

Hamsterley Forest Plan

2016



Planning and District Context

The Strategic Plan for the Public Forest Estate in England outlines the delivery of forest policy at a national level. At a regional level there are six Forest Districts covering the country that directly oversee the implementation of policy actions in local public forest estate woodlands. Forest Enterprise England is the organisation responsible for managing the English public forest estate.

North England Forest District (NEFD) is the management unit that manages the public forest estate in Northern England. This is an extensive area encompassing 9 county or unitary authority areas from the Scottish border to Durham and Lancashire.



Our task is to realise the potential of each of the forests in our care for sustainable business opportunities, wildlife and nature conservation, and the enjoyment and well-being of local people and visitors. Each of our forests supports the economy through local jobs, sustainable timber production and the provision of recreation and tourism opportunities. All are funded by revenue from timber sales and recreation provision.

The woodlands of the district are currently arranged in 62 management areas, and their management is covered by individual ten year forest plans that identify local issues and the broad silvicultural management of the woods. Forest Plans are reviewed every five years.

These plans and their associated forest operations ensure that produce from the woodlands is endorsed by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) as being produced from woodlands under good management that meet the requirements of the UK Woodland Assurance Scheme (UKWAS) and the UK Forest Standard (UKFS).

Individual FDP's aim to deliver a range of public benefits with achievable objectives that deliver the three drivers of sustainable land management outlined in the North England Forest District Strategy.



These key drivers are supported by the following Forest District Policy;

- we will optimise the financial return from timber production compatible with achievement of other forest district objectives while complying with the UK Forestry Standard and meeting the requirements of the UK Woodland Assurance Scheme
- we will provide public access to all our forests and woodlands where there are no legal or safety restrictions. We will encourage and permit a wide range of recreational activities from walking and quiet enjoyment to more specialised activities including orienteering, horse riding and motor sports.
- we will ensure that rare and threatened habitats are protected and managed to maintain or enhance their conservation value

Hamsterley Forest Plan

This is the third revision for Hamsterley Forest Plan. Key changes to the previous plan include greater recognition of climate change projections and species choice for restocking, an increase in area managed under alternative systems to clear felling, recognition of recreational development and rescheduling of felling coupe periods.

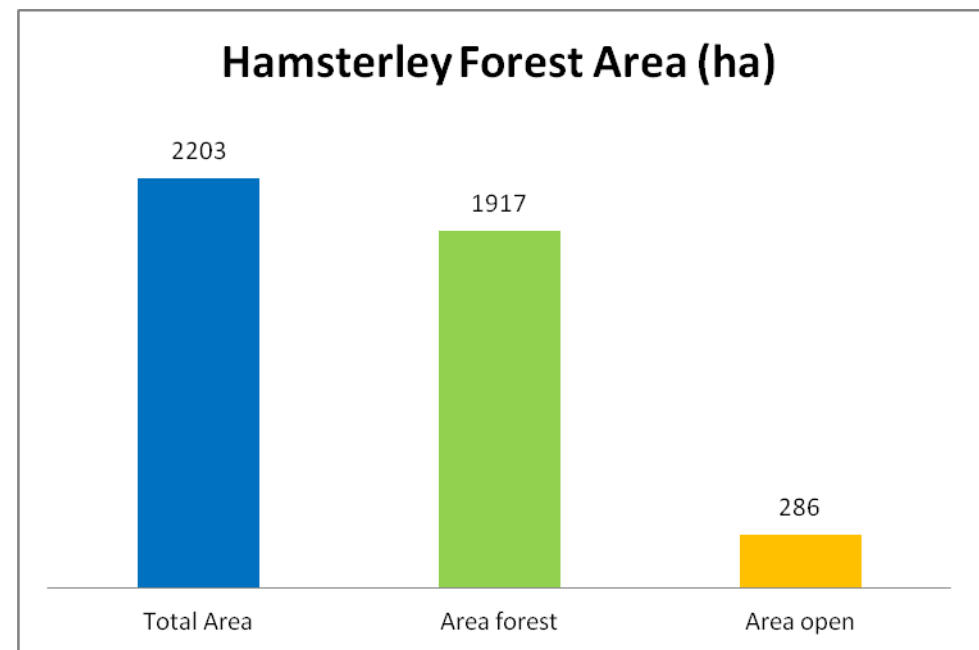
Part 1 Background Information

Introduction

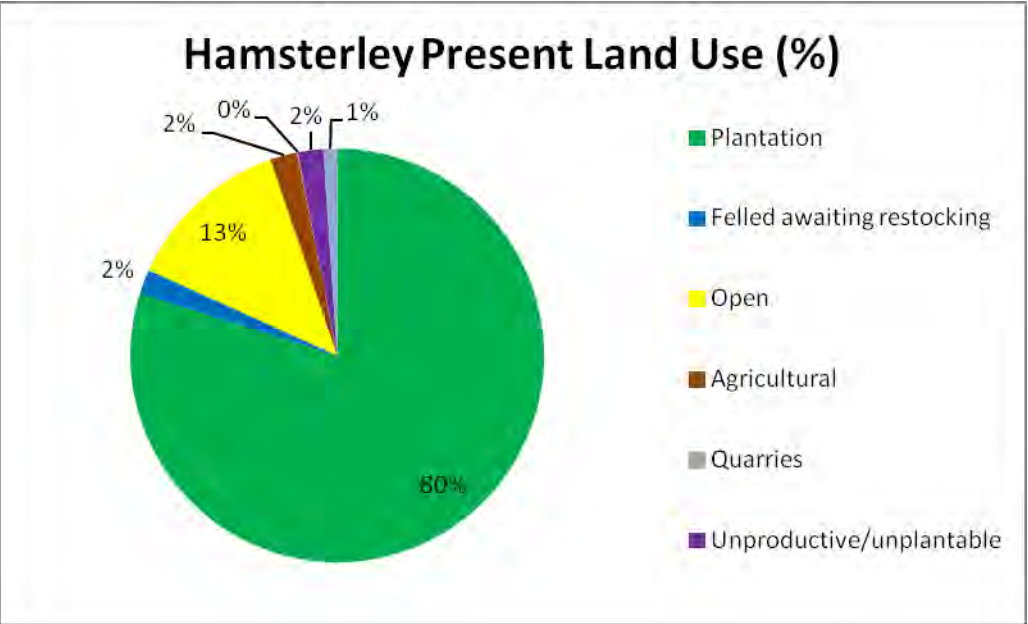
Located approximately 2 miles to the west of Hamsterley village, the majority of Hamsterley forest freehold was purchased in 1927 with the addition of Dryderdale/Knitsley in 1974. The long ownership of the forest is demonstrated by the majority of the trees planted being second or subsequent rotation, with only 16% being first rotation crops.

Current Woodland composition

Of the total 2203ha area approximately 1917ha is managed and 286ha as permanent open land.

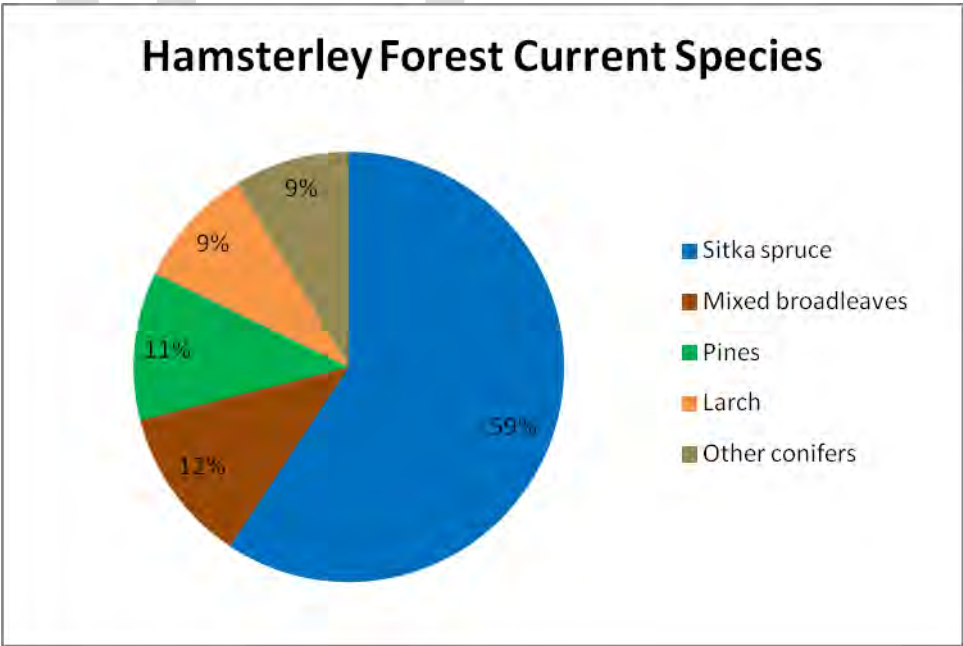


In addition to the productive woodland the managed area also includes 46ha of agricultural land, 43ha of unproductive/unplantantable and 24ha consisting buildings, car parks and permanent picnic sites indicated in the following graph.



