

# Kilburn and Oldstead Forest Plan FP 53

## 2023

### Yorkshire Forest District



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



# Kilburn and Oldstead Forest Plan

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## Forestry England - Property

Forest District:	Yorkshire
Woodland or property name:	Kilburn and Oldstead
Nearest town, village or locality:	Kilburn
OS Grid reference:	SE 510 810
Local Authority district/unitary Authority:	North York Moors National Park and North Yorkshire County Council

## Areas for approval

	Conifer	Broadleaf
Felling	16.31	
Lower Impact Silvicultural Systems regeneration felling	20	30.5
Restocking	23.81	43

1. I apply for Forest Plan approval for the property described above and in the enclosed Forest Design Plan.
2. I confirm that the pre-consultation, carried out and documented in the Consultation Record attached, incorporated those stakeholders which FS agreed must be included. Where it has not been possible to resolve specific issues associated with the Plan to the satisfaction of consultees, this is highlighted in the Consultation Record.
3. I confirm that the proposals contained in this Plan comply with the UK Forestry Standard.
4. I undertake to obtain all permissions necessary for the implementation of the approved Plan.

# Kilburn and Oldstead Forest Plan

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## Kilburn and Oldstead

497.9 Hectares (Ha)

Period of Plan: 2023 - 2033

### 1. Background

These two woodlands are situated in the southwest corner of the North York Moors National Park covering 497.9ha. The woods were first leased to the Forestry Commission (FC) in the early 1950's. In 1996 the FC secured freehold rights to the Kilburn blocks by surrendering land that previously linked the two woodlands. 379ha is freehold with 118ha leased, the leasehold element in one contiguous area at the south-eastern end of Oldstead Wood.

Kilburn and Oldstead is surrounded by mostly arable farmland, with some woodland. On the eastern plateau, the Kilburn block neighbours the North Yorkshire Gliding Club airfield.

### 2. Describing the Site

#### 2.1 Geology and Soils (FP Map 01)

The soils follow a simple pattern where the plateau is predominantly an iron pan soil giving way to brown earths as the slopes descend into the valleys and then to surface water gleys on the lower slopes and valley bottoms. There are several areas of rock and scree, both geological and a result of historic quarrying.

#### 2.2 Current tree Species (FP Map - 02 and 03)

Since the previous plan, Larch as a percentage of planted conifer has reduced to 42% (47% at 2016).

Mixed broadleaf species are present across 285.5ha which encompasses 3.83ha of Upland birchwoods and 53.97ha of Upland oakwood habitats; 26.6ha is covered by a natural reserve management type. Conifer habitat is present across 179.39.

Tree species have been chosen to follow soil types, with Larch (Hybrid and Japanese), Spruce (primarily Norway and Sitka) and Pines (Scots, and Macedonian) being the main conifer species comprising 32.1% of the overall area, with Hybrid Larch accounting for the majority. Other conifer species include but are not limited to Fir, Cedar and Hemlock.

Oak forms the main broadleaf component at 18% of the overall area, followed by birch at 13%. Other broadleaves include but are not limited to European Ash, Sycamore, Beech and Alder.

Species Composition	2022*	
	Ha	%
Mixed Broadleaf	285.5	57%
Pine	34.6	7%
Fir	20	4%
Spruce	37.8	8%
Larch	74.5	15%
Other conifer	7	1%
Other i.e. Open, Felled	38.5	8%

\* No equivalent species composition data is available for proceeding years

## 2.3 Wind Damage

The majority of Kilburn and Oldstead woods fall within Windthrow Hazard Class 1 and 2, providing good windfirm conditions which on the whole do not restrict thinning operations. Subsequently, where access is practicable, many stands can be managed on extended rotations and provide opportunities for Lower Impact Silvicultural Systems (LISS). A small area falls within Windthrow Hazard Class 3 and a small proportion in Windthrow Hazard Class 4 and 5.

Since the previous plan, opportunities have been taken to carry out 150.38 of thinning associated with LISS, extended rotation silviculture.

## 2.4 Landscape (Photographic montage)

The woods comprise two large and one small blocks of predominantly broadleaved and coniferous woodland. The area is characterised by farmland and woodland, where boundaries are curvilinear or straight for only short distances. The woods form an integral part of the landscape character of this location within the North York Moors and Cleveland Hills National Character Area, and more specifically the NYMNP Western Fringe character area.

Both Kilburn and Oldstead woods are highly visible from the surrounding area with the visual importance of these woods further underlined by the high number of rights of way, other popular tourist routes and local attractions.

