

Blengdale Forest Plan 2018



North England Forest District



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 Standard (UKWAS) and the UK Forest Standard (UKFS).

Individual Forest Plans 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 Standard
- 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

Blengdale Forest Plan

This is the fourth revision for the Blengdale Forest Plan, first approved in 1998 and most recently reviewed in 2006. There are no fundamental changes to the previous plan objectives, however recent unplanned felling of *Phytophthora ramorum* infected larch over the last few years has necessitated changes to the scheduling of harvesting coupes and crop stability issues have prompted a review of the extent of Continuous cover management in the western part of the forest. Furthermore, the impacts and threats associated with climate change, emerging pests and diseases and the need to make our forests more resilient in the future has prompted changes to species composition in the restocking plan.

Part 1 Background Information

Introduction

Blengdale forest occupies the upper valley of the River Bleng and moor land to the east of the village of Gosforth. The forest lies within the Parish of Gosforth in the borough of Copeland within the Lake District National Park.

Blengdale Forest has a character born out of the big conifers, the River Bleng and views of the western Lake District fells. Unlike Miterdale to the south Blengdale has no recent history or local association as ancient woodland. Blengdale is a forest of two distinct halves with the valley of the River Bleng having a different character to the plateau of Hollow Moor which overlooks the Wasdale Valley.

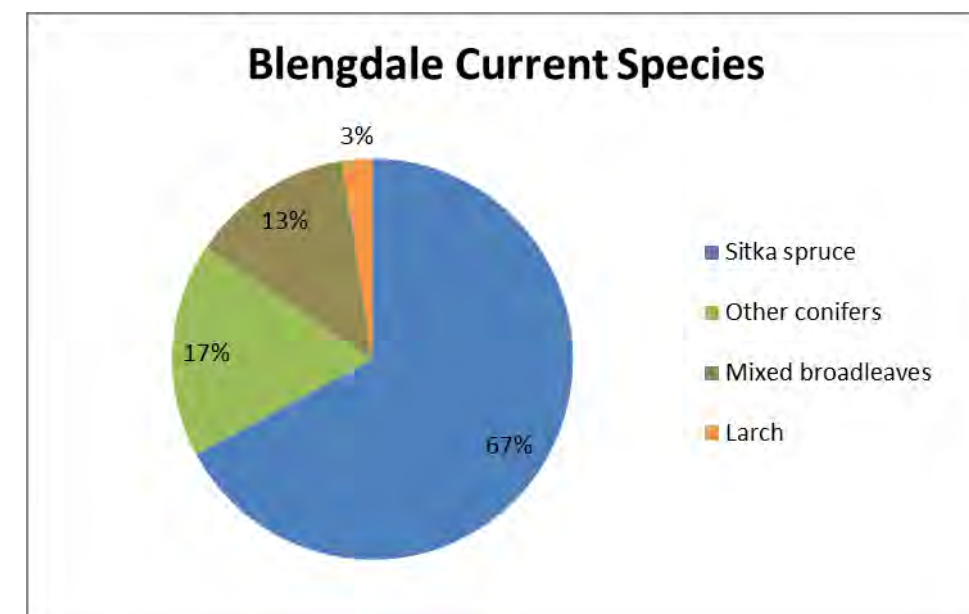
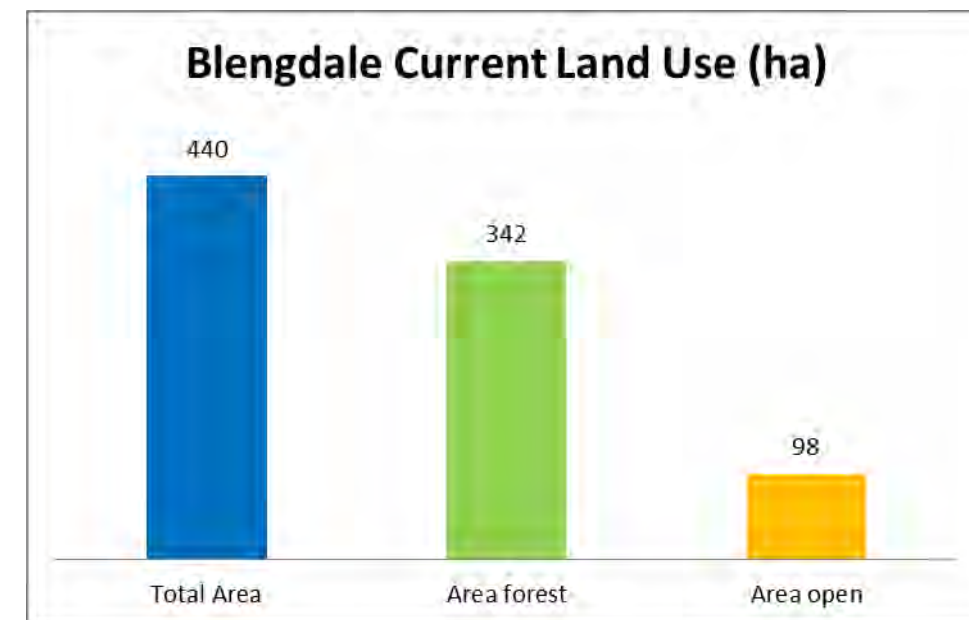
Current land use, woodland composition, species and timber potential

In total the Forestry Commission owned land covered by this plan extends to 440 ha of which approximately 77% is forested and 22% open ground. The Blengdale Valley is an attractive and popular area of forest which although dominated by productive conifers benefits from a diversity of height, species, tree size and areas of open habitats.

Sitka spruce is the dominant commercial species producing good quality timber for local processors on an industrial scale using modern mechanised machinery, thereby supporting the local economy. Other components include mature Douglas fir and larch, commonly managed as Continuous cover and located along the River Bleng providing a sense of grandeur and valuable red squirrel habitat. Larch in particular is an important landscape feature, the value of which has been recognised for a long time in the locality and disease outbreaks of *Phytophthora ramorum* presents challenges in maintaining both landscape and economic objectives.

For many years the forest in the valley bottom has been managed principally through thinning and regeneration which has ensured the protection of water quality, enjoyment of visitors and stable habitats.

The plateaus to the east and south of the River Bleng are much less diverse being dominated by spruce which reflects the wetter, poorer peaty and gleyed soils and more exposed outlook. Reflecting these soils and exposure much of this forest has been unthinned in the past. Recent restocking has increased the area of open non-wooded habitats and native broadleaves through restocking and selective respacing of regeneration.



Recent planting has aimed for a more balanced and diverse species structure in terms of the inclusion of broadleaf and alternative conifer species. Birch is scattered throughout the woodland and alder and willow follow the network of streams.

The terrain is variable from generally level or gently sloping on the upper plateau areas to steeper less accessible areas in the main valley. Timber harvesting techniques therefore vary depending on the terrain and can be achieved mostly with mechanised harvester – forwarder based systems supplemented by skidders or high lead winch systems. Soils are mainly upland brown earths, rankers and peaty gleys and the productive capacity of the area is very good, commercial plantations typically achieving Yield Class in the range 12 to 24.