Species and timber potential

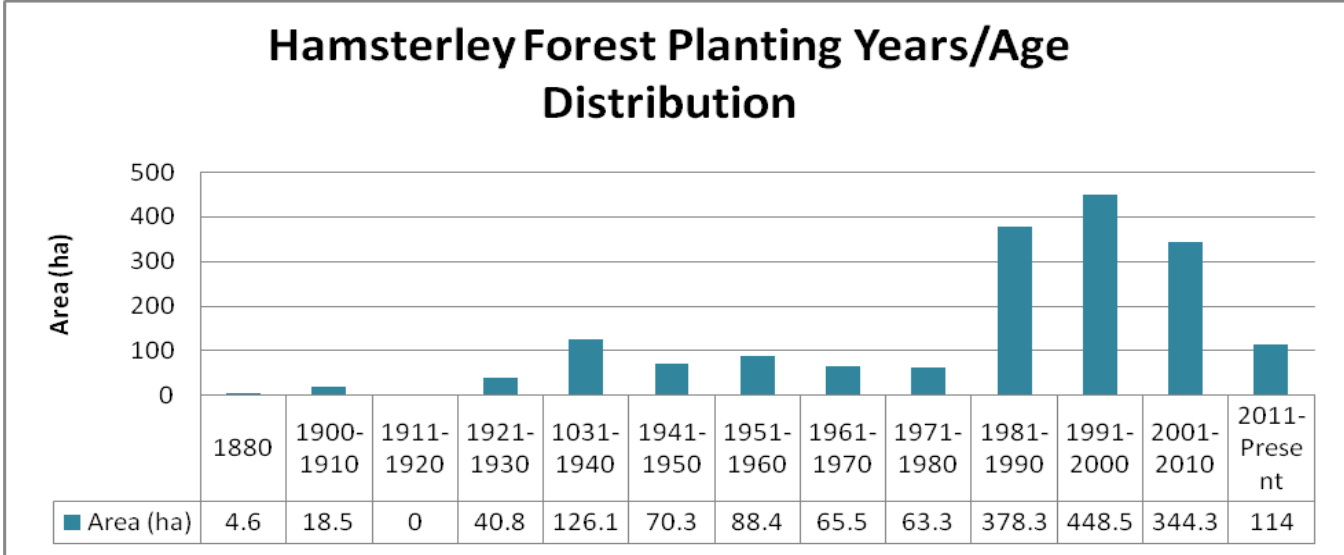
The current species composition is mostly conifer, a mixture of spruce, pine and larch with Sitka spruce dominant (see current species chart). The location of these species tend to reflect the soils and exposure of the site with spruce generally being sited on the less fertile and more exposed sites at higher elevations, with the other conifers and broadleaves being planted on the less exposed lower elevation sites within Hamsterley. Crops are generally growing well with Spruce typically obtaining yield class¹ 12 to 14, other conifer species 8 to 10 and broadleaf species 0 to 6.



¹ Yield class is a measure of how fast the trees are growing. If they are yield class 12, the trees will put on 12m³ of timber /hectare/annum as an average over their life

Age class

Hamsterley was planted predominantly from the mid 1920’s onwards and the majority of these early plantings have since been felled. A program of felling and restocking has been underway since the early 1980’s and the forest is now moving into its third rotation as some of these plantations are approaching economic maturity. Much of the remaining original forest is being managed through Continuous Cover Management or Long term retention.



Designated areas

Two statutory designated sites (SSSIs) are located within the forests covered by this plan, these being Low Redford Meadows and Frog Wood, which are also covered by detailed management plans agreed with Natural England. The Hamsterley complex is bounded to the North and West by the Bollihope SSSI and the North Pennines AONB. Remnant areas of ancient semi natural woodland and ancient replanted woodland are identified on the provisional register of ancient woodland.

Landscape, Topography and Soils

The forest falls generally within the transitional zone from a low-lying landscape of fields laid down to pasture to the expanse of the open fell above. To describe the landform the forests may be split into Hamsterley on north easterly facing slopes, with Knitsley on a south west slope. Hamsterley is incised by “Y” formed by valleys associated with the Bedburn beck and its tributaries (Euden and Spurlswood becks) giving a strong internal landform. The slope of the valleys changes from “U” shaped valley at the lower reaches, to sharply defined “V” shaped valley up stream on to the fringes of the plateau of the moorland.

The altitude of the forests varies significantly from 120m to 430m above sea level. Soil types (though not mapped in detail) vary to reflect the elevation and terrain. Gley and peat soils tend to dominate at higher elevations moving through podzol to browns earths at lower elevations.

Site stability as measured by Detailed Aspect Method Scores² reflects the changes with altitude and soil type, with higher scoring sites above 15 dominating the more exposed areas, where as on less exposed sites the scores falls to below 12 (see DAMS map). The relative stability of these lower slopes does present opportunities to manage crops under continuous cover silvicultural systems. The majority of the first rotation crops are beyond the age of economic maturity and at higher elevation windthrow is a limiting factor on rotation length at risk of windthrow.

Conservation and Heritage

The maintenance of the remnant semi natural sites is an aim of management, as is the conversion of the ancient replanted woodland sites to native broadleaf species. Where practical it is our aim to convert these replanted sites to native species through continuous cover. However the terrain and silvicultural history of some areas will necessitate removal of the current crops by clearfelling.

In addition, a number of other sites of conservation interest are located within the plan area, ranging from habitat types to the location of specific species. Where appropriate these are noted on the plan. Also of note is the presence of black grouse which utilise the open space and younger plantations associated with the Pennington fields.

The more general biological interest within Hamsterley Forest is in the process of being improved. This is through the phased felling and restocking of timber stands to increase the structural diversity of the woodland. At the restocking phase the establishment of a mosaic of permanent open space and native tree cover is being encouraged. This will be focused along woodland edges, adjacent to watercourses and in the vicinity of paths and rides. New native tree cover will mostly be achieved through the retention of natural regeneration of birch, rowan and holly in addition to some planting of sessile oak.

No Scheduled archaeological sites are present within the plan area, though a number of unscheduled sites are located in the forest. These will be opened up and protected as felling progresses. Any newly discovered sites will be recorded and notified to the county archaeologist.

Communities and recreation

It is Forestry Commission policy to promote informal recreation such as walking, cycling, picnicking, and studying wildlife. We also seek to provide opportunities for more specialist users and for events when this is compatible with site conditions and other management objectives.

Hamsterley is a significant recreational resource in the area and forms one of the top visitor attractions in County Durham, receiving some 180,000 visitors annually. Though there is a network of public footpaths and bridleways running through the forest, the open access policy and the provision of a recreational infrastructure has raised its level of use. The recreational provision includes an Information Centre and shop, Forest Drive & picnic sites, classroom, cafe, children’s play area, way marked trails (walking cycling and horse riding) and an extreme downhill bike course.

A Master Planning process is currently being undertaken to assess the potential and feasibility for major developments at Hamsterley, the outcome of which may form the basis for further growth in the recreation provision. The most recent area of growth has been in Downhill Mountain biking with the provision of the extreme downhill and “four cross”³ course, an expansion of the main car park and development of the Riverside Way multi user trail incorporating the construction of a new footbridge in 2015. The provision of a wide range of dedicated way marked walking, cycling and horse riding trails helps to reduce the potential for conflict with other users of the forest.

² DAMS are an indication of the windiness of the site. Areas with high DAMS scores above 15 are more restricted in forest management objectives such as the ability to thin or extend the rotation length of a crop.
³ Four cross is a downhill course where 4 cyclists compete against each other to reach the bottom of the course

Pests and diseases

Roe deer are resident in the area and there is potential for damage to both tree crops and other habitat types through browsing and grazing. The stalking rights are retained and an annual cull is achieved by Forestry Commission rangers.

Grey squirrels are prevalent throughout and have potential to cause significant damage to mature tree crops. Previous attempts at population control have proved futile given the proximity to neighbouring woodland where little grey squirrel culling has taken place.

Larch is under potential threat from the disease Phytophthora ramorum and consequently there will be no restocking of larch in the future. However, larch will be retained and accepted as a future component where it has been previously planted or where it is regenerating naturally.

Access and Roothing

Hamsterley is accessed from either end of the forest drive with good links to the public road network. Internally there is a good network of well maintained forest roads and there are no plans for further road development at the present time.