The woodland slopes form part of the extensive western fringe of the North York Moors and are visible as distant views from much of the Vale of York between York and Thirsk.

Tree cover along with the local landscape form in places can in places restrict views and provide a strong sense of enclosure.

### Kilburn

The larger of the blocks, Kilburn is the most westerly and sits below the plateau of Oldstead Moor; it contains Hood Hill, a distinctive conical hill visible from the nearby A170 and the North York Moors National Park visitors centre at Sutton Bank. Distinct within the landscape and sitting both above the woods and below the plateau are the escarpment cliffs of Roulston Scar and Ivy Scar. There is a footpath running along the escarpment top which provides views across the woodlands and into the Vale of York.

## Oldstead

The Oldstead block lies on southwest facing slopes below Byland Moor and consist of three woods, Cockerdale Wood, Snever Wood and Abbey Bank Wood which historically had close links with Byland Abbey, the ruins of which it overlooks.

Above Boar's Gill a small isolated 15ha block which lies on the plateau separated from Kilburn by the North Yorkshire Gliding Club airfield and from Oldstead by agricultural land. This woodland is only visible in the near distance by traffic utilising Town Bank Road.

Since the previous plan the forest has seen an increase in its overall species and structural diversity, mainly through increased utilisation of Lower Impact Silvicultural Systems (LISS). Species diverse conifer restocking with naturally regenerating conifer and broadleaf species across previously felled sites is contributing to a more diverse forest composition that responds well when seen from different locations.

Fixed-point photographs of both external and internal views demonstrate the changing structure across the forest and how this is providing a more positive contribution to the overall landscape.

## **2.5 People and Community (FP Map - 04)**

Kilburn and Oldstead woods are predominantly freehold with an area of Snever Wood, Elm Hag and Abbey Bank Wood leasehold where the owner has retained sporting rights. The area of dedicated freehold woodland (380.5 ha) provides public access for walkers, dog walkers and horse riding.

The busy A170 runs close to the northern and western boundaries of Kilburn.

A Forestry England (FE) car park facility serves visitors to the Kilburn White Horse, which along with two FE waymarked walks and eight public rights of way, provide the woods formal recreation provision.

A well-used footpath runs along the top edge of the escarpment overlooking Kilburn woods and although this footpath forms part of the long-distance walk, the Cleveland Way, it is a popular route to access the White Horse. Many users of this route will have parked vehicles at the well-established NYMNP Sutton Bank Visitor Centre, a popular attraction and stopping off location for people passing through the area. There is also a popular walk to an observatory above Snever woods.

The FE White Horse Trail utilises a section of the Cleveland way along with existing forest tracks to provide a moderate grade 2.44km circular walk.

The longer Hood Hill Trail provides a difficult grade 5.06km circular walk from the White Horse car park and around Hood Hill.

A popular bridleway runs in the valley between Hood Hill and the escarpment from Acre House to Hood Grange, the route forks below Ivy Scar and with a branch heading towards and exiting at the hairpin bend of Sutton Bank.

These blocks also see significant informal access from walkers, horse riders and increasingly mountain bikers.

## 2.6 Natural Heritage (FP Map - 04)

A significant area of Oldstead woods overlooking Byland Abbey and a large proportion of Kilburn near Hood Hill and Hood Grange Wood make up 176.15 ha of ancient woodland, including both PAWS and ASNW sites.

The western edge of Kilburn Woods which lies outside the National Park boundary is recorded as a Site of Importance for Nature Conservation (SINC) in recognition of the value of this area of mixed woodland.

The mosaic of habitats developing across the block provides opportunities to manage mixed woodland with variable proportions of open and temporary open space.

The blocks rich ecological value is closely related with the areas of ancient woodland and herb rich verges.

During the previous plan this block has provided an important contribution towards the districts PAWS restoration process through felling and thinning programmes.

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

The forest also supports Schedule 1 birds of prey.

## 2.7 Cultural Heritage

Kilburn and Oldstead has a rich, wide range of cultural heritage features including 3 scheduled monuments (SAM) which continue to be managed with approved management plans, including an early medieval motte and bailey at the top of Hood Hill, and a Late Bronze Age Promontory Fort within the forest boundary. 2 SAM's part within or adjacent to the forest include a ruined 12<sup>th</sup> Century Medieval Cistercian Monastery a 14<sup>th</sup> century medieval battlefield. The woods also hold a significant number of unscheduled features such as post-medieval remains of industrial quarrying and lime kilns.