As with many upland forests within Great Britain managing the risk of wind throw is a major constraint when allocating felling dates to crops. Economic felling age is often limited to the age at which they are expected to achieve terminal height (the height at which major wind blow can be expected). However, at lower levels Blengdale is typified by generally stable site types in terms of exposure, and much of the valley area has been classified as wind hazard class 2 to 3. However, localised factors can influence crop stability and options on the timing of clearfelling and opportunities to thin or utilise continuous cover silvicultural systems will be reviewed as part of this plan revision. In practical terms any areas of windthrow below 3 should be thinable but much of the upper areas are within wind hazard class 4 to 5 and have therefore not been thinned.

Designated areas

Blengdale is situated wholly within the Lake District National Park within a World Heritage Site (UNESCO **2017 Outstanding Universal Value as a ‘cultural landscape’**). This designation provides the opportunity to demonstrate at a practical level how activities such as forestry, which have been prominent in shaping the landscape we see today, can create greater public benefits through sustainable land management delivering for people, the landscape, nature and the economy. This can be done for example by conserving and enhancing the landscape, scenic beauty and cultural heritage of the Lake District, whilst also **providing wider ecosystem services to support communities’ social and economic well-being** in a sustainable way.

The only other formal designation is a small area of Ancient semi natural woodland called Whinnerah Wood which is a **Plantation on Ancient Woodland Site (PAW’s)**.

Conservation and Heritage

Whinnerah Wood is ancient replanted woodland, and the ancient woodland status of this area dictates that there is a presumption for conversion to native species in **line with our policy for Plantations on Ancient Woodland Sites (PAW’s). An Ancient**

woodland survey was undertaken in 2012 which indicated more than 80% non-native species are present. The rate at which conversion is achieved will be dictated by the success of regeneration or supplementary planting following thinning or felling interventions, and is likely to take many years to achieve.

Elsewhere despite the large areas of conifer plantation Blengdale is a diverse valley due to the variety of species planted and growing naturally, in particular the existing areas of Continuous cover forest in the valley bottom. This area of the forest provides stable habitat for wildlife and protects the water quality of the River Bleng. The different growth rates have given the forest a varied age structure and the variety of un-thinned, thinned, open space and links with external agricultural land all add to the mosaic. The forest is home to Red Squirrel, merlin, deer and badgers as well as a range of other wildlife and the River Bleng is recognised as an important fish spawning river.

A Local Geological Site (LGS) is located in Blengdale (LGS 7/136), spread over a number of locations in the forest shown on the Conservation and Heritage map. This site is important for exposures of both solid rock and glacial drift. Four exposures, close to the River Bleng in its incised middle section, allow the rock sequence in the Lower Borrowdale Volcanic Group of rocks in Western Lakeland to be worked out. Stratigraphically important marker ignimbrite bands are exposed. Rocks in the outcrop indicate the nature of the volcanic activity. In addition three further sites are important for deposits of glacial till. Exposures on the valley floor and east valley side in the incised middle Bleng Valley illustrate the glacial and fluvioglacial deposits of the Central Lake District and allow a chronology of the last main ice advance to be worked out for the valleys of Western Lakeland. These are classic geological sites recorded by the Quaternary Research Association, and may be of considerable significance for working out details of climate change after the last Ice Age.

The Blengdale Forest LGS is now marked as one area, and its amended boundary is shown on the LGS GIS mapping layer, held by the Cumbria Biodiversity Data Centre (CBDC) in Carlisle.

Much of the open space within the forest hides archaeological features associated with the Bronze Age including a prehistoric cairnfield, **a “burnt mound” feature** recognised by Historic England as of national significance and the presence of old enclosures all of which are routinely protected during forest operations.

Landscape

Section 62 of the 1995 Environment Act considers that in exercising or performing any functions in relation to land in a National Park bodies such as the FC are required to have regard to the dual purposes to conserve and enhance the natural

beauty, wildlife and cultural heritage and to promote opportunities for the understanding and enjoyment of the special qualities of the national parks by the public. Blengdale is located within Area 37: Bleng and Irt Valleys (Lake District Area of Distinctive Character) in the south western corner of the Lake District National Park, in close proximity to the western coast. Key characteristics of the LCA of significance to Blengdale include:

- Valley which links the lowland plain to the upland fells and set against the distinctive backdrop of the High Fell Fringe;
- Gently undulating, peaceful landscape dominated by pastoral farmland in the west and the large forests of Blengdale and Miterdale to the east where the landscape becomes wilder and more rugged nearer to the High Fells to the east;
- Generally open with views throughout the area framed by irregular clumps of woodland in the west, and views towards the edges of the High Fells to the east;
- Predominantly a tranquil landscape, especially towards the east away from the busy coast route and towns of Santon Bridge and Gosforth;
- Blengdale forest includes some of the largest and tallest conifers in Cumbria.

The whole LCA is within the LDNP forming part of the unique natural landscape and therefore of very high value. The undulating topography allows open views across adjacent predominantly pastoral, farmland landscape, which are framed by small, mainly irregular, clumps of woodland (both deciduous and coniferous). There are no national/European nature conservation designations within this LCA although three Scheduled Monuments are present (not within Blengdale).

Recreation Value

Two long distance recreational routes pass through the area: **Wainwright's Remote Lakeland** and the Lake District Boundary Walk. Some small pockets of open access land can be found throughout the area with a higher concentration present along Muncaster Fell and the western end of Whin Rigg. Part of the Ravenglass to Eskdale Steam Railway line passes through the ADC and is a popular tourist attraction.

Tranquillity levels are high in the northern part of this LCA around Blengdale Forest reducing to moderately high to moderate levels along the western fringes as a result of the proximity to Gosforth and the A595 as well as the minor road network which extends toward Santon Bridge and Nether Wasdale.

Much of Blengdale sits well in the landscape with the valley bottom linking into neighbouring woodland or remaining hidden from many views. There are a number of harsh boundaries, notably those to the west and south which would benefit from a combination of reduced restocking, species change and more diverse stocking and will be addressed in the plan.

The high level nature of the ground does provide great views out of the forest towards the coast and into the fells with Haycock, Pillar and Wasdale Screes clearly visible. The views looking east from the public footpath between the River Bleng and Wasdale are especially valued and following recent clearfelling have significantly improved. When seen from external viewpoints the plateau areas of Blengdale do contrast with the fell land especially boundaries on the east and south.

Communities and recreation

Recreation use in Blengdale is low key, quiet and informal in keeping with its **location within the Lake District National Parks "Quiet Western Fells" zone** and the LCA high tranquillity level description. The area of Continuous cover management in the valley bottom is the most popular area with visitors which attracts people to walk and cycle the forest tracks along the banks of the river Bleng. The mature conifers in this area provide a real sense of grandeur which helps create a unique sense of place.

Blengdale is also popular with walkers passing through from the surrounding area on the network of public footpaths. The Lake District National Park is responsible for the maintenance of the public rights of way and we work closely with the authority to ensure that access routes remain open and clear of obstruction. It is considered that the current level and type of use is appropriate for the area and no formal recreational provision is envisaged at the present time.

Pests and diseases

The varied age structure and range of species provides ideal habitat for Roe and Red deer. The population is monitored and managed by Forestry Commission rangers to an appropriate density in order that natural regeneration is possible.

Grey squirrels are also present, often reported on the edges of the forest and pose a threat to the local population of native red squirrels and have the potential to cause damage to mature trees.