Part 2 Analysis and Concept

The factors outlined in Part 1 present various opportunities and issues. These are summarised below and represented on the accompanying map:

Hamsterley Factor	Opportunities	Issues
Soils	Better soils (brown earths) are toward the eastern end of the forest or valley sides.	Elsewhere complex distribution of soils typified by surface and groundwater gleys and podzols which influences species choice for restocking
CCF	Areas with DAM score <14 mostly toward the east and more sheltered valley sides where most opportunities for retention or CCF.	DAMS >15 over much of the western side of the forest at higher elevations. Silvicultural systems here restricted to non-thin clearfell and restock.
Biodiversity	Black grouse utilise the open space and younger plantations associated with the Pennington fields. The introduction of open woodland planting along the forest edges which bound on to the open moor will improve opportunities for black grouse. SSSI meadows in favourable condition. Riparian corridors, main water courses Restoration of ancient woodland sites	
Access/Roothing	Good network of forest roads. Good links to public highway.	Potential conflict with recreational use of forest
Harvesting		Need to balance between the multi-objective management of the forest, conservation, landscape and recreation values within the constraints of both the current status of wind throw and its future silvicultural management.
Pests and disease	Wider alternative species choice at restocking will improve resilience of the forest to future pest and disease.	Significant % of larch is at risk of infection from P. Ramorum.
Future Species/ Climate change	Opportunity for species diversity and increased resilience through underplanting and management by CCF. Potential alternative conifer species could include WRC, DF, ESF, GF, NF, RSQ and JCR. Developing MB understorey could provide woodfuel opportunities.	Under clearfell system species choice limited to light demanding species i.e. pines which will limit diversity. Larch no longer desirable species choice.
Current species	SS predicted to remain favourable under future high emissions climate models, particularly at higher elevations.	At lower elevations SS becoming increasingly unsuitable (beyond next rotation). Larch is at risk from P. Ramorum
Public access	Recreation and the potential to utilise continuous cover silviculture and maintain the forest backdrop within the areas under greatest recreational pressure.	

Appraisal of Opportunities and Constraints

The Forest Plan delivers key national priorities for woodland management, ‘People, Economy and Nature’. Economic potential of timber is optimised by the current species and clear fell/restocking regime. Furthermore alternative systems of woodland management (CCF) provide economic benefit whilst also enhancing the recreational quality and potential to develop wider species diversity. The recreational facilities on offer make a significant contribution both economically and toward ‘People’ with both local community and visitor engagement. Ongoing appropriate management of the SSSI meadows, remnant ancient woodland restoration and opportunities for black grouse habitat expansion provide significant biodiversity benefit.

Part 3 Objectives and Proposals

The following objectives have been identified based on FEE National Policy and NEFD Strategic Plan

Forest District Strategic Goal	How FDP delivers
ECONOMIC <u>Wood Production</u> – <i>‘we will optimise the financial return from timber production compatible with the achievement of other district objectives whilst complying with the UK Forestry Standard and meeting the requirements of the UK Woodland Assurance Scheme’</i>	<p>82,050 m³ of timber produced over next 10 years of the plan with Sitka spruce remaining principle commercial species but through the long term implementation of the plan there is less dependence on Sitka spruce. Alternative species could include Scots pine, Macedonian pine, Western red cedar, Lawson cypress, Douglas fir, Grand fir.</p> <p>Establishment of quality hardwoods e.g. Sessile oak. Developing mixed broadleaved areas provide local woodfuel market opportunities.</p> <p>Continuous Cover Forestry provides opportunity for sustainable forest management maintaining productivity through the introduction of a wider range of conifer species.</p>
NATURE <i>‘we will continue to diversify the age class structure of our even-aged woodlands and increase the value of all our woodlands and forest for wildlife’</i>	<p>Environmental improvements will be delivered through forest restructuring achieved through felling, thinning and restocking and open space management. CCF will provide opportunity for wider species and age structure.</p> <p>At restocking, as indicated by the indicative restocking plan, the opportunity is being taken to restock both to mitigate the straight boundaries of the earlier planting, increase the open area, and introduce a wider range of conifer and broadleaf species.</p>

<i>‘we will ensure that rare and threatened habitats are protected and managed to maintain or enhance their conservation value’</i>	<p>An introduction of open woodland planting along the forest edges which bound open moor will help mitigate the harsh boundary between forests and moor. The aim is produce a mix of scattered or clumps of trees on the moorland margin, thereby providing an additional habitat which will benefit species which utilise such forest edge habitat. Notably this should increase the potential Black Grouse populations. (See Appendix 1 below for definition of ‘open woodland’).</p> <p>Protection of SSSI features through appropriate management in accordance with SSSI Management Plans agreed with Natural England.</p>
PEOPLE <i>‘we will utilise the land and resources at our disposal to assist communities close to our forests to enhance their environments and hence their quality of life’</i> <i>‘we will provide public access to all our forests and woodlands where there are no legal or safety restrictions...’</i>	<p>Improve the internal and external attractiveness of the woodland through restructuring and species choice.</p> <p>Species diversity and sympathetic management of external boundaries to enhance visual impact of the forest from public rights of way and the wider landscape.</p> <p>Recreational provision remains a significant ongoing objective within the plan.</p>

Appendix 1 Open woodland

The aim is to establish an open woodland type to ameliorate the abrupt habitat change from the open moor to the high forest by establishing a low and varied density planting, establishing 300 – 400 trees per ha. The species mix being based on the proportions in Table 1.

Table 1	
Species	Approx. %
Birch (Betula Pubescens)	40 -50
Willow (Salix aurita)	15 - 25
Rowan (Sorbus aucuparia)	10 -20
Aspen (Populus tremula) ¹	5 -10
Alder (Alnus glutinosa) ¹	5 -10
Scots pine (Pinus silvestris)	5 -10
Juniper (Juniperus comunis) ²	0 - 5
1 To be planted in localised areas where suitable ground conditions exist.	
2 Planted only within known distribution.	

Part 4 Monitoring plan

The objectives identified in section 3 will be monitored in the following ways;

Objective	Criteria for success	Assessment
ECONOMIC		
Wood production	Marketable parcels of timber on offer to the trade.	Production forecast and sales records Harvesting facilitated according to the management plan
Sustainable economic regeneration	Successful establishment of restocking and underplanting.	Restocking assessment
NATURE		
Restructuring	Delivery of felling/thinning and restocking proposals	Five yearly internal Forest Plan review
PEOPLE		
Visual enhancement to visitors.	Establishment of mixed woodland and ongoing restructuring of the plantations.	Five year Forest Plan review.

Part 5 Forest Plan Maps

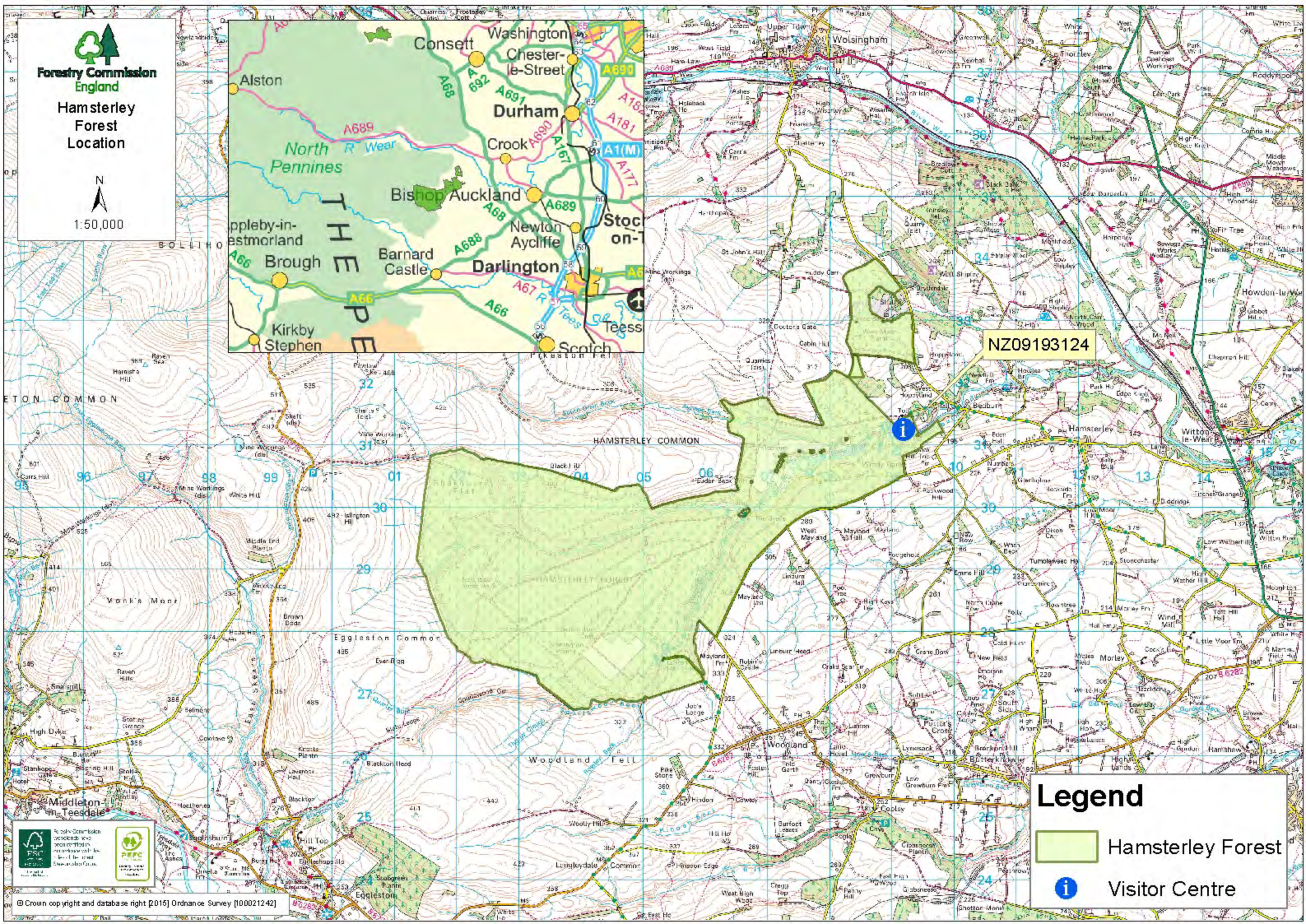
- Location – 1:50,000 scale showing location in context of other woodland in the local area
- Current Species – species composition in 2016
- Landform – indicating topography of the woodland and local area
- Wind Hazard - windiness represented by Detailed Aspect Method Scores (DAMS)
- Yield Class – indicating the productivity of the current species as mean cubic metres growth of timber for each hectare per year
- Soils – indicating underlying soils composition across the forest area
- Conservation and Heritage – statutory and non-statutory conservation and heritage features.
- Access and Public Rights of Way – formal public rights of way and access
- Recreation – recreation facilities and way marked trails.
- Issues and Opportunities – representation of significant issues and opportunities to be considered in the final design concept
- Design Concepts – broad concepts of future management
- Felling Proposals – showing five yearly coupe felling periods and areas of CCF or long term retention.
- Future Species – representing design concepts and the long term vision (>2042) for future species composition and open habitat.



