWS regeneration.	On-site stocking density plot surveys.
Semi-naturalness scores for stands across Belman Bank and West Banks to achieve up to 40% broadleaf cover.	GIS semi-naturalness scores derived from Forester Web scdb.
Plan specific	
Forest Plan mid-term review. Review the plan's aims and objectives and the progress of their implemetation.	Apply a variety of measures as described in the above table.

ugh 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.
Year 0 baseline, 10-year review or sooner if required.	Consider changes in future management where these align with Yorkshire Forest District business objectives and partner organisations aspirations.
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.
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.

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.
Review 5 years from felling date and thereafter as required.	Carry out enrichment planting to achieve stocking as per AN093 by year 5 after felling.
Beat-up surveys between years 1 to 5 year final assessment.	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 final assessment.	Monitor change from current Semi natural class toward target SN 1 (>80% native). Consider future changes in management that can achieve target score.
Year 0 baseline and 10-year review.	Monitor change from current SN 4 (<20% native/non native broadleaf) toward target SN 3 (20-50% native/non native broadleaf). Consider future changes in management that can achieve target score.
2025	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

GUISBOROUGH FOREST PLAN

Forestry England

Forestry Commission woodlands have been certified in accordance with the rules of the Forest Stewardship Council.

SCALE: 1:10,000
WHEN DRAWN @ A2 SCALE

N

GUISBOROUGH

3101 3102 3103 3104 3105 3106 3107 3108 3109 3110 3111 3112 3113 3114 3115 3116 3117 3118 3119 3120 3121 3122

FP Map 01 - Soils

- Typical Brown Earth
- Typical Ironpan Soil
- Podzolic Ironpan Soil
- Typical Peaty Surface-Water Gley
- Typical Surface-Water Gley
- Scree

0.2 0.1 0 0.2 0.4 0.6 0.8 Kilometers

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GUISBOROUGH

FP MAP 02 - CURRENT SPECIES

- BEECH
- LARCH
- OAK
- OTHER BROADLEAVES
- OTHER CONIFERS
- PINE
- SPRUCE
- OPEN, FELLED ETC

0 0.13 0.25 0.5 0.75 1 Kilometers

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GUISBOROUGH

FP MAP 03 - AGE CLASS

- 1801 - 1850
- 1851 - 1900
- 1901 - 1920
- 1921 - 1930
- 1931 - 1940
- 1941 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2011 - 2020

0.25 0.13 0 0.25 0.5 0.75 1 Kilometers

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Guisborough Forest Plan

Forestry Commission

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FP Map 04 - Windthrow Hazard Class

1
2
3

0 125 250 500 750 1,000 Meters

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FP Map 05 - Management Information
Natural Heritage, People & Community

- Recreation
- Public Bridleway
- Public Footpath
- Primary River
- Secondary River
- Tertiary River (MasterMap single line)
- Lake / Reservoir
- Extended Culvert (greater than 50m)
- CROW/Public Access
- Ancient Woodland
- Conservation Site Point
- Conservation Site Line
- Conservation Site Polygon
- SSSI/SAC/SPA

0 125 250 500 750 1,000 Meters

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FSC www.fsc.org FSC® C123214 The mark of responsible forestry

PEFC PEFC/04-30-1001 Promoting Sustainable Forest Management www.pefc.org

SCALE: 1:10,000
WHEN DRAWN @ A2

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BELMONT MINES. GUISBOROUGH. YORKS.
PLAN SHOWING IRONSTONE WORKINGS IN THE CLEVELAND MAIN SEAM.
SCALE 1/2500.

GUISBOROUGH

FAXDALE FARM

BELMONT FARM

HUNTER HILL FARM

HUTTON HALL

HUTTON HALL FARM

Guisborough

OUTCROP

MOUNT HOUSE

HUTTON MINE WORKINGS

ROSEBERRY MINE

ARTON MINE WORKINGS

FP MAP 06 - MANAGEMENT INFORMATION
CULTURAL HERITAGE

HERITAGE

SCHEDULED MONUMENT

DISUSED IRONSTONE MINES

0.25 0.13 0 0.25 0.5 0.75 1 Kilometers

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Guisborough Forest
Analysis and Concept

Links with nearby Redcar and Cleveland Borough Council visitor centre at Pinchinthorpe and high visitor numbers to this part of the forest provide opportunities for visitors and communities to take part in activities that improve quality of life.