Larch is threatened by the disease *Phytophthora ramorum* and there have been several outbreaks within the forest in recent years. Our strategy is to respond swiftly and expediently to outbreaks through adherence to Statutory Plant Health Notices as issued and agreed with Forest Services to try to reduce the spread of the disease within the forest and to neighbouring woodland. Consequently there will be no future restocking of larch; however in thinned areas of continuous cover natural regeneration will be accepted and monitored in the future. Larch is an

important species within the landscape providing seasonal changes in colour and texture across the forest. As part of our strategy to deal with the impact of the disease the Forestry Commission is actively exploring the use of alternative species choice which is a positive outcome in terms of increasing the opportunity for diversification and improved future resilience.

Access and roading

Access to the forest for haulage is via minor roads from the west. The internal road network is complete and provides satisfactory access to all parts of the forest and there are no plans for further development or extension other than for routine maintenance.

Part 2 Analysis and Concept

The factors outlined in Part 1 present various opportunities and issues. These are summarised below:

Factor	Opportunities	Issues
Current species	Diversification of species composition is being achieved with the inclusion of Mixed broadleaves and other conifer species. Mixed conifer stands, including Sitka spruce remain the primary economic species for timber production through the next rotation.	Westerly crops are becoming increasingly unstable. Larch is at risk from Phytophthora ramorum.
Management type	Depending on future stability continue with continuous cover management in core valley area Elsewhere coupe clearfell systems are appropriate in terms of scale.	Westerly coupe of CCF and the coupe north of the quarry are increasingly damaged by wind and need to be felled. Wind hazard, soils and localised conditions will influence ability to thin and retain some crops. Decisions regarding thinning viability or conversion to continuous cover will be made in response to these factors.
Biodiversity and heritage	PAW’s restoration Whinnerah Wood – slow transformation is appropriate in this location.	Threats to native red squirrel population by grey squirrels.

	Designated heritage features are located within open areas and therefore at low risk from future operations. Areas of CCF good for red squirrels, also species diversification.	
Access/Roading	Adequate internal network of forest roads.	
Landscape	Scheduled coupe felling and restocking will give the opportunity to re-align upper forest boundaries and incorporate more appropriate species choice over time as these areas are restocked.	Some harsh forest boundaries remain or will become increasingly dominant in the landscape i.e. the upper forest edge below Ponsonby fell and above Lowcray.
Harvesting	Coupes scheduled within the period of the plan will produce good volume of marketable timber. Aim to roll back scheduling of coupes across the forest to maintain structure for benefit of red squirrels.	Unscheduled early harvesting of larch in response to Statutory Plant Health Notices means that much of the forest will not produce timber again until beyond 2034 and may impact on scheduling of coupes in future years.
Pests and disease	Alternative species choice to replace felled larch will contribute to diversity and future resilience.	Larch is at risk from Phytophthora ramorum. Damage to softer conifers by deer may necessitate use of deer fencing.
Future Species/ Climate change	Restocking with conifer species where there are no statutory designations and there is good access for timber harvesting will optimise future productivity of the forest and provide important red squirrel habitat. Species diversification with an introduction of alternative conifers (such as Norway Spruce, Western red cedar, Serbian Spruce, Macedonian Pine and native Mixed	Need to balance diversification with maintaining economic viability of the forest through subsequent rotations to meet current market demand. Managing conifer regeneration into areas of broadleaved conversion or open space.

	Broadleaves). Although Sitka Spruce remains viable through the next rotation (based on climate change projections) in the long term we should be aiming to establish more spruce crops in mixture with alternative species such as Aspen.	
Public access	Use of the forest is adequately served by the access available to the public and local community.	Maintaining isolated PROW's with routes clear of obstruction and encroachment of trees.

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 Forest Plan delivers
<p>ECONOMIC</p> <p><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 Standard'</i></p>	<p>Clearfell 23ha in the period 2018-2026 generating approx. 6,000 m³ of timber.</p> <p>Establish economically viable and resilient commercial crops to maintain future productivity of the forest where there are no other overriding environmental, landscapes or social considerations.</p> <p>Seek to optimise value of larch felled under SPHN through effective marketing.</p>
<p>NATURE, HERITAGE, LANDSCAPE, GEOLOGY</p> <p><i>'We will continue to diversify the age class structure of our even-aged woodlands and increase the value of all our woodlands</i></p>	<p>Continued restructuring of the forest through felling and restocking with a variety of conifer and broadleaved species.</p> <p>In the period 2018-2021 the upper forest boundary below Ponsonby fell</p>

<p><i>and forest for wildlife'</i></p> <p><i>'We will ensure that rare and threatened habitats are protected and managed to maintain or enhance their conservation value'</i></p>	<p>will be re-aligned post harvesting to incorporate a wider diversity of species and transitional habitat adjacent to the open fell.</p> <p>Create new and maintain existing network of deer control areas, facilitating safe and effective deer management. This will enable achievement of woodland and district objectives, particularly in the move towards low impact silvicultural systems through conversion to CCF, minimum intervention and long term retention of existing coupes.</p> <p>Transform suitable areas of the forest into management under Continuous cover.</p> <p>Ensure the regeneration, extension and survival of areas of ASNW.</p> <p>The geodiversity of forest area should be considered to ensure continued access to geological areas (by avoiding tree planting). New forest roads on the other hand can provide fresh rock exposures for geological study.</p> <p>Ensure the protection and survival of historic features during forest operations and by removing natural regeneration as appropriate.</p>
<p>PEOPLE</p> <p><i>'We will provide public access to all our forests and woodlands where there are no legal or safety restrictions...'</i></p>	<p>Maintain public rights of way to a good standard to facilitate public access and maintain key open views from the forest.</p> <p>Continue to consult and involve the local community through attending meetings where appropriate.</p>

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 Sustainable economic regeneration	Marketable parcels of timber on offer to the market Maintain timber harvesting access and infrastructure	Contract and sales records
NATURE, HERITAGE and LANDSCAPE Nature conservation Historic features Landscape	Maintain areas of mixed broadleaved woodland, riparian zones and increase extent of this habitat as appropriate Protect and enhance features of interest Improving internal and external visual enhancement of the forest over time	Delivery of felling and restocking plans and assessment at five year review PAW’s re-survey in 2022
PEOPLE Access, communities, health and well-being	Continue to promote opportunities for the understanding and enjoyment of the special qualities of the forest within the Lake District National Park	Five year Forest Plan review

Part 5 Forest Plan Maps

- Location – showing location in context of other FEE woodland in the local area
- Current Species – species composition in 2018
- Land Use –present land use categories
- Landform – indicating topography within the forest and local area
- Soils – indicating soil composition across the forest
- Wind Hazard – windiness of the site based on Wind Hazard Classification
- Yield Class – indicating the productivity of the current species
- Conservation, Heritage and Geology – statutory and non-statutory conservation and heritage features
- Access and Services - formal public rights of way, FC access and local services
- Opportunities and Issues – summary of future opportunities and current issues
- Design Concepts – broad concepts and zoning of management
- Operations Proposals – showing felling proposals and areas of Long Term Retention or alternatives to clearfelling (ATC)
- Future Species – representing the long term vision for future species composition

Blengdale Location



1:50,000

Blengdale
Other FC ownership





Forestry Commission
England

Blengdale
Current
Species

N

1:12,000



UK Forestry Standard
Woodland created in accordance with the UK Forestry Standard



PEFC
Certified by the Forestry Commission



Open



Broadleaved



Other conifers



Larch



Sitka spruce

Blengdale Land Use

N
1:12,000

This westerly coupe, which is currently managed under a Continuous cover management regime has been severely damaged by wind. The coupe will have to be felled and re-planted.