**Forestry Commission
England**
Hamsterley
Forest
Location



1:50,000



Legend



Hamsterley Forest



Visitor Centre





Forestry Commission
England

Hamsterley Forest Current Species



1:25,000

Legend

-  Spruce
-  Pines
-  Larch
-  Other Conifer
-  Broadleaves





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Hamsterley Forest Landform and Elevation



1:25,000

The altitude of the forest varies considerably from 120m above sea level in the east to 430m further west. The landform is characterised by several steep sided river valleys flowing eastwards with gentler plateau areas above extending to open moorland to the north and west. The forest nestles within the steep valleys and wide 'saucepan' shaped upper bowl

Contours

ELEVATION (M)

- 0-50
- 51-100
- 101-150
- 151-200
- 201-250
- 251-300
- 301-350
- 351-400
- 401-450
- 451-500

Watercourse





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Hamsterley Forest Detailed Aspect Method Scores (DAMS)



1:25,000

DAMS are an indication of the windiness of the site. Areas with high DAMS scores above 15 are more restricted in forest management objectives such as the ability to thin or extend the rotation length

DAMS





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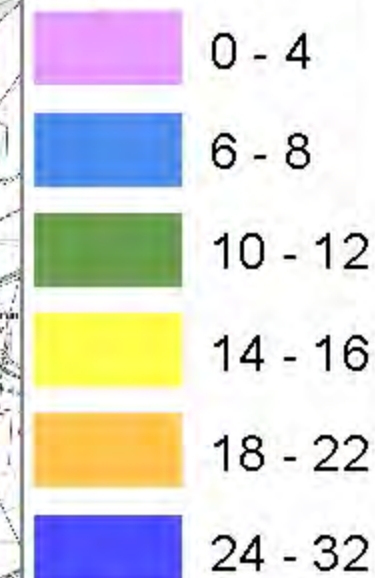
Hamsterley Forest Yield Class



1:25,000

The 'Yield Class' figure is the mean cubic metres growth, for each hectare of tree species for each years growth

Yield Class



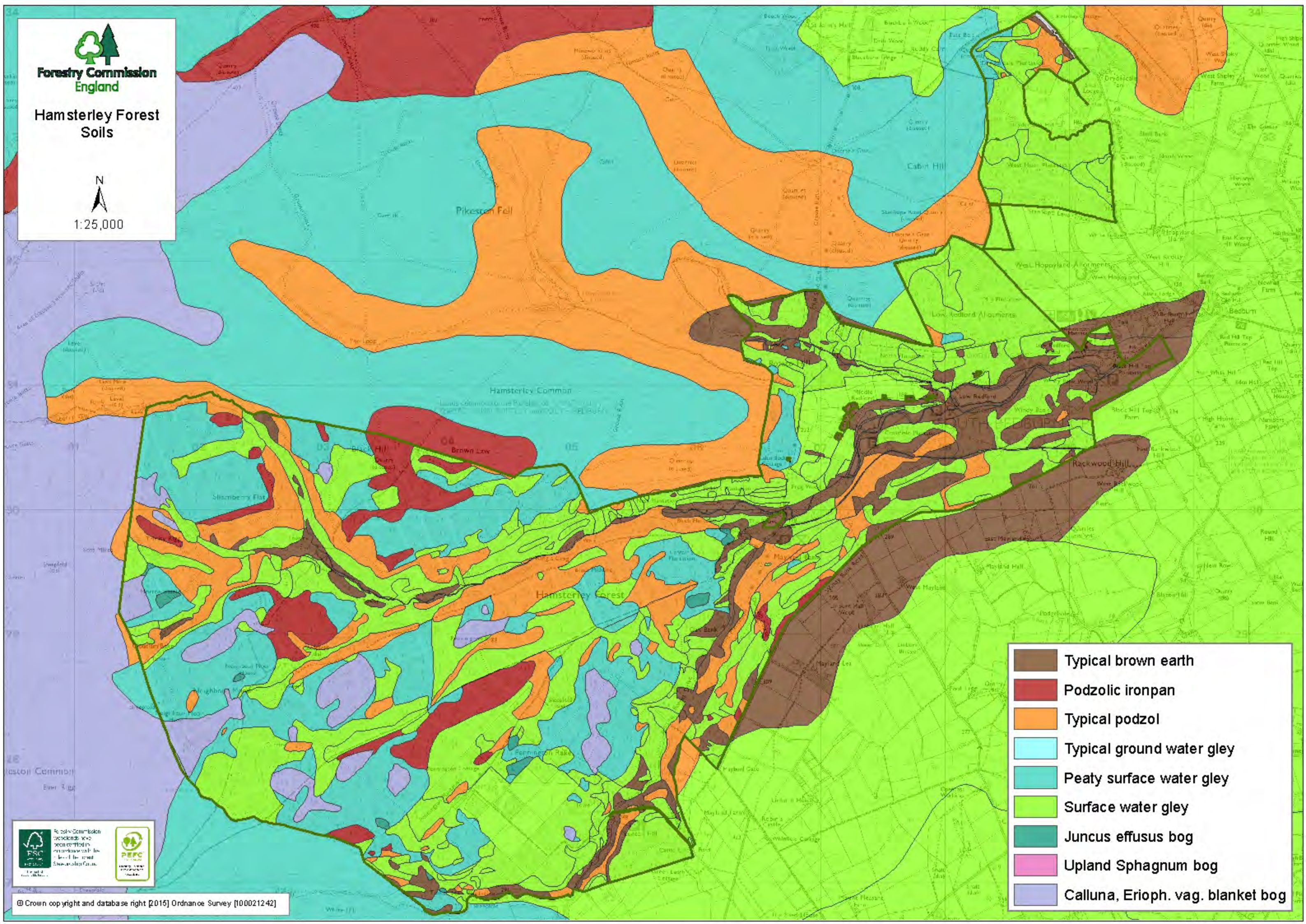


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Hamsterley Forest Soils



1:25,000



- Typical brown earth
- Podzolic ironpan
- Typical podzol
- Typical ground water gley
- Peaty surface water gley
- Surface water gley
- Juncus effusus bog
- Upland Sphagnum bog
- Calluna, Erioph. vag. blanket bog