* Work with woodland users and partner organisations to help shape the future management and direction of the woodland and its facilities across this part of the forest.
* Enhance and diversify forest composition and structure to improve the visitor experience.

Restoring ancient woodland sites to native woodland species remains a priority objective.

*Conifer stands will be restored to native species by thinning, small-scale regeneration felling, natural regeneration and controlling unwanted invasive species.

*Ancient woodland sites will be buffered by converting adjacent conifer stands to predominantly broadleaf woodland.

*Maintain existing and develop additional deadwood resource through management interventions and allowing natural mortality of some large dimension trees.

The network of watercourses passing through Guisborough Forest connect with downstream waterbodies classed as 'Moderate' under the Water Framework Directive.

*Future habitat along riparian corridors will replace conifer crops with broadleaf-dominant species, buffering impacts of future forest management.

Sustainable timber production remains a priority objective across the forest whilst mindful of climate change impacts on species choice and plant health.

*Alternative conifer species i.e. Douglas and European silver fir, coast redwood and Macedonian pine will be considered for restocking where conditions are suitable.

* Develop low impact silvicultural systems and extended rotation silviculture to allow natural regeneration and enrichment planting with alternative species to be become established.

* Gradually reduce the proportion of larch to manage the risk and future impact from *Phytophthora ramorum*.

Forest landscape character is strongly influenced by the regular conifer boundaries across this part of the Upland Fringe in the Cleveland Foothills.

* Clearfell coupes across the top edge of the escarpment will be designed to continue the phased Conversion from conifer plantation to wooded heath and open woodland that will better integrate with the adjacent SSSI/SPA/SAC moorland and provide valuable habitat for important bird species e.g. Nightjar.

N

FP Map 07 - Concept and Analysis

- Maintain predominantly productive mixed conifer
- Manage as predominantly mixed broadleaves
- Restore and maintain ancient woodland sites
- Manage natural regeneration to maintain wooded heath objective
- North York Moors SSSI/SPA/SAC
- Develop riparian buffer adjacent watercourses

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GUISBOROUGH FOREST PLAN

Forestry England

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Scale: 1:10,000
when drawn @ A2

Proposed Harvesting Map

This map shows how we intend to manage tree felling in Guisborough in order to meet the multiple objectives of management there.

Clearfells

Clearfells remove all or the majority of trees from the site. They allow significant changes in landscape, species and age class diversity to be achieved in a short space of time. They provide temporary open space followed by a slow succession of different habitat types each exploited by different flora and fauna.

Low Impact Silvicultural Systems

Change is managed more slowly using a combination of heavier thinnings and small group fellings (normally no greater than 0.5 ha). The purpose of thinning/felling operations is to prod uce timber and to allow enough light to reach the forest floor for replanting/regeneration to take place. The majority of the site has tree cover at all times and at one or more levels.

N

FP Map 08 - Proposed Felling

- 2017 - 2021
- 2022 - 2026
- 2027 - 2031
- 2032 - 2036
- 2037 - 2041
- Beyond 2042 or LISS
- Other: Open, Felled etc