- Quarry
- Open ground
- Previously felled
- Forest
- Windblow

Previously felled areas shown on the map indicate unplanned felling of Phytophthora infected larch under Statutory Plant Health Orders over the last few years.



Forestry Commission
England

Blengdale
Landform

N



1:12,000



Forestry Commission
woodlands have
been certified to the
standards of the Forest
Stewardship Council



PEFC
Certified
by the British
Woodland
Certification
Scheme

The terrain is variable from generally level or gently sloping on the upper plateau areas to steeper less accessible areas in the main valley. The upper plateau areas of the forest generally border with grazed upland habitat, and the transition between forest and open fell is an important landscape consideration. The main valley of Blengdale is largely hidden from view and links well with adjoining woodland.



Forestry Commission
England

Blengdale Soils



N

1:12,000



Forestry Commission
woodlands have
been certified to
FSC standards
by the Forestry
Commission



PEFC
Programme
Certified
by the Forestry
Commission

Blanket bog

Typical ironpan soils

Mining spoil

Peaty ranker

Tussocky Molinia Calluna bog

Typical brown earth

Typical surface-water gley

Upland brown earth

Valley Complex



Forestry Commission
England

Blengdale
Wind Hazard



1:12,000



UK Forestry Standard
Approved by the Forestry Commission



PEFC
Certified by the Forestry Commission

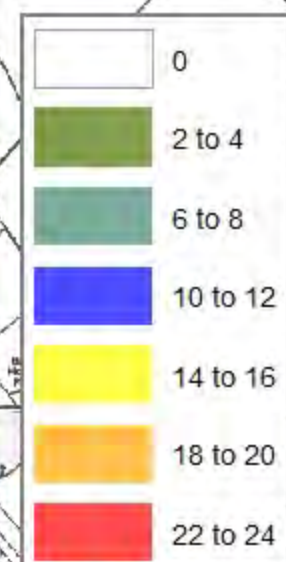


The wind hazard class indicates zonation of the forest in terms of tree stability, based on exposure and soil type. Zone 1 is the most windfirm and zone 6 the least.

In practical terms crops in zones 1 to 3 should be thinnable, whilst crops in zones 4 to 6 would not be thinned. There are therefore more opportunities to extend rotation length and implement Low Impact Silvicultural Systems (LISS) such as Continuous Cover management and Long term retention in the western part of Blengdale, particularly within the main valley.

Blengdale Yield Class




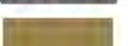


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Yield Class is a measure of how fast the trees are growing. For example, if they are yield class 12, the trees will put on 12m³ of incremental growth/hectare/year as an average over the trees lifespan.

Bleng Tongue Flush Local Wildlife Site
A very species rich flush on the River Bleng.
Species include purple moor grass, bog mosses, star
sedge, tormentil, bog asphodel, cranberry, round leaved
sundew, butterwort, lesser spearwort, cross leaved
heath, sheep's bit, sneezewort and grass of pama

Gosforth Flush Local Wildlife Site
A species rich flush supporting bog mosses, purple moor
grass, rushes, sedges, bog asphodel, devil's bit scabious,
marsh violet, heath spotted orchid, cranberry and white
beak sedge.

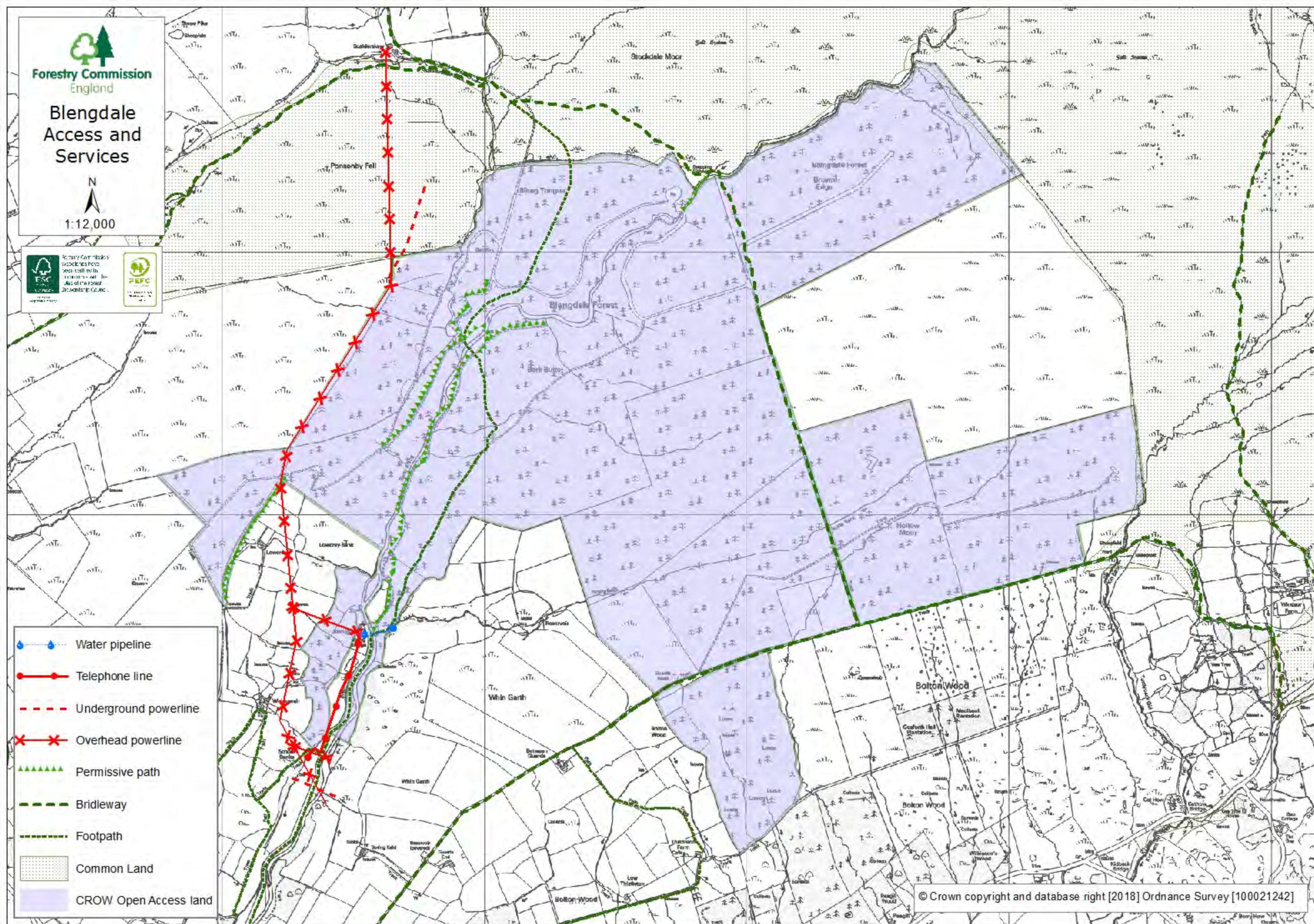
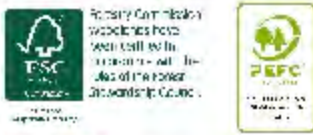
-  Heritage feature point
-  Heritage feature
-  LGS
-  Ancient Woodland Site
-  Local Wildlife Site
-  Watercourses



Blengdale
Access and
Services



1:12,000



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Blengdale Opportunities and Issues

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Post felling restocking will allow use of desired species choice and re-alignment of upper forest edge

Remaining areas of larch are at further risk of Phytophthora ramorum and may have to be felled in the future

This coupe which is currently managed under Continuous cover has been severely affected by windblow and will need to be felled.