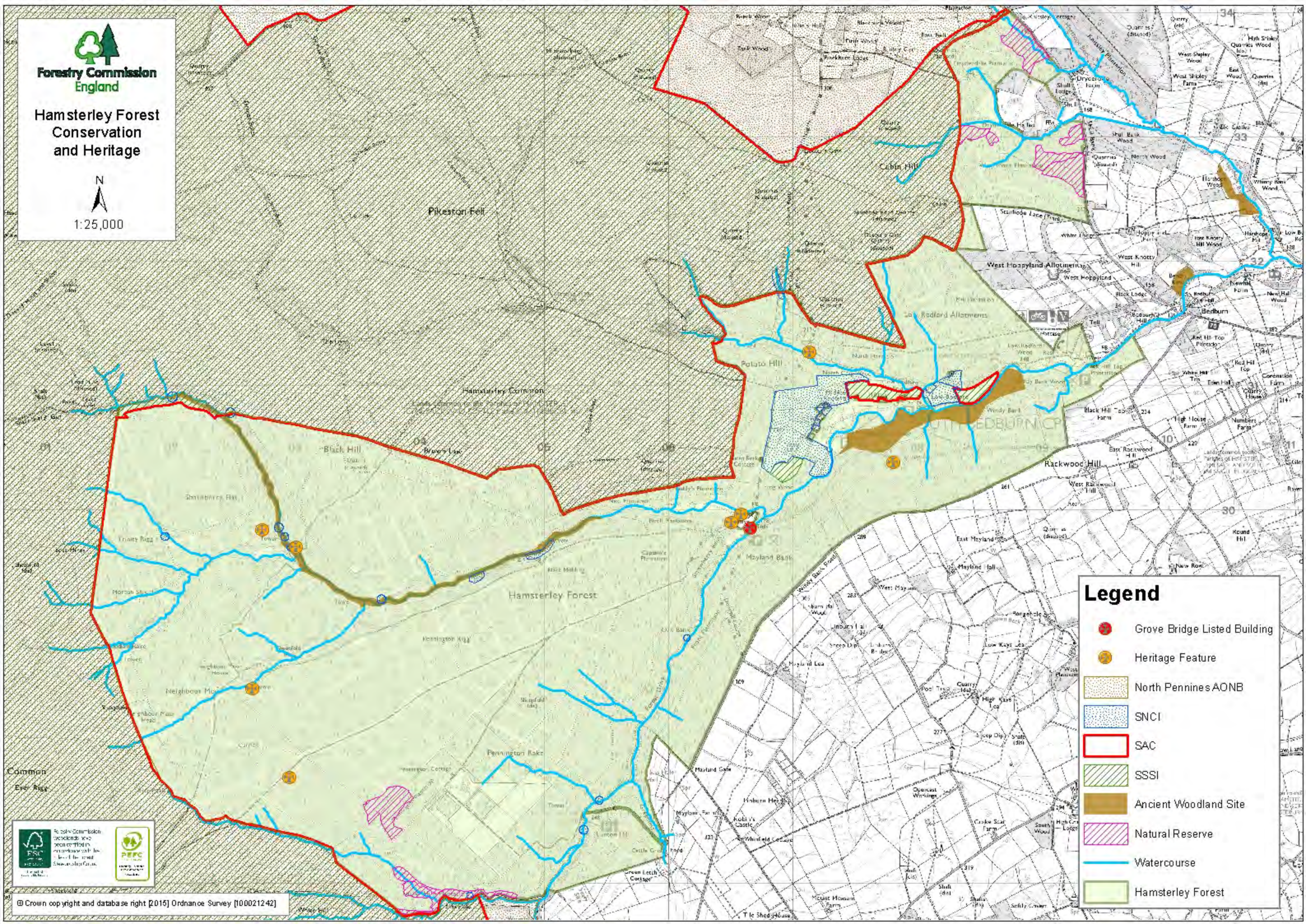


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Hamsterley Forest Conservation and Heritage



1:25,000



Legend

- Grove Bridge Listed Building
- Heritage Feature
- North Pennines AONB
- SNCI
- SAC
- SSSI
- Ancient Woodland Site
- Natural Reserve
- Watercourse
- Hamsterley Forest



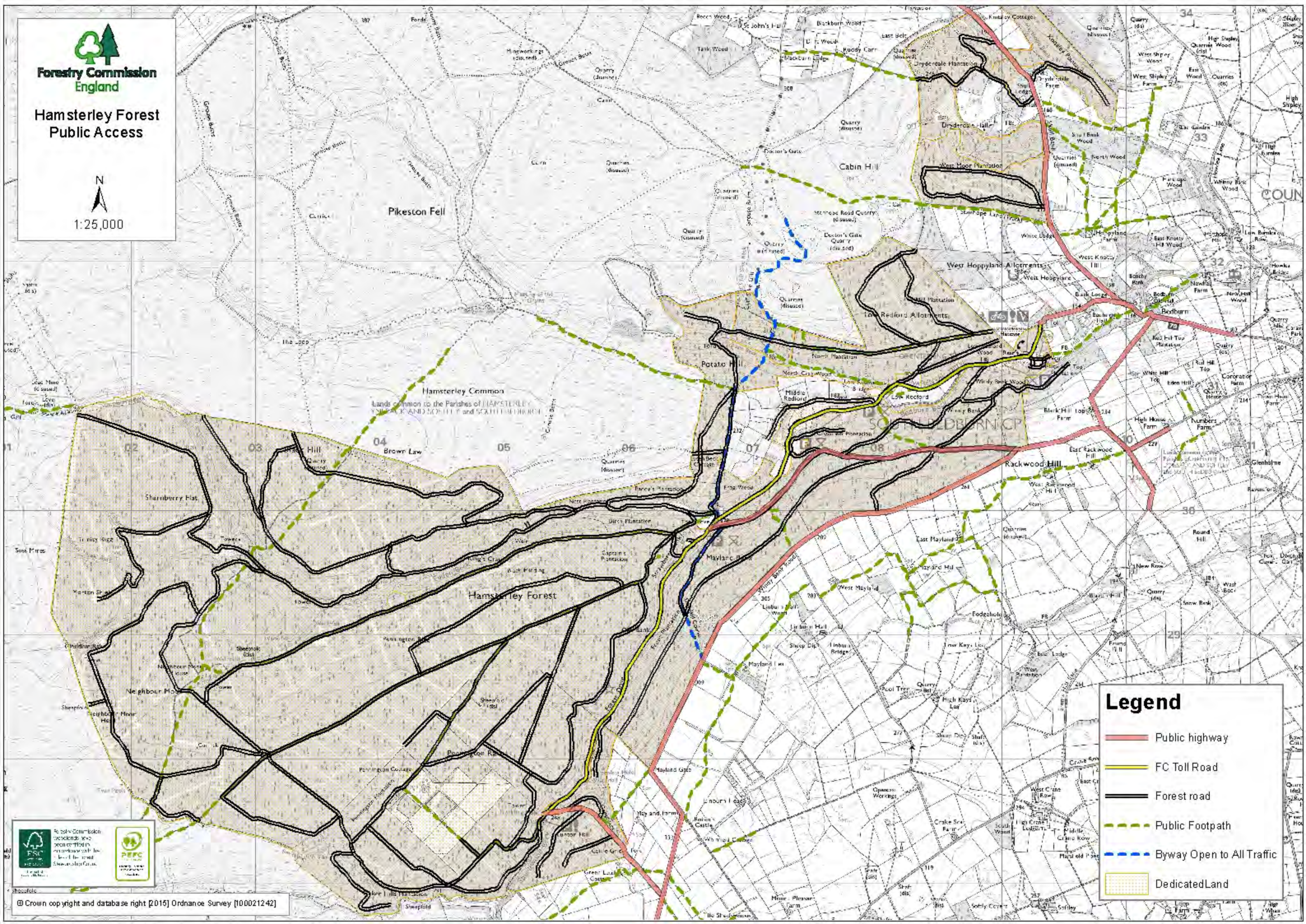


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Hamsterley Forest Public Access



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Legend

- Public highway
- FC Toll Road
- Forest road
- Public Footpath
- Byway Open to All Traffic
- Dedicated Land





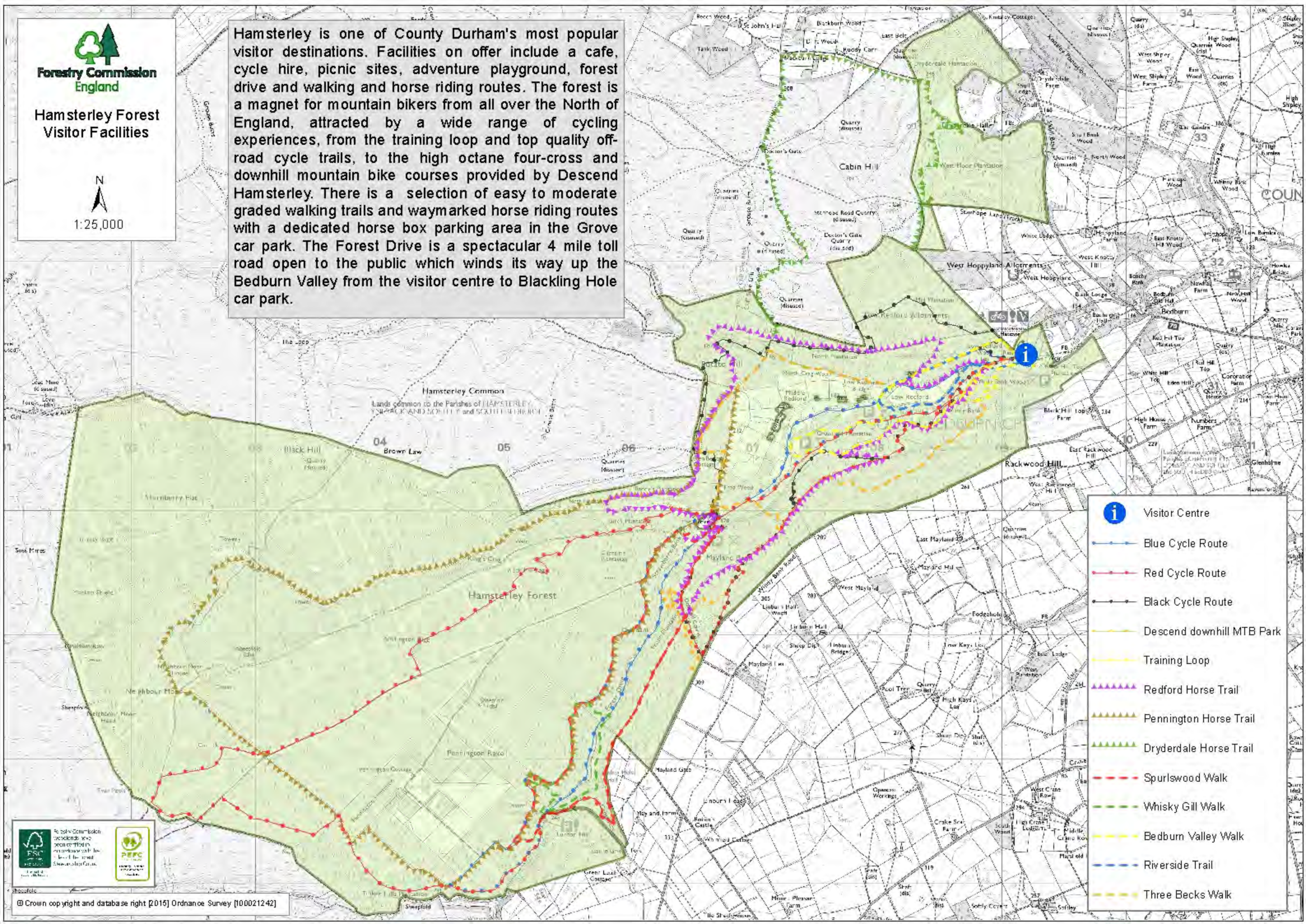
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Hamsterley Forest Visitor Facilities