0.25 0.13 0 0.25 0.5 0.75 1 Kilometers

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GUISBOROUGH FOREST PLAN

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WHEN DRAWN @A2

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GUISBOROUGH

FP MAP 09 - MANAGEMENT TYPE

- CLEARFELL
- LONG TERM RETENTION
- GROUP SHELTERWOOD
- OTHER\OPEN LAND

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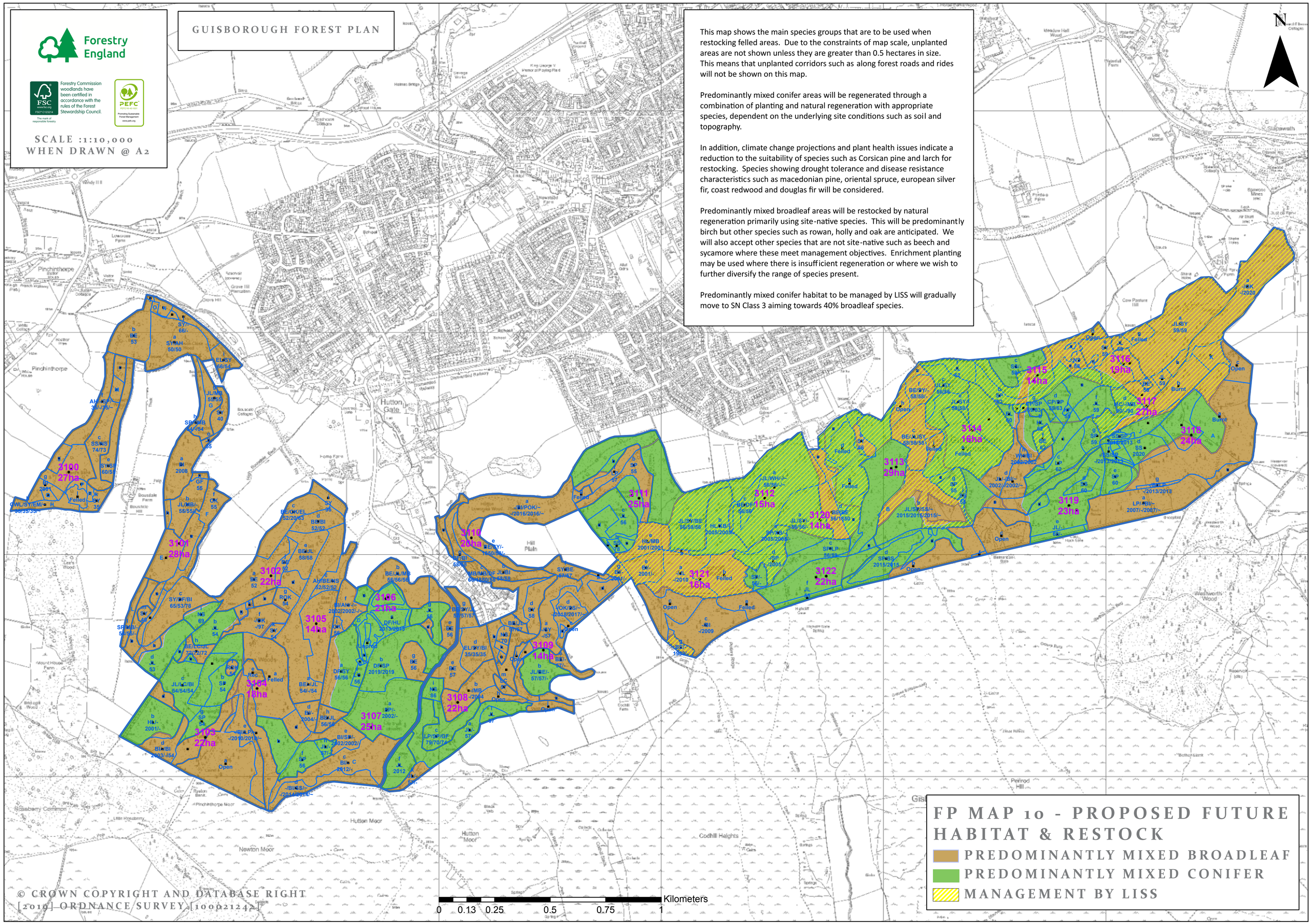