Natural regeneration of conifer and broadleaved species will need to be kept under review to ensure appropriate amount of open space is maintained

Remaining harsh upper boundaries in the west of the forest need to be re-aligned

Core area of CCF in the main valley is developing well and the stable mature habitat provides benefit to landscape, soil conservation, red squirrel habitat, water quality and public enjoyment

Future felling and restocking provides an opportunity to diversify the species mixture so that future crops are less dominated by pure stands of Sitka spruce

Conversion of PAW's (Whinnerah wood) is likely to take many years as the wood has difficult access. Felling non natives will be on an opportunistic basis

- Opportunities
- Issues
- Harsh upper edges
- Species diversification
- Larch
- Ancient Woodland Site
- Core valley CCF
- Natural regeneration
- Windblow

Blengdale Design Concepts



Continuous Cover Management
This zone will predominantly utilise Lower Impact Silvicultural Systems in order to maintain a permanent stable canopy. Objectives - Retention of large conifers and production of high quality timber, red squirrel habitat, soil protection, water quality and public access along River Bleng.



Minimum Intervention
This zone includes the management of transitional scrub (natural regeneration), open habitat along riparian/wet areas and broadleaved woodland habitat. Management could include recycling of natural regeneration to achieve the appropriate tree density, removal of conifer regeneration along riparian corridors and management along access routes.

Whinnerah Wood (PAW's)
Restoration of Ancient woodland. This will be achieved gradually over time in response to opportunistic felling of non native trees. Protection of Ancient woodland features such as ground flora and veteran trees

Productive Zone
Management primarily by clearfelling and restocking with main objective to produce crops that generate a sustainable economic return. Species diversification and resilience are major objectives ensuring that future crops are not single species dominated and include a range of mixed conifers and broadleaves creating a very different and much more resilient near natural forest in the future. Aspen could be a significant component, helping to sequesterate carbon, fix nutrients in the soil and compliment landscape and biodiversity objectives.

- Ancient Woodland Restoration
- Continuous Cover Management
- Minimum Intervention
- Productive Zone with species diversification

Blengdale Operations

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23ha will be clearfelled within the period 2018-2026. Approximately 160ha of the forest will be managed utilising Low Impact Silvicultural Systems (LISS) including Continuous cover and Minimum intervention. This area includes the continuous cover management of 110ha through the core valley area, where thinning operations will sustain a permanent canopy cover and promote seeding and development of an understorey and ground flora in response to changing light levels. This process will be supported, where needed by supplementary planting in order to achieve the desired increase in species diversity.

Blengdale Future Species

N
1:12,000



- Open
- Broadleaved
- Open woodland habitat
- Mixed conifer/broadleaved mixture
- Mixed conifer/spruce/aspen mixtures

Transitional open woodland habitat will typically include a mix of naturally regenerating broadleaved and conifer species managed as Minimum Intervention. Intervention will most likely involve felling to recycle to ensure an appropriate balance of trees and open habitat is maintained. This will be kept under review in response to levels of natural regeneration.

The clear fell and restock management system provides the opportunity to diversify future species composition so that the forest will be less dominated by pure stands of Sitka spruce. Planting spruce in mixture with other conifers and species such as Aspen will help to improve the forest biologically and visually and make the forest more resilient in the long term to the affects of climate change, pests and disease and changing demands in the supply of wood in response to energy needs. Species change in areas of Continuous cover will be achieved principally through natural regeneration by manipulating light levels through thinning operations whilst maintaining a permanent tree canopy, with underplanting of desired species if necessary. Low Impact systems help to protect soils, improve structural diversity, assist in slowing the flow during high rainfall events and enhance the conservation and landscape value of the forest.

Landscape Appraisal

Blengdale generally fits well within the wider landscape and blends with the mosaic of neighbouring woodland and farmland with its characteristic geometric field patterns and drystone walls which is characteristic of the Landscape Character of the area.



Forest between improved agricultural ground and open fell



Situated below the western slopes of the Lake District mountains

The River Bleng is the most significant landscape feature of the forest, its characteristics changing throughout its length.



Downstream - wide and overhung by broadleaves



Upstream – flowing through large Douglas fir



Upper Bleng – increasingly mixed species open forest

Associated with the forest along the River Bleng is the core area of the forest managed as Continuous Cover. Although not widely visible from distant views this part of the forest is a prominent internal landscape feature frequently used by the public walking the riverside trail through the mature woodland and is important for red squirrels.