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Hamsterley is one of County Durham's most popular visitor destinations. Facilities on offer include a cafe, cycle hire, picnic sites, adventure playground, forest drive and walking and horse riding routes. The forest is a magnet for mountain bikers from all over the North of England, attracted by a wide range of cycling experiences, from the training loop and top quality off-road cycle trails, to the high octane four-cross and downhill mountain bike courses provided by Descend Hamsterley. There is a selection of easy to moderate graded walking trails and waymarked horse riding routes with a dedicated horse box parking area in the Grove car park. The Forest Drive is a spectacular 4 mile toll road open to the public which winds its way up the Bedburn Valley from the visitor centre to Blackling Hole car park.





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Hamsterley Forest Opportunities and Issues



1:25,000

- Opportunities
- Issues
- East/west climatic divide
- Public highway
- Forest road

Better soils toward eastern end of forest and valley sides
Areas with DAMS < 14 toward east and more sheltered valley sides
Lower elevations eastwards
Opportunities for wider choice of future species and for long term retention or alternative silvicultural systems

Good network of forest roads with links to public highway for timber haulage.

Poorer soils toward western end of forest typified by surface and ground water gleys and podzols limits restocking species choice
Areas with DAMS > 15 toward west at higher elevations.
Silvicultural systems limited to non thin clearfelling/ restock
Opportunities for wider choice of future species more limited

Potential conflict with recreational use of forest

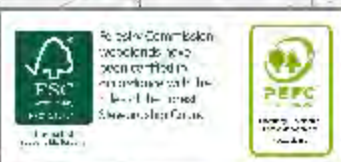
SS predicted to remain favourable under future high emissions climate models, particularly at higher elevations.

Recreation and the potential to utilise continuous cover silviculture and maintain the forest backdrop within the areas under greatest recreational pressure.

Significant % of larch is at risk of infection from *P. Ramorum*.

Need to balance between the multi-objective management of the forest, conservation, landscape and recreation values within the constraints of both the current status of wind throw and its future silvicultural management.

Black grouse utilise the open space and younger plantations associated with the Pennington fields. The introduction of open woodland planting along the forest edges which bound on to the open moor will improve opportunities for black grouse.





1:25,000

Area of Intense Recreation

Valley bottom and Forest Drive corridor form the area most utilised for recreation and forms an intimate landscape for visitors and residents.

Utilise continuous cover silvicultural systems where practical to enhance age and species diversity and maintain landscape continuity

Mixed woodland/Remnant formal landscape

Maintain species diversity, opportunities to develop older growth woodland with retention of overmature trees

Potential Black Grouse habitat

A more varied woodland edge and the open woodland within Hamsterley has the potential to maintain/enhance the Black Grouse populations existing on the moors to the south

Remnants of Ancient Semi-natural woodland

Remove the conifer element to allow the extension of ancient semi-natural woodland

Roadside

Main visually important area of the outlying block with opportunities to utilise lower impact systems to current crops

Main Water Courses/Valley Sides

Form a link to the plateau areas. Small scale diversity and mixed species appropriate. Potential to form permanent woodland employing minimum or low impact silvicultural systems

Ancient replanted woodland

Through mainly constant cover management increase the % of broadleaf species and non-evergreen conifers aiming for a mixed broadleaf/conifer woodland to enhance the small scale visual diversity. Phased removal of Western Hemlock to allow more species diverse regeneration

Main Productive Areas

Aim to create age diversity at a large scale. Shape and scale to follow landform, forming windfirm boundaries. Need to link zone to valley sides

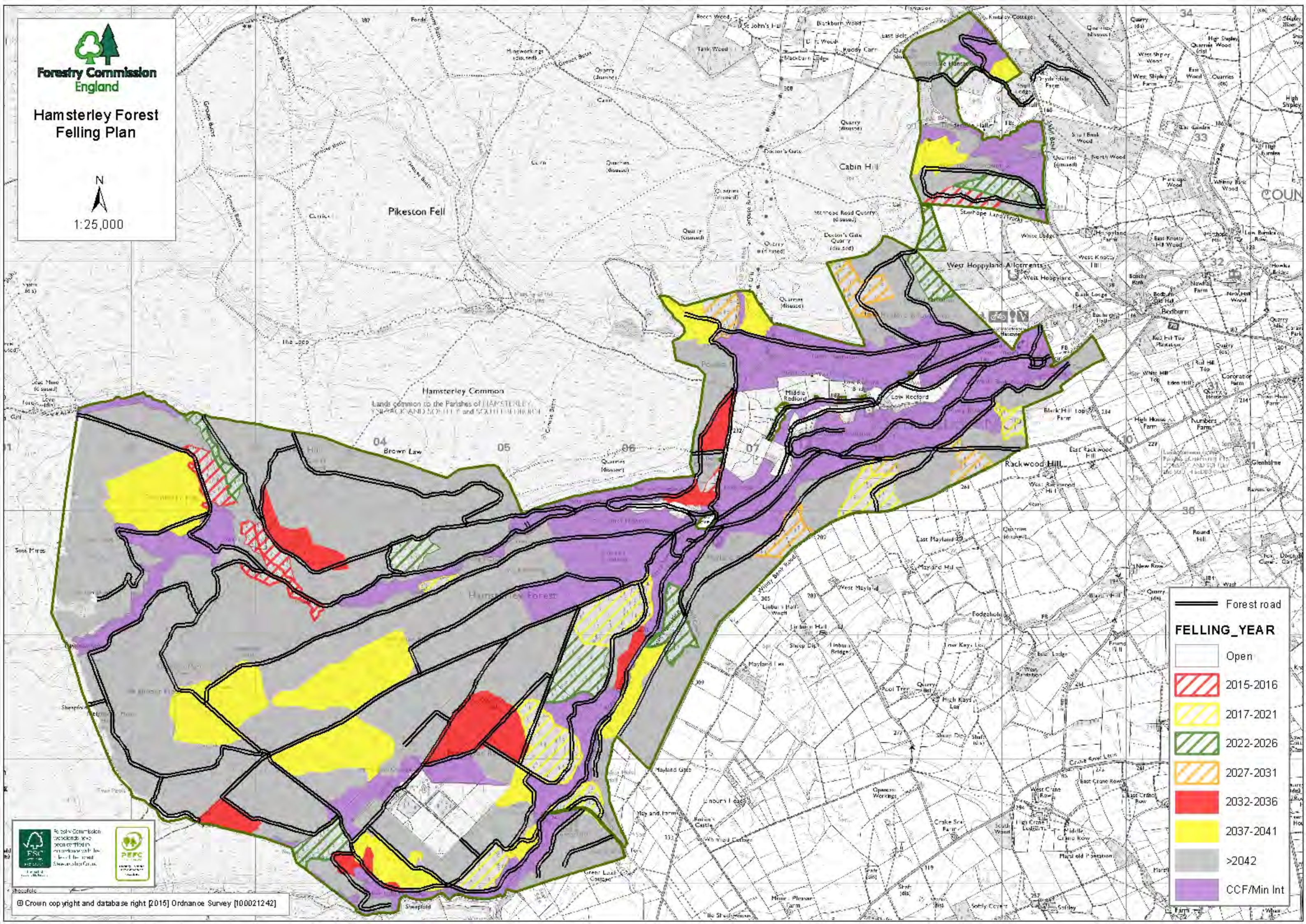


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Hamsterley Forest Felling Plan



1:25,000



— Forest road

FELLING_YEAR

- Open
- 2015-2016
- 2017-2021
- 2022-2026
- 2027-2031
- 2032-2036
- 2037-2041
- >2042
- CCF/Min Int