## 3. Describing the Project

### 3.1 Project Brief

- Continue to sustainably harvest timber from clearfell and thinning's, including Lower Impact Silvicultural Systems (LISS) and landscape sensitive regeneration felling.
- Increase diversity of the age structure and landscape impact by maintaining current felling patterns. Enhance external and internal edges, using appropriate silvicultural systems, including LISS - Irregular/Group Shelterwood. Targeting the retention of high-value Douglas Fir crops and integration of PAWS restoration and utilising natural regeneration and enrichment planting to enable these areas to be productively managed.
- Increase overall proportion of native broadleaf woodland, whilst recognising the important contribution of productive conifer species through utilisation of natural regeneration, to contribute toward an improving wooded landscape, in-keeping with the NYMNP Western Fringe character area.



- Consider the selection of Forest Research Ecological Site Classification (ESC) supported alternative main tree species that will contribute towards a greater range of species diversity, to maintain or increase quality timber productivity and increase resilience to plant health, biosecurity threats and impacts of climate change.
- Protect and, where appropriate, enhance all known sites of archaeological and ecological importance.
- Larch forms 15% of the forest by area; due to the proximity of previous Phytophthora Ramorum sites at Gilling, consider advancing its reduction as a component within mixed stands, group felling in pure stands and increase rhododendron control especially within or adjacent to Larch crops.

## 3.2 Objectives

### 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 Natural England and FC systems.
- Maintain the ecological, cultural and heritage value of these woods, to be measured by Historic England, NYMNP Authority and FC systems accordingly.
- Where practicable, manage stands through LISS regeneration felling, utilising natural regeneration and enrichment planting, particularly across areas of PAWS whilst targeting the retention of high-value Douglas Fir crops.

### Economy

- All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard, as independently assessed by annual independent surveillance audits.
- Maximise and maintain a sustainable supply of timber from a diverse range of site-appropriate conifer and broadleaf species, to be measured by FC systems.
- With 85% of the plantable area supporting productive high forest (167.2 ha conifer, 255.9 ha broadleaf), Kilburn & Oldstead remains an important block for its contribution to the districts timber producing capacity, particularly hardwoods.
- Continue the reduction of Larch as a component within mixed stands, consider group felling/small scale regenerative felling in pure stands.

- Target the retention of high-value Douglas Fir crops.

## People

- Maintain the woodlands contribution to the landscape character NYMNPA Western Fringe character area. To be measured by fixed-point photography.
- Clearfells will be designed so that their size and scale are in keeping with the surrounding landscape. To be measured by fixed-point photography.
- Continue to manage and provide for public access across this woodland, including the management of the car park facility.

## 3.3 Opportunities & Constraints

- Increase the contribution of broadleaf stands to total timber production, including those containing ash.
- During the lifetime of this plan we will explore the opportunities which this unique forest presents regarding public access, engagement and recreational use, guided by the Yorkshire Forest District Recreation Strategy which is currently in development
- The discovery and advance of *Phytophthora ramorum* (*P. ramorum*) on Larch and rhododendron in nearby FE woodland at Gilling, and across the wider district may present issues if crops were to become infected. This could have a significant negative impact across this block as Larch accounts for 42% of planted conifer (a reduction from 47% since the 5-year review of 2016) and 15% of the total forest by area. This is particularly important due to the high visual impact that Larch makes across this location.
- *Dothistroma septosporum* (DNB) and *Dendroctonus micans* (*D.micans*) could have a significant impact should significant infection rates occur in future years.
- Site limiting factors - low nutrient and moisture regime in places.
- Some areas have challenging, steep ground access issues, particularly relevant for thinning operations. Consider the range of silvicultural systems or combinations of systems to manage these sites, such as clearfell, long term retention, extended rotation.
- Significant levels of informal mountain bike activity, with associated building of structures requires ongoing FE intervention to manage safety.
- The increasing profile of the White Horse could present a range of constraints and opportunities.
- Areas of invasive rhododendron and Himalayan balsam.

## 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 site assessment (OSA) 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 through liaison with Historic England and North York Moors National Park Authority.

#### 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 Kilburn and Oldstead this will include:

- Increase and improve the deadwood resource as set out in - 'Deadwood - Policy, Procedures, Guidance (PPG) 51 (March 2022)'. Areas of high ecological value across which deadwood resources could be encouraged include; Ancient Woodland, riparian zones, Long Term Retention sites and areas of broadleaf woodland.
- Managing PAWS as set out in - 'Keepers of Time: ancient and native woodland trees policy in England (May 2022), 'Ancient Woodland on the Forestry Commission Estate in England (March 2002)' and 'FEE Operations Instructions No. 3 (rev.2012), Ancient Woodlands'.
- 'FC - Managing England's woodlands in a climate emergency' provides guidance to implement adaptation actions including the acceptance of naturalised species and assisted migration.
- Increase the diversity of tree species and age structure that will maintain and improve favourable conditions for target species and identified habitats.