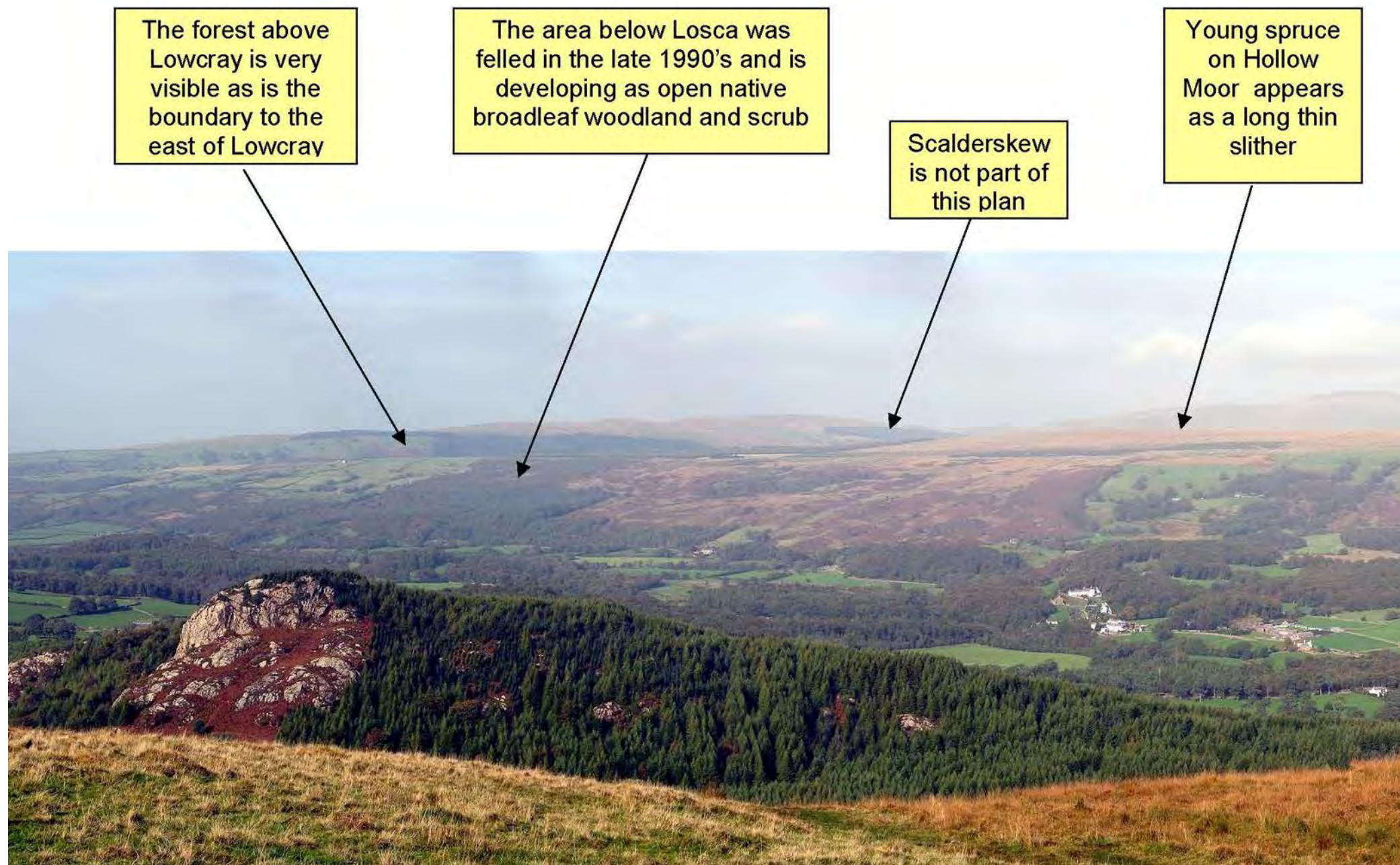


The photographic survey and landscape assessment from the previous forest plan in 2006 identified a number of areas of concern in relation to wider landscape sensitivity. These were mostly concerned with mitigating harsh boundaries between mature forest and open fell and significant progress has been made through the period of the previous plan, for example at Brown Edge in the north east extreme of the forest which is now developing as a mixed broadleaved and conifer open woodland habitat. However, there remain several upper forest boundaries that would benefit from re-alignment, for example at Ponsonby Fell and others which are summarised below:



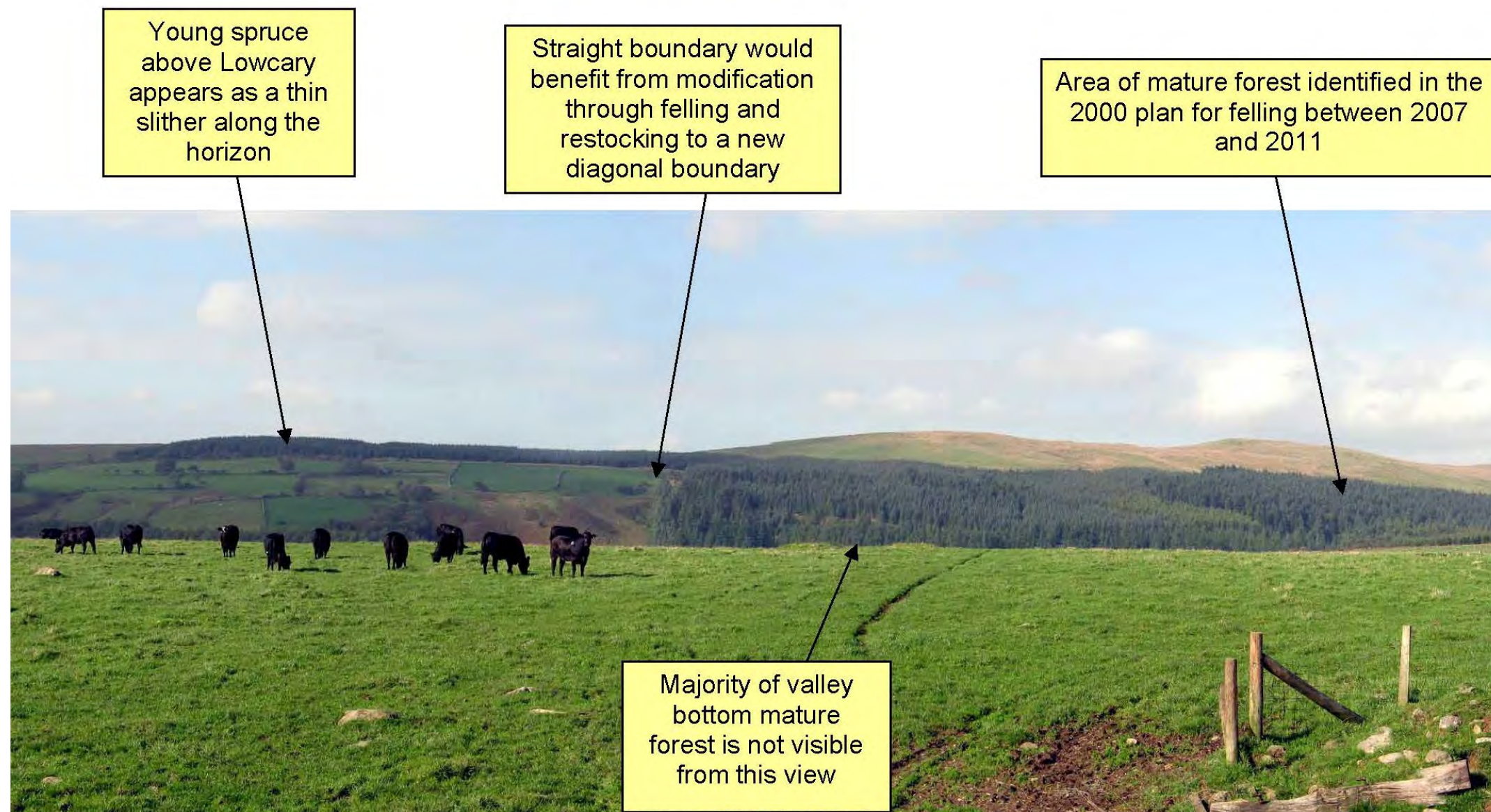
Harsh forest edge below Ponsonby Fell

View North from Mecklin Park (Miterdale)



Looking north over the western end of the Wasdale valley this distant view shows Blengdale as a long narrow forest except for the area to the east of Lowcray which is more visible. The younger crops on Hollow Moor will become increasingly prominent as they mature and will be clear felled and restructured circa. 2039 once they are economically viable.

View North from Guards Lonning



On the left the crops above Lowcary are prominent on the skyline and the straight edges east of Lowcary would benefit from being modified through restocking to a new diagonal line post felling. These are scheduled to be clear felled in the period 2027-2031.

To the right is the area of mature forest below Ponsonby Fell which was originally planned to be felled in 2000. This coupe is now scheduled to be harvested in the period 2027-2031. Between these two areas the mature forest in the valley bottom is barely visible but the upper edge includes an area of heavily windblown Continuous cover which needs to be clear felled in the next few years and is planned between 2018-2021. Felling will provide the opportunity to realign the upper forest edge at restocking and create a more textured transition between forest and fell through species choice and wider planting density.

Looking South from Scalderskew entrance



To the left is the large area of Brown Edge which was clear felled during the period of the previous plan in 2005. Through a combination of broadleaved planting adjacent to the River Bleng and natural regeneration of broadleaves and conifer this area is now being managed as Minimum Intervention with landscape and biodiversity as the key management objectives. The valley bottom is mostly hidden from view to the right.