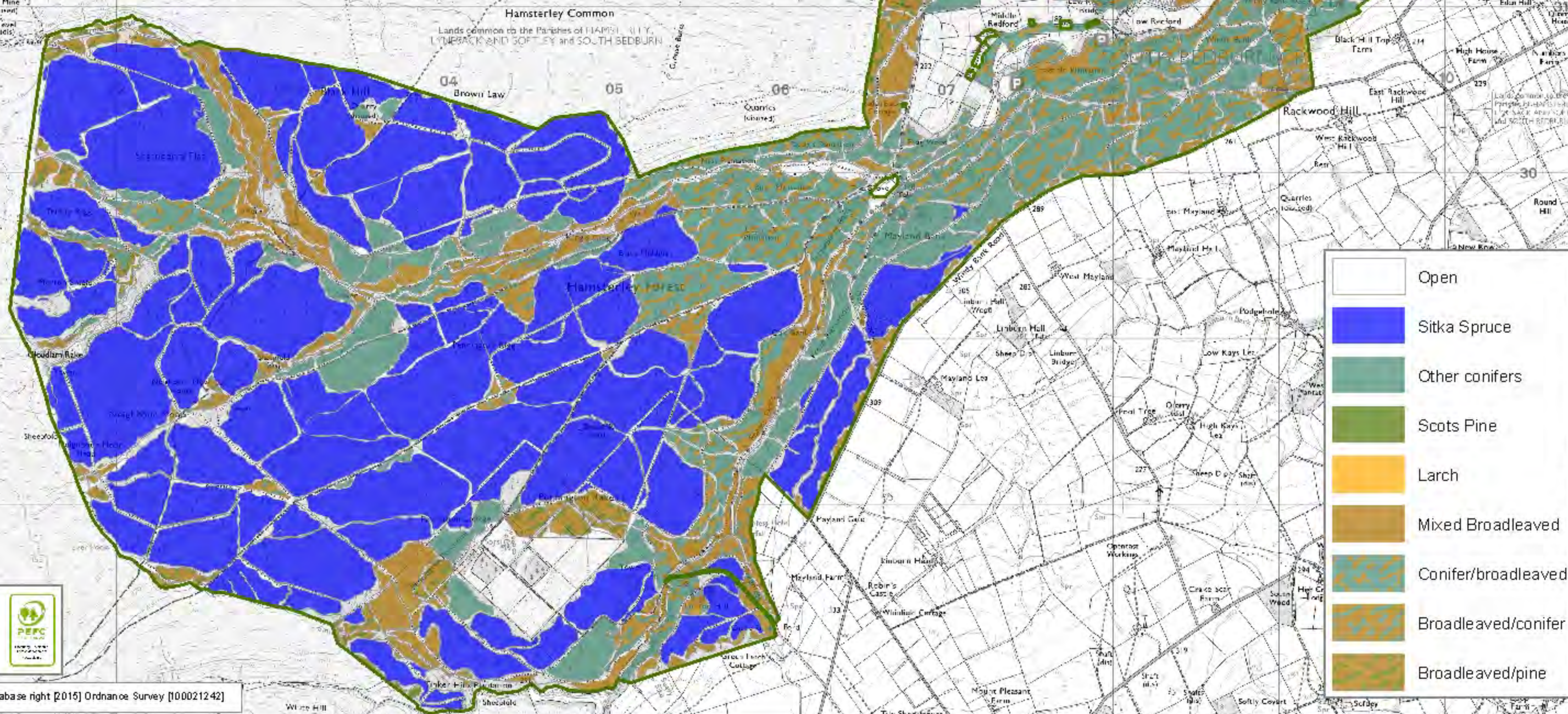


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Toward the east of the forest the lower windyness scores, better soils and climate change projections suggest that there is greater scope for species diversity. Mixed conifers may include for example SP, CP, WRC, DF, ESF, GF, NF, RSQ, JCR.

Broadleaved planting of oak will focus on the production of quality hardwood.

Climate change projections for spruce indicate that the species is likely to remain suitable in Hamsterley toward the west of the forest at the higher elevations



Part 6 Forest Plan Outcomes

Landscape

The first image below shows the western extent of the forest viewed from the south. The view is characterised by a visually simple landscape due to topography and the uniform extensive nature with broad horizons and a strong sense of openness. The more uniform nature of the crop on these higher areas and scale and shape of clearfelling and restocking fit within this wider landscape. Over time the establishment of more open ‘forest edge’ habitat will help to reduce the geometric impact of upper forest edges and improve the transition to open moor.

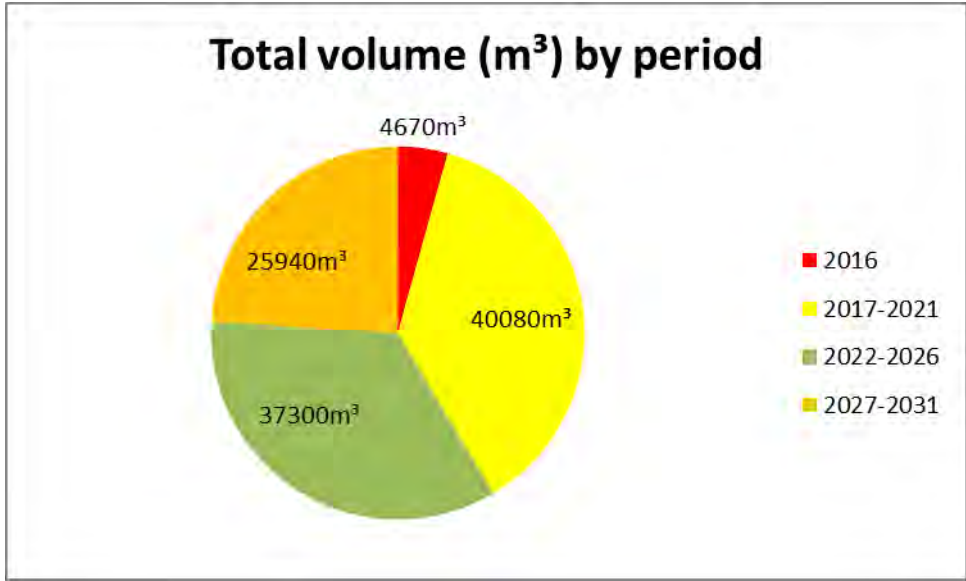


The second image, below demonstrates how the landscape changes further east to a more enclosed pastoral landscape typified by a mosaic of fields, hedges and mixed woodland. Continuous cover management of the woodland within the valley will maintain landscape continuity and the lower elevation, better soils and lower wind hazard provides the opportunity for a greater range of conifer and broadleaf species in the future which will blend well in this more complex landscape.

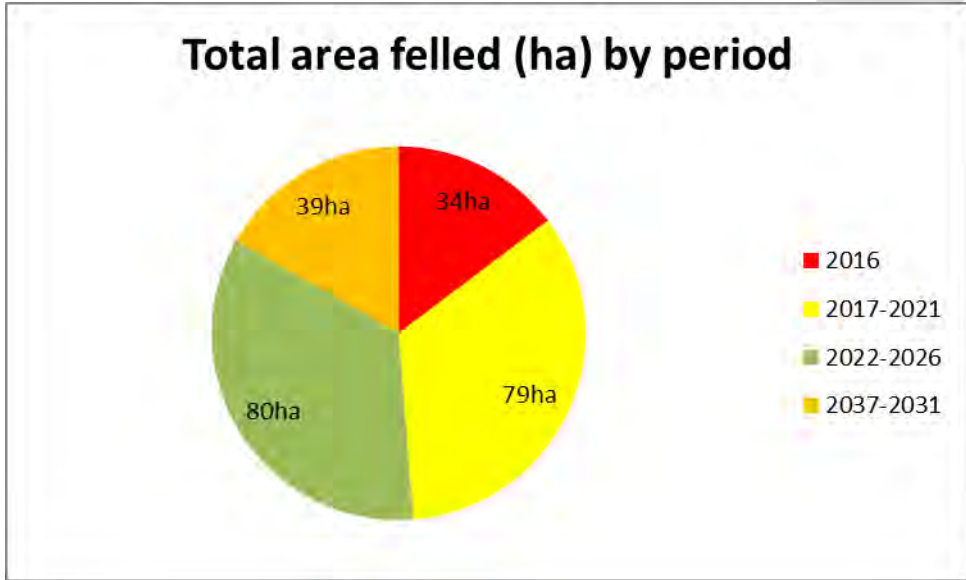


Timber production

Average timber production per period is shown below. Over the 10 year approval of the plan we will harvest approximately 82,000m³ of timber.

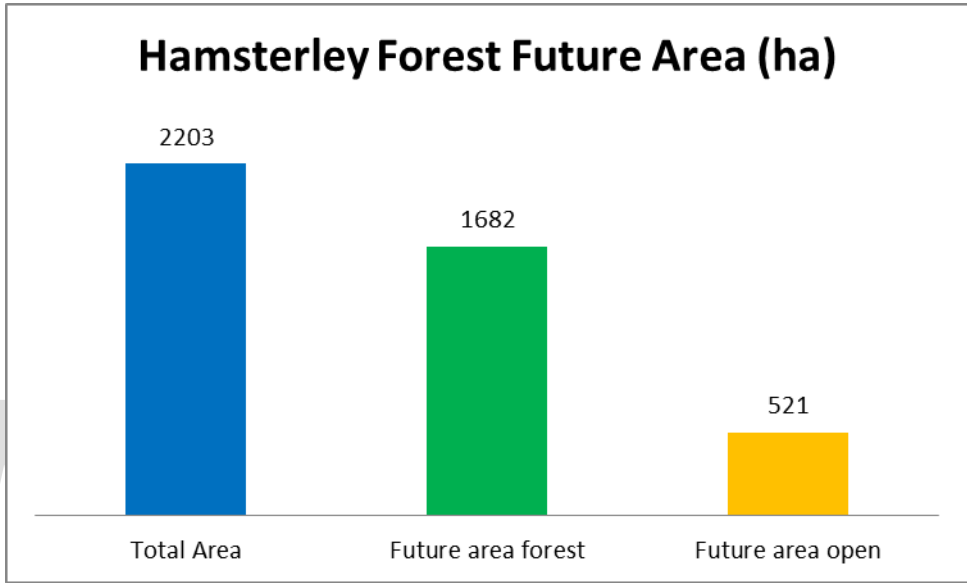


On average approximately 5% of the forested area will be felled during each 5 year period of the 10 year approval of the plan (2017-2021 and 2022-2026) represented below.