Forestry England
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FSC
PEFC
SCALE :1:10,000
WHEN DRAWN @ A2
GUISBOROUGH FOREST PLAN
This map shows the main species groups that are to be used when restocking felled areas. Due to the constraints of map scale, unplanted areas are not shown unless they are greater than 0.5 hectares in size. This means that unplanted corridors such as along forest roads and rides will not be shown on this map.
Predominantly mixed conifer areas will be regenerated through a combination of planting and natural regeneration with appropriate species, dependent on the underlying site conditions such as soil and topography.
In addition, climate change projections and plant health issues indicate a reduction to the suitability of species such as Corsican pine and larch for restocking. Species showing drought tolerance and disease resistance characteristics such as macedonian pine, oriental spruce, european silver fir, coast redwood and douglas fir will be considered.
Predominantly mixed broadleaf areas will be restocked by natural regeneration primarily using site-native species. This will be predominantly birch but other species such as rowan, holly and oak are anticipated. We will also accept other species that are not site-native such as beech and sycamore where these meet management objectives. Enrichment planting may be used where there is insufficient regeneration or where we wish to further diversify the range of species present.
Predominantly mixed conifer habitat to be managed by LISS will gradually move to SN Class 3 aiming towards 40% broadleaf species.
N
3100 27ha
3101 28ha
3102 22ha
3103 22ha
3104 18ha
3105 14ha
3106 21ha
3107 25ha
3108 22ha
3109 14ha
3110 20ha
3111 25ha
3112 15ha
3113 29ha
3114 16ha
3115 14ha
3116 19ha
3117 27ha
3118 24ha
3119 23ha
3120 14ha
3121 16ha
3122 22ha
Pinchinthorpe
Hutton Gate
Hill Plain
Hutton Moor
Newton Moor
Codhill Heights
Westworth Wood
Penrod Hill
Rosebery Common
0 0.13 0.25 0.5 0.75 1 Kilometers
FP MAP 10 - PROPOSED FUTURE HABITAT & RESTOCK
PREDOMINANTLY MIXED BROADLEAF
PREDOMINANTLY MIXED CONIFER
MANAGEMENT BY LISS
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Views from Guisborough town across Guisborough forest. Photos 1 to 5.

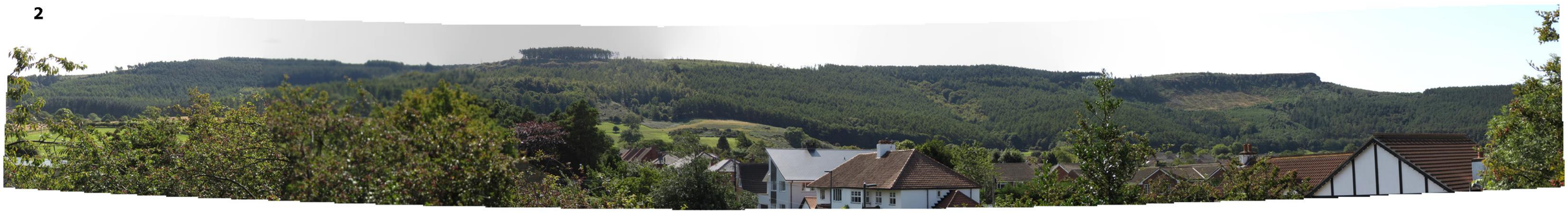
Forest restructuring over the past ten years has seen significant parts of even-aged, single species conifer crops felled across a wide range of sites. Felling sites range in shape and scale, where subsequent regeneration either by planting or natural regeneration is creating a more diverse forest, such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

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



2



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View from Roseberry Topping across Ryston Bank and Bousdale Wood. Photo 6.

This winter view highlights the increasing proportion of broadleaf and open woodland adjacent designated moorland. Proposed felling will further reduce the proportion of mature conifer stands and increase the proportion of broadleaf regeneration across ancient woodland sites.

6



Views from south of the forest/moorland boundary. Photos 7 and 8.

Recent felling under the old plan has removed significant parts of the forest along the upper boundary where even-aged, single species conifer crops formed a hard geometric shape between the forest edge and designated moorland. Restock areas previously designated as Open Woodland is slowly developing through natural regeneration of broadleaf and conifer species and open spaces. These sites will be monitored and managed over the next ten years to help develop a more natural interface between forest and moorland. Future felling will continue the process of restructuring, creating a more integrated mosaic of habitats that fits better within the landscape and is more permeable for wildlife to move through.

7



8