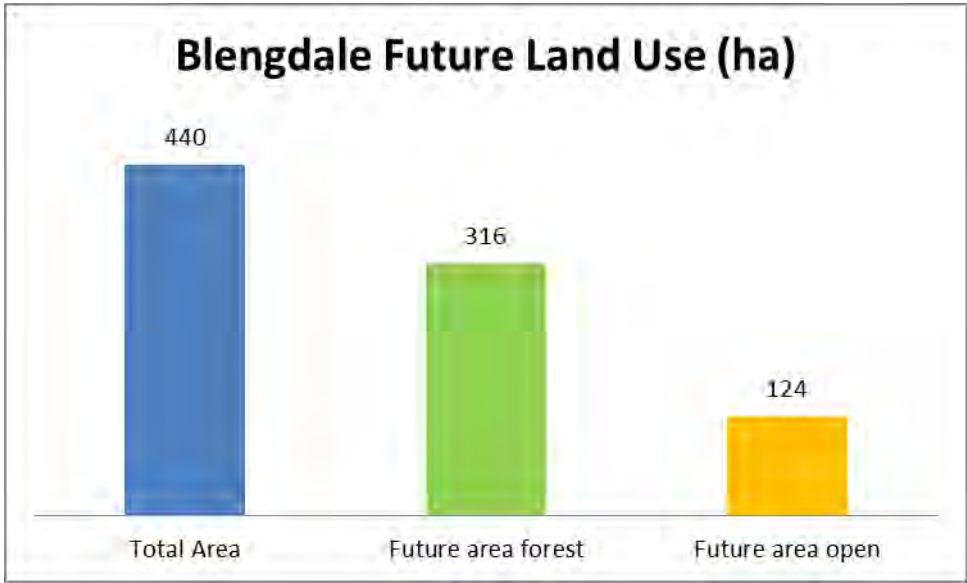
Looking West from Nether Wasdale Common



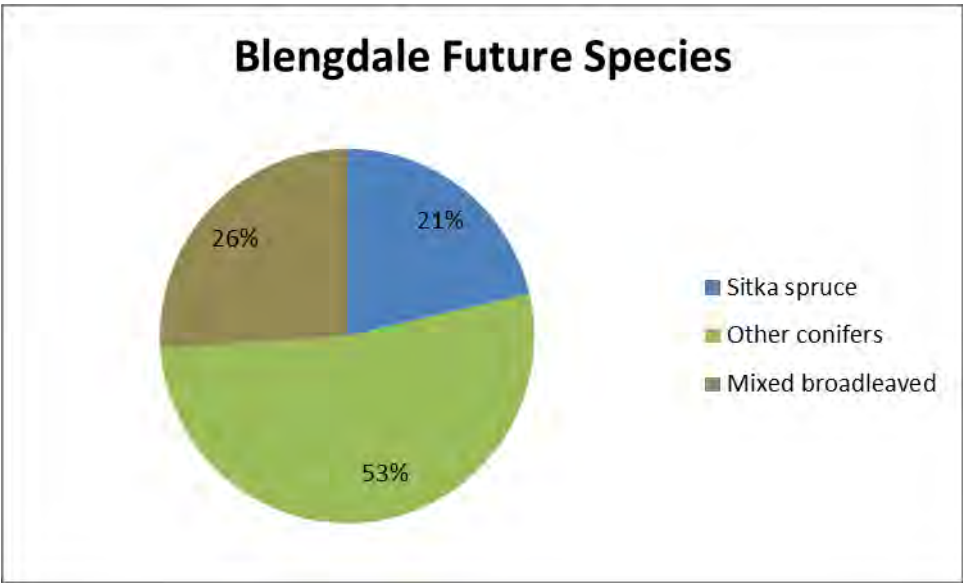
This view shows the younger crops on Hollow Moor which are beginning to become more prominent in the landscape. Landscape mitigation for these crops will be a feature of future plans. The previous skyline crops at Brown Edge have now gone.

Part 6 Forest Plan Outcomes

Future Area and Land Use



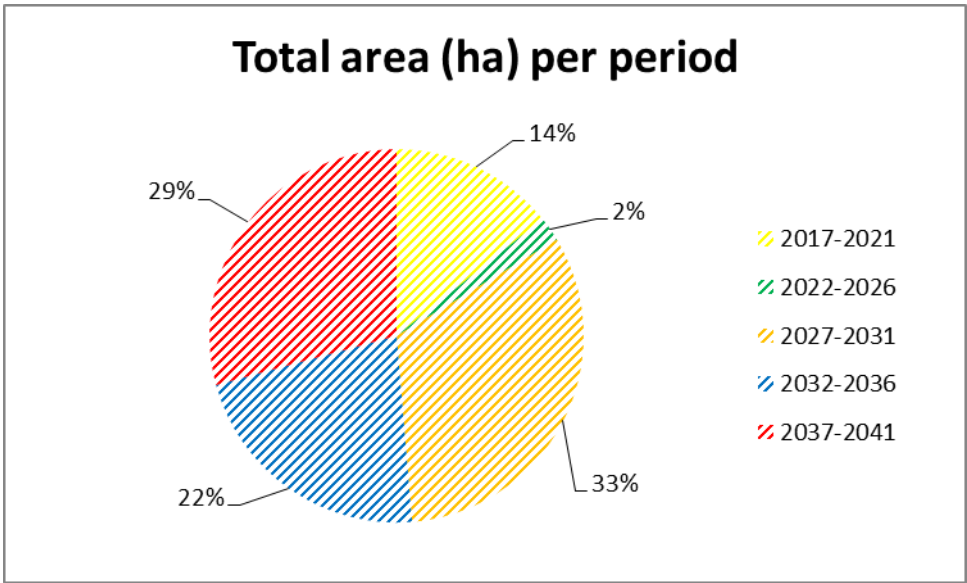
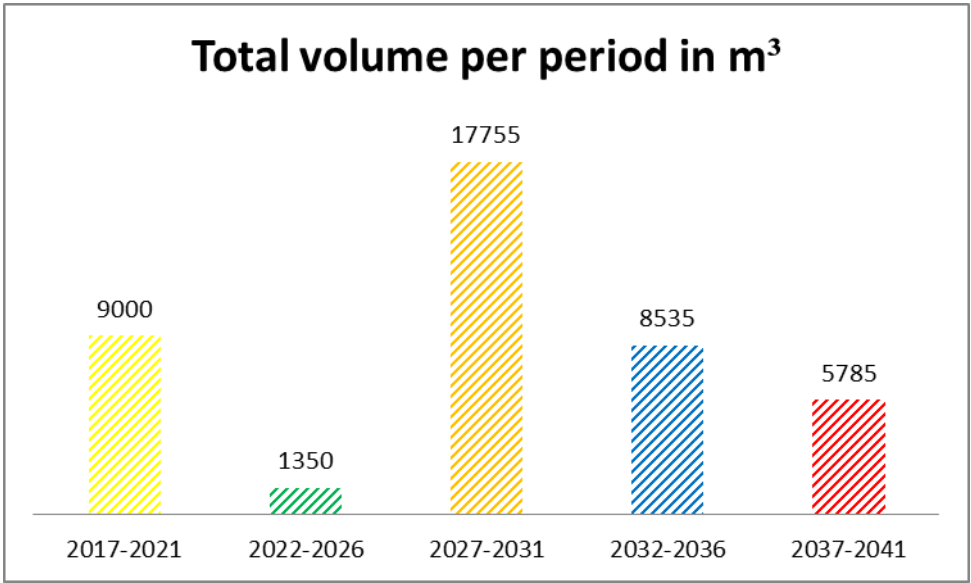
Future Species