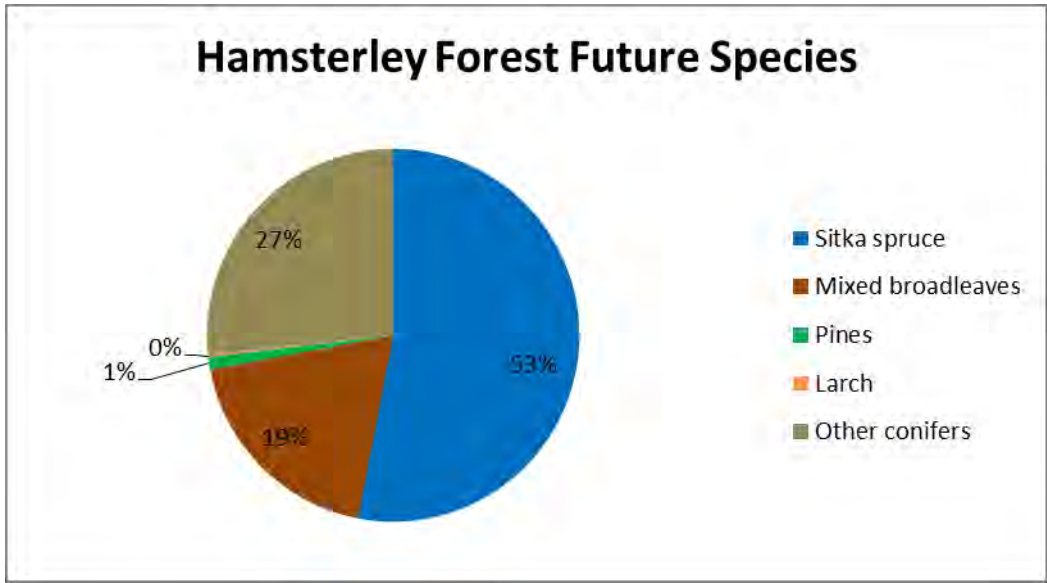
Future Land Use

Over the lifetime of the plan (>2042) open space increases by 235ha



Future Species

The combined percentages of future species composition shown below exceed the minimum requirements for UKWAS and UKFS (65% primary species (Sitka spruce), 20% secondary species (Other conifers) and 5% mixed broadleaves).



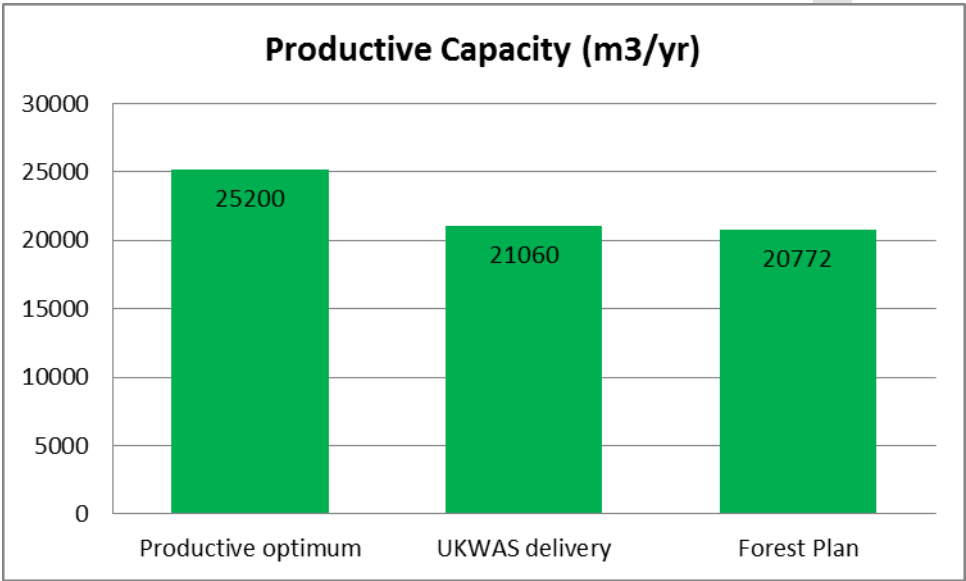
Productivity

The productive potential is optimised through timber production achieved through delivery of the harvesting plan and delivery of ecosystem services and other non-market benefits included in biodiversity, climate change mitigation, water, people and landscape. This is represented in the Productive Capacity Analysis below:

The graph shows the relative productive capacity (m³/year) of the forest based on average yield class as a comparison between the following scenarios;

- 1. Productive optimum – productive capacity assuming that the total productive area is planted with the optimum commercial species suited to the site (i.e. Sitka spruce YC 14).
- 2. UKWAS delivery – productive capacity achievable through minimum UKWAS compliance with a species percentage mix comprising 65% primary species (SS YC 14), 20% secondary species (MC YC 12), 5% broadleaved (YC 4) and 10% open space.
- 3. Forest Plan – productive capacity based on the percentage species mix and open land from this plan.

Note: The difference between UKWAS delivery and Forest Plan also includes requirements such as riparian corridors, landscape, ancient woodland, heritage etc. which require going beyond the minimum species composition and open space percentages to achieve UKFS.



The United Kingdom Forest Standard (UKFS)

The UKFS is the reference standard for sustainable forest management in the UK. The UKFS is supported by a series of guidelines which outline the context for forestry in the UK, defines standards and requirements and provides a basis for regulation and monitoring. These include General Forestry Practice, Forests and Biodiversity; Climate Change, Historic Environment, Landscape, People, Soil and Water.

Hamsterley Forest Plan is able to demonstrate that relevant aspects of sustainable forest management have been considered and the stated objectives in Part 3 and outcomes in Part 6 show how sustainable forest management will be achieved. The plan provides a clear means to communicate the proposals and to engage with interested parties and serves as an agreed statement of intent against which implementation can be checked and monitored.

In addition to conforming to general sustainable forest management principles UKFS is demonstrated in the following key areas:

Productivity	The productive potential is dictated by timber production achieved through delivery of the harvesting plan and delivery of ecosystem services and other non-market benefits included in biodiversity, climate change mitigation, water, people and landscape. This is represented in the Productive Capacity Analysis graph.
Structure	Future species composition; 53% Sitka spruce, 28% other conifers and 19% mixed broadleaved, exceeds UKFS minimum requirements. Long term structure will improve through linking of permanent broadleaved and open habitats (23% of total area).
Silvicultural	A combination of clearfell/restock and continuous cover principles will be adopted with Long Term Retention of areas of broadleaved woodland. This will improve species and age class diversity.
Biodiversity	Priority habitats and species are considered during the planning phase. Ecological connectivity achieved by extending and linking areas of native broadleaved woodland and open space will be enhanced ensuring that the area is managed with conservation and biodiversity as a major objective.
Climate change	LTR and continuous cover areas will minimise soil disturbance. Forest resilience will be enhanced over time through greater species diversity, particularly establishment of alternative conifer species (27%), with age and stand structure diversification to help mitigate climate change and disease/pest outbreaks. Ecological Site Classification will be used to identify the most appropriate species at the time of restocking.
Landscape	The planning process refers to the Local Landscape Character to inform the forest design. Visual sensitivity and consideration to visibility and the importance and nature of views of the woodland from several key viewpoints is used to inform shape, landform and scale. Particular emphasis is made on mitigating geometric shapes, symmetry and distinct parallel lines in the landscape through species choice, forest edge and coupe design.
Historic	Historic features are recognised and their safeguard will be routinely incorporated into operational management.
People	The Forest Plan is consulted with individuals, the local community and organisations with an interest in the management of the forest.
Water	Water quality will be protected through adherence to Forest and Water guidelines as a minimum during harvesting and forest management operations.

Longer term management proposals

The proposals in this plan will lead to a more diverse and resilient woodland, with a greater range of species and habitats providing long term sustainability and greater resilience to potential pests and disease. Substantial areas of alternative conifer species will have been established, and the range of broadleaved species will have been extended.

Timber production will continue through a clearfell/restock regime with the focus on Sitka spruce towards the higher elevations in the west of the forest with a much broader range of conifer species and broadleaves at the lower elevations towards the east. The establishment of a broader suite of commercial species, including quality hardwoods will provide long term sustainability and the development of broadleaves will offer potential for local woodfuel markets. This strategy will also contribute toward climate change mitigation and long term forest resilience. Continuous cover management, mostly around areas of highest recreational activity will provide marketable timber whilst protecting the internal and external attractiveness of the woodland.

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