#### Minimum Intervention - Natural Reserve

Sites that have the potential to deliver greatest biodiversity benefit but without the formal designation of Natural Reserve as defined by the UKWAS.

26.6 ha of native broadleaf natural reserve across Kilburn and Oldstead ensures the retention of future veteran trees.

#### 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. There are no Long Term Retentions in Kilburn and Oldstead

## Invasive species

*Rhododendron ponticum* and *Impatiens glandulifera* (Himalayan balsam) are recorded across several sites in the forest. A programme of vegetation management will be carried out over the duration of this plan where this is likely to impact on high value conservation sites.

## 3.4.2 Timber Harvesting

We will continue to sustainably harvest timber from clearfelling, 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 Kilburn and Oldstead.

## 3.4.3 Landscape

Kilburn and Oldstead Forest mainly lies within the North York Moors National Park, a protected and designated landscape where felling as seen from prominent viewpoints under the previous plan has benefited its associated landscape impact.

Clearfell and shelterwood areas are designed so that their scale and shape are in keeping with the scale of the woodland blocks and the surrounding landscape. The resulting diversity in age and height that these systems produce will enhance both external and internal views of the woodlands.

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

Appropriate scale felling across the forest will continue the process of restructuring, moving away from even-aged, single species stands to a more mixed conifer/broadleaf woodland linking with other associated habitats.

The adoption of appropriate silvicultural systems, including LISS will contribute toward the creation and retention of species and structurally diverse woodlands within the landscape.

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

## 3.5 Plan (FP Map 08)

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.

# Kilburn and Oldstead Forest Plan

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

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

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

Felling	Area - hectares	% of total area (excl. SSSI)	Projected volume (m <sup>3</sup> )
Clearfell	16.31	3.2	6300
LISS*	50.50	10.14	12625

\* Through this plan 418.69ha of Kilburn and Oldstead will be managed utilising LISS through Group and Irregular Shelterwood silvicultural systems. During the plan period, it is proposed that areas of LISS where crops are over 25 years old will receive a silvicultural intervention (thinning/regeneration felling), as a result, the associated area will be regenerated through a combination of restocking and natural regeneration.

See Appendix 2 - LISS justification. The above area of woodland cover will be regenerated through a combination of restocking and natural regeneration, removing no more than 30% of the stems within any single compartment over the plan period.

### 3.6.2 Breakdown of constituent areas.

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

Habitat type (based on principle species planted)	Area - hectares			% of total area		
	2023	2033	2053	2023	2033	2053
Broadleaved; mixed/yew woodlands	246	260	270	49.4	52.2	54.2
Coniferous woodlands	179.4	165.4	155.4	36	33.2	31.2
Other; lowland dry acid grassland; upland birchwoods, heathland & oakwood	72.4	72.4	72.4	14.5	14.5	14.5

## 3.7 Methods / Forest Operations

### 3.7.1 Planning

Before any major forest operations are undertaken an OSA is completed. This document details the proposed work and outlines all known environmental, social and operational considerations. The OSA 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 OSA 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 following standards;

- U.K. Woodland Assurance Standard
- U.K Forestry Standard (published 2017).

### 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.

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

Using the FC Forest Research Agency, Ecological Site Classification system (ESC), a range of conifer species are considered 'optimum' to 'unsuitable' for LISS where timber production is considered as an objective.

Through this plan the area to be managed under LISS is 418.69ha. See Appendix 2 - LISS Justification.

During the lifetime of this plan we will look to introduce the concept of Forest Development Types. *"A Forest Development Type is a long-term vision of how the species composition and structure of a forest stand is intended to develop. The concept encourages the greater use of mixed-species stands and a wider variety of stand structure than previously deployed in British forests".<sup>1</sup>*

### 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.

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<sup>1</sup> Forest Research - Forest Development Types: A guide to the design and management of site-adapted resilient mixed forest stands in Britain

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

## 3.7.5 Restocking

### Conifer

The areas of LISS regeneration felling carried out as part of management by LISS and clear felling will be established through a combination of restocking using alternative productive conifer species, diversifying 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.

In addition to replanting, areas of LISS and clearfelling will be managed to encourage natural regeneration of conifer and broadleaf species, although it is accepted that replanting will be required to maintain and further diversify the current range of species.

Reference to Predominantly Mixed Conifer on the Future Habitat & Species Map (FP Map 07) will be used to describe those areas where a range of species will be planted and/or regenerated, where conifer species will comprise at least 80% of the component mix. As indicated at 3.7.1, the Operational Site Assessment will provide site-specific data on soils and other site factors that will help inform the correct choice of species on a site-by-site basis.

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

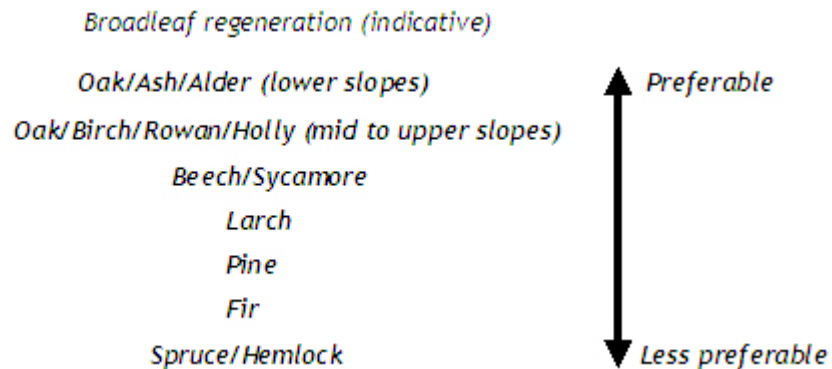
### Broadleaf

There are 176.15 ha Ancient Woodland Sites across Kilburn and Oldstead which currently ranges between semi-natural class 1 or 4 (see section 4.1 Habitat Condition). Where Conifer PAWS are either clear felled or managed through LISS regeneration felling through this plan, regeneration will be carried out through a combination of planting site-native species and natural regeneration. Sites will achieve at least 1100 broadleaf stems per hectare. We will accept 'naturalised' species such as beech and sycamore and the principles of assisted migration where these can enhance resilience to the impacts of climate change.

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 as part of routine felling or thinning operations.

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Reference to Predominantly Mixed Broadleaf 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 broadleaf species will comprise up to 70% of the component mix.

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

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

### 3.7.6 Wildlife Management

The successful establishment of future restocking sites through planting and/or natural regeneration will require effective control of crop damaging mammals. Although Roe deer are present within the forest and surrounding farmland, good levels of natural regeneration indicate browsing pressure is low. Damage levels will continue to be monitored and will be managed in line with the Yorkshire Forest District Deer Management Strategy.



## 4. Monitoring

See Appendix 4 - Monitoring Plan

### 4.1 Habitat condition

Over the lifetime of the plan where maintaining semi-naturalness is important, such as Ancient Woodland Sites, we will monitor and record levels of change through the Sub-Compartment Database and the resulting Semi Natural Class scores. Across these sites we will maintain stands at SN Class 1 and gradually manage other sites towards this target composition.

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 2028 with the 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

Maintain the land within our stewardship certified against the UK Woodland Assurance Standard, as independently assessed by annual independent surveillance audits.

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	497.9	100	20,971	100
Total Wooded area	482.9	97	18,594	85
Natural Reserves - Plantation (1%)	16.8	5	294	1.7
Natural Reserves - Semi-natural (5%)	9.8	6.7	101	5.6
Long-term Retentions and Low Impact Silvicultural Systems (>1%)	445.3	89.5	9,346	45
Area of conservation Value (15%) including designations; SSSI, PAWS, ASNW, NR, LTR, LISS	445.3	89.5	9,346	45

## 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.

[Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672222/Keepers_of_time_-_ancient_and_native_woodland_and_trees_policy_in_England.pdf)

Major threats to native woodland are:

- Climate change and fragmentation
- Excessive browsing and grazing by deer, livestock and grey squirrels
- Inadequate or inappropriate management
- Invasive and non-native plant species
- Diffuse pollution
- Pests and diseases
- Inappropriate recreational use
- Development and boundary incursions

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

### 5.2 Flora

*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 Kilburn and Oldstead. Maintaining a mixed resource of temporary and permanent open space with heathland flora will provide suitable habitat for priority woodland bird species. There are no plans to create new areas of permanent open heathland through this Forest Plan.

### **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 Kilburn and Oldstead. 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 1 - Priority species).

## Appendix 1 - Priority species

Bird Species <sup>1</sup>	Forest location	Habitat enhancement
Woodcock, Dunnock	Developed shrub layer	Continue selective thinning and regeneration felling as part of LISS management, this will allow the development of shrub layer structure and increased structural and species diversity. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Tree pipit Wood warbler Willow warbler Garden warbler Spotted flycatcher Willow tit Marsh tit Lesser redpoll Lesser spotted woodpecker Song Thrush Redstart	Woodland edge, ride, glade	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity. Expand road and ride margins to extend herb and invertebrate rich roadside verges, increase habitat connectivity and edge habitat. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Woodlark Nightjar	Open habitat/ wooded heath	Maintain a mosaic of open structure woodland/wooded heath with areas of open habitat with short grass/heath for feeding and denser vegetation for nesting through woodland management and grazing as appropriate.
Reptile <sup>2</sup>	Forest location	Habitat enhancement
Adder Common Lizard	Heathland/verges	Maintain the known sites in suitable condition through vegetation management. Plan operations to minimise damage to known hibernacula sites. Maintain a mosaic of open structure woodland/wooded heath, wide rides and forest road verges.
Invertebrates <sup>3</sup>	Forest location	Habitat enhancement
Labyrinth Spider	Rough grassland and low scrub	Maintain mosaic of habitats with open rough grassland and taller heather and gorse. Expand road and ride margins to extend herb and invertebrate rich roadside verges and increase habitat connectivity

<sup>1</sup> Source - BTO Bird Atlas and Breeding Bird Survey data for SE48 V, SE57 P, SE58 B,G,A,F grid squares and surveys undertaken by the Forest bird study group.

*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).*

<sup>2</sup>Amphibian and Reptile Group

<sup>3</sup>FE Wildlife monitoring volunteers

## Appendix 2 - LISS justification

### Site Appraisal

Site Factor	Suitability Score	Comment
<p>Wind Hazard Classification:</p> <p>Majority of the forest is WHC range 1 - 2</p>	1	ESC indicates rooting depth ranges between 20 cm to 100 cm.
<p>Soil fertility:</p> <p>Very Poor</p> <p>Poor Typical Ground-Water Gley</p> <p>Medium</p>	<p>1</p> <p>2</p> <p>3</p>	<p>Isolated areas of medium fertility</p> <p>Competing ground vegetation is generally that associated with poor sites although localised areas of bramble indicate increased fertility.</p> <p>More fertile conditions can lead to issues with competing vegetation. Apply appropriate vegetation management and/or manipulate upper canopy to reduce light levels reach forest floor.</p>
<p>Current species suitability:</p> <p>CP, LP, MCP, MAP, SP, SS, NS, HL, JL, WRC, JCR, GF, NF, ESF, PSF, WH, RSQ, LC, Birch. Big leaf maple, Beech, Ash, Oak, Sycamore, Alder, Aspen, Willow.</p>	1or 2 Suitable	Advanced natural regeneration already occurs across a range of conifer and broadleaf species, either as developing understorey where light levels are favourable or across clear fell sites.

With a combined score ranging between 3 and 4, initial analysis indicates significant parts of Kilburn and Oldstead achieve a Good site ranking for transformation to LISS. Remaining areas achieve Medium ranking with a score of 5.

### Stand Appraisal

Stand form - Overall stand form across the majority of conifer species is good and developing but more variable across broadleaf species.

Thinning history - Historically Thinning did not follow a regular cycle to help develop crowns that can act as potential seed bearers. During the period of the last plan, regular thinning has been carried out across the majority of conifer stands where threshold basal area has been reached, providing opportunities for subsequent selective thinning to improve crown development. The majority of 1<sup>st</sup> rotation broadleaf stands have been thinned. Currently there is good evidence that a range of conifer and broadleaf species are capable of developing through natural regeneration across sites.

The impact from *D.septosporum*, *D.micans* and *Chalara* on pine, spruce and ash species will need to be monitored as to how this might impact on future stand composition, depending on what the management objectives are for those sites.

Access - Although good infrastructure exists across the majority of the forest areas, there are areas where access is challenging. Thinning and LISS management will seek to maximise stand development where safe to do so.

On the basis of the above information, we will consider transformation to LISS for the majority of the block with the aim of increasing species diversity through enrichment planting using a range of species depending on site objectives.

Strip (between 20 to 25 m wide), Irregular and Group shelterwood (up to 0.6 ha in size) systems will be applied to a range of stand types where the felling of small coupes, will contribute toward the development of a diverse woodland.

Future wildlife management issues may arise where deer browsing could impact across strips as more palatable species are introduced. Site monitoring and adherence to the District Deer Management strategy will help inform future management.

The Forest Research ESC table below supports the range of target species considered for natural regeneration and those identified as very suitable (dark green) and suitable (light green) where enrichment planting will increase species diversity. For Kilburn and Oldstead, enrichment planting could consider the introduction of Corsican and Macedonian pine, Grand Fir, Norway, Oriental and Serbian spruce, Coast Redwood and Western red cedar across areas to be managed as productive, conifer dominant woodland and Common alder, Hornbeam and Pedunculate Oak for productive broadleaf dominant areas.







**Ecological Site Classification Report**

Cider gum	EGU			17	AT5							3(C)
Rowan	ROW			2	SMR							3.3(A)
True service tree	TST			0	SMR							3(A)
Wild service tree	WST			2	SMR							3(A)
Black walnut	JNI			0	SMR							3(B)
Common walnut	JRE			1	SMR							3(B)
Hornbeam	HBM			8	SMR							3(A)
Small-leaved lime	SLI			7	SMR							3(A)
Wych elm	WEM			7	MD							3(A)
Wild cherry	WCH			8	SMR							3(A)
Sweet chestnut	SC			0	SMR							3(A)
White willow	WWL			4	MD							3(C)
Holly	HOL			2	SMR							3(C)
Willow (SRC)	SRC			8	SMR							3(C)
Eucalyptus glaucescens (SRF)	SRF			14	SMR							3(C)

**Appendix 3 - Restock species by soil type**

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

<b>BOLD CAPITAL (Y)/BOLD INFILL COLOUR</b>	<b>Cat A Major species</b> - currently widely used with no supply problems and should continue to play an important role
<b>Bold, lower case italics (y), pastel infill colour</b>	<b>Cat B Minor species</b> - 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	<b>Cat C Secondary species</b> - 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

[source data](http://www.forestry.gov.uk/fr/treespecies) http://www.forestry.gov.uk/fr/treespecies

Refer to cell comments for specific species notes

**No planting where >0.5m peat depth**

Pacific coast associated forest cover - consider in mixtures as part of management by LISS					
DF	GF	WH	Law C	Coast R	ESF

Appendix 4 - Kilburn and Oldstead Forest Monitoring Plan			
Objective	Method	Frequency/Timings	Actions
<b>People</b>			
Maintain the woodlands contribution to the landscape character NYMNP Western Fringe character area. Clearfells will be designed so that their size and scale are in keeping with the surrounding landscape.	Fixed-point photography	Year 0 baseline, 5-year review, 10-year review.	Review visual impact of coupes within the landscape and adjust future coupe shape if necessary.
Continue to manage and provide for public access across this woodland, including the management of the car park facility.	Measured by FC systems	Year 0 baseline, 5-year review, 10-year review.	Review activity across the forest and wider District to measure activity and to provide insight into gaps and future opportunities through volunteering.
<b>Nature</b>			
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.	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.
	Review sample of Operational Site Assessments.	Annually	Provide feedback where management is not compliant with recommendations.
Maintain the cultural ecological heritage value of these woods.	Liaise with and review Historic England At risk Register, NYMNP shared monuments data, update Forester Web GIS Heritage module.	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.
Where practicable, manage stands through LISS regeneration felling, utilising natural regeneration and enrichment planting, particularly across areas of PAWS whilst targeting the retention of high-value Douglas Fir crops.	Update Forester Web GIS; subcompartment database	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in stand structure. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
<b>Economy</b>			
All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard.	Independent surveillance audit across the organisation.	Annually	Implement corrective actions as required.
	Independent surveillance audit across the District.	As per audit sample.	Implement corrective actions as required.
Maximise and maintain a sustainable supply of timber from a diverse range of site-appropriate conifer and broadleaf species	Update Forester Web GIS; subcompartment database, Operational Thinning Layer, Management Coupe Layer.	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.
<b>Site-specific</b>			
Clearfell coupes - ensure boundaries are accurately reproduced and within agreed tolerances as set out in Forestry Commission Practice Delivery Note 01 (FC PDN 01).	GPS unit or equivalent data recorders.	Upon completion of all harvesting activity.	If significant coupe variation, apply for appropriate amendment to FC as required as per FC PDN 01 prior to felling. Update Forester Web for completed clearfells.
Restock & Future Habitat Coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by planting and natural regeneration by year 5 since date of initial planting (allowing 2 years fallow for <i>hylobius</i> ).	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out beating up where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Restock & Future Habitat Coupes - Mixed broadleaf habitat. Establish at least 1100 broadleaf stems per ha through natural regeneration by year 10 since date of felling.	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
LISS coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by year 10 after final removal overstorey.	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Continue the reduction of Larch as a component within mixed stands, consider group felling/small scale regenerative felling in pure stands.	Update Forester Web GIS; subcompartment database	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. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Increase rhododendron control especially within or adjacent to Larch crops	On-site visual assessment and monitoring	As recordable changes occur within the forest environment.	Review activity across the forest and wider District to measure activity and to provide insight into gaps and future opportunities through volunteering.
Wildlife management - Identify problem sites where mammal damage is affecting crop establishment or degrading woodland flora.	On-site stocking density plot surveys. Damage, Impact and Activity Assessments as set out in YFD Deer Management Strategy.	To be informed from results of beat-up surveys between years 1 to 4 and year 5 stocking assessment, internal guidance OGB4.	Target deer control in line with District strategy.
<b>Plan specific</b>			
Forest Plan mid-term review. Review the plan's aims and objectives and the progress of their implementation.	Apply a variety of measures as described in the above table.	2028	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 Forestry England 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 <sup>7</sup>	Delayed restocking - including natural regeneration	Species choice	Tree health
<b>Formal assessment and approval by FC area team required</b>	>25% of the coupe area	Where changes to the felling sequence is likely to result in a significant breach <sup>1</sup> of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling such as: <ul style="list-style-type: none"> <li>regeneration felling</li> <li>strip felling<sup>2</sup></li> <li>clear felling</li> </ul> and where ≥50% of standing tree volume is to be removed	Individual work area that is either: <ul style="list-style-type: none"> <li>&gt;5ha of standing trees associated with wind-blow areas</li> </ul> or <ul style="list-style-type: none"> <li>Proposals result in cumulative additional felling<sup>8</sup> affecting &gt;20% of the Forest Plan area<sup>9</sup></li> </ul>	N/A – dealt with via FC Area team approval (below)	From mixed, predominantly broadleaves to predominantly conifer	Where no SPHN is issued but felling of ≥65% standing tree volume is required in response to a plant health issue
<b>Written approval only required from FC area team<sup>3</sup></b>	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach <sup>4</sup> of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling where between 30%-50% of standing tree volume is to be removed such as: <ul style="list-style-type: none"> <li>regeneration felling</li> <li>strip felling</li> </ul> or <ul style="list-style-type: none"> <li>From lower intensity regeneration felling to higher intensity regeneration felling, (as defined by the felling operation hierarchy<sup>5</sup>) where &lt;50% of standing tree volume is to be removed</li> </ul>	Individual work area that meets both the criteria: <ul style="list-style-type: none"> <li>1-5ha of standing trees associated with wind-blow areas,</li> </ul> (Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of ≥5ha of standing trees associated with wind-blow areas) <ul style="list-style-type: none"> <li>and</li> <li>Proposals result in cumulative additional felling<sup>8</sup> affecting &lt;20% of the Forest Plan area<sup>9</sup></li> </ul>	<b>Planting:</b> <ul style="list-style-type: none"> <li>Where this is ≥ 4 planting seasons from the date of felling.</li> </ul> <b>Natural regeneration:</b> <ul style="list-style-type: none"> <li>where necessary intervention to secure natural regen is not implemented within 4 full planting seasons from date of felling</li> </ul>	Deciduous conifers to predominantly evergreen conifers	Where no SPHN is issued but felling between ≥50% and < 65% of standing tree volume is required in response to a plant health issue
<b>No formal or written approval by FC area team required<sup>6</sup></b>	< 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 strip felling, shelterwood or regenerative felling systems, or thinning <ul style="list-style-type: none"> <li>or</li> <li>From more severe regeneration felling to less severe regeneration felling as defined by the regeneration felling hierarchy<sup>5</sup></li> </ul>	<1ha of standing trees associated with wind-blow areas <ul style="list-style-type: none"> <li>(Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of 1ha-5ha of standing trees associated with wind-blow areas)</li> <li>and</li> <li>Proposals result in cumulative additional felling<sup>8</sup> affecting &lt;10% of the Forest Plan area<sup>9</sup></li> </ul>	For any changes to the timing of restocking where this occurs <4 full planting seasons from the date of felling	Any other changes	Where an SPHN is issued <ul style="list-style-type: none"> <li>Or</li> <li>Thinning / regenerative felling &lt;50% of standing tree volume is required in response to a plant health issue</li> </ul>

<sup>1</sup> Greater than 20% of the coupe boundary

<sup>2</sup> Felling strips with a width ≤ 1.5 x treelengths, with a length appropriate to site constraints.

<sup>3</sup> Approval letter retained for compliance inspection purposes.

<sup>4</sup> 20% or less of the coupe boundary

<sup>5</sup> Lower impact operation to higher impact operation hierarchy: thinning, selection system, uniform shelterwood, irregular shelterwood, group shelterwood, strip felling, clear felling.

<sup>6</sup> District must keep all **assessment and decision-making** records in respect of amendments for **audit purposes** and compliance inspections