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

Timber production

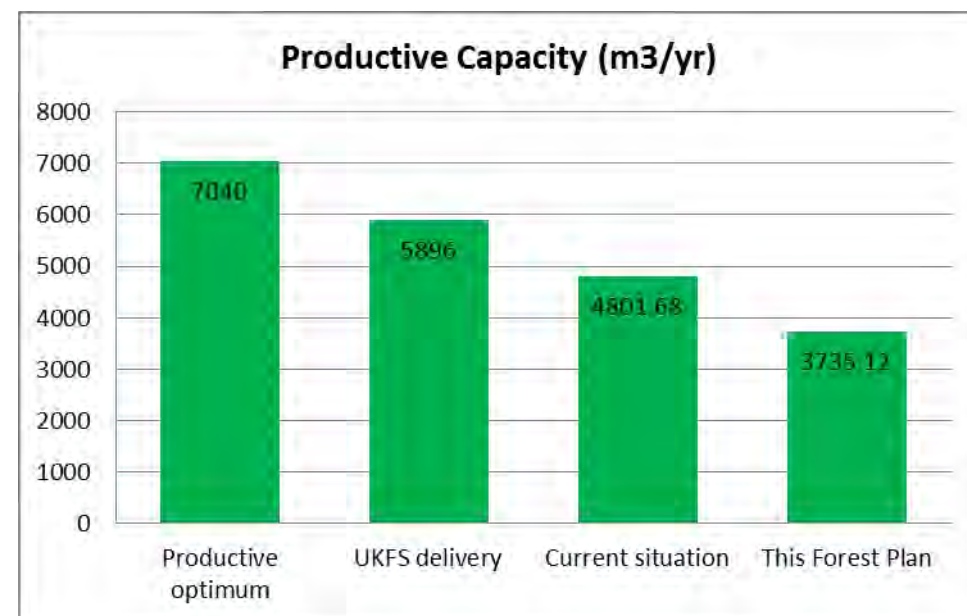
Average timber production (clear felling only), per five year period is shown below. Over the 10 year approval of the plan we will clearfell approximately 23ha generating in the region of 13,500m³ of timber. Additional volume will be generated from thinning of Continuous cover areas.



Productivity

The productive potential of the forest is optimised through timber production achieved through delivery of the harvesting plan. This is represented in the Productive Capacity Analysis below which 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 (10% open) is planted with the optimum commercial species suited to the site (i.e. Sitka spruce YC 16).
2. UKFS delivery – productive capacity achievable through minimum compliance with a species percentage mix comprising 65% primary species (SS YC 16), 20% secondary species (MC YC 14), 5% broadleaved (YC 4) and 10% open space.
3. Current situation - productive capacity based on the current percentage species mix from the previous plan with 22% open.
4. This Forest Plan – productive capacity based on the percentage species mix from this plan with 28% open.



Natural Capital and Ecosystem Services

The productivity analysis refers to timber production and gives a general indication of the productive capacity of the forest. However, timber represents only part of the picture and Natural Capital refers to the stock of all natural assets upon which the economy and society is built. Natural capital produces value for people in the **form of 'goods' such as timber or minerals and 'services' such as** climate regulation and air purification. To realise the benefits of some natural assets, humans need to intervene (e.g. harvesting timber) but in other instances natural capital produces value through natural processes (e.g. trees reducing flooding).

Forest Enterprise England (FEE) published its third organisational Natural Capital Account (NCA) in 2018 as a transparent way of quantifying the value of natural assets beyond what is seen in a typical financial account. Whereas income from car parking and timber are available in **FEE's annual accounts, the NCA also recognises** values for natural services, such as the well-being our woods bring to people, and the atmospheric carbon our trees are storing, thereby providing a more representative picture.

A key feature of a natural capital approach is that it is looking at the asset value rather than the value of the services provided now, i.e. it takes the value of the services that will be provided into perpetuity (and whether they are going to increase or decline) **and assigns a current 'net present value' to give a total asset value.** FEE's NCA looks at the whole of the public forest estate (PFE) and calculates the value of all the natural capital FEE is custodian of in a 'top down' way. This is useful for the organisation to understand whether it is strategically delivering its mission, and to evidence the value of the work we do to others. However it is at **such a large scale that it doesn't provide practical information that can help** individual decisions within the organisation.

FEE is exploring whether using a natural capital approach could help decision making for land use choices for specific sites and forest design planning and is in the process of developing and testing a natural capital tool to do this. The Blengdale forest plan delivers ecosystem services and other non-market benefits included in biodiversity, climate change mitigation, water, people and landscape including public health and well-being, productivity through increased carbon sequestration, species diversification and climate change resilience, landscape enhancement and increased native woodland and priority habitats. In the future we hope to be able to assess these non-financial benefits using this tool to provide a breakdown of the natural capital costs and benefits associated with the plan to support the decision making process.

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.

The Blengdale 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; 21% Sitka spruce, 53% other conifers and 26% mixed broadleaved and 28% open space, exceeds UKFS requirements. Long term structure will improve through linking of permanent broadleaved and open habitats and expanding the range of continuous cover management.
Silvicultural	A combination of clearfell and restocking will be continued with Continuous Cover of areas of mixed conifer and broadleaved woodland at lower elevations.
Biodiversity	Habitats and species are considered during the planning phase. Ecological connectivity achieved by extending and linking areas of broadleaved woodland and open space will ensure that the area is managed with conservation and biodiversity as an ongoing objective.
Climate change	Long Term Retention areas will minimise soil disturbance. Forest resilience will be enhanced over time through greater species diversity, particularly establishment of alternative conifer

and broadleaved species 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 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	Quality will be protected through adherence to Forest and Water guidelines as a minimum during harvesting and forest management operations.

Longer term management proposals

Forest management in the UK is facing many challenges both now and for the future with issues and threats associated with climate change, disease and **economic uncertainty. As custodians of the nation's public forest estate for 100** years Forest Enterprise have sustainable forest management at its core with the aim of delivering wide ranging objectives for people, nature, landscape and the economy. Within the setting of the Lake District National Park and World Heritage Site the proposals in this plan will lead to a more diverse and resilient woodland, with a greater range of species and habitats and future design that recognises the scenic beauty and cultural heritage of the area. Substantial areas of alternative conifer species will have been established, and the range of broadleaved species and more diverse open habitat will have been extended particularly on the transitional boundary between forest and open fell.

Timber production of home grown quality timber remains a priority and will continue through a combination of clearfelling and continuous cover silvicultural techniques with the focus on maintaining productive woodland with species best suited to site conditions including a wider range of conifers and broadleaves at the lower elevations. This strategy will also contribute toward climate change mitigation, flood alleviation and long term forest resilience.

Public recreational use of the forest is likely to remain low; however, this is in keeping with the character of the forest and locality within this part of the Lake District National Park. By continuing to manage our woodlands sustainably we will continue to provide a high quality experience for the enjoyment, health and well-being of all our visitors for the next 100 years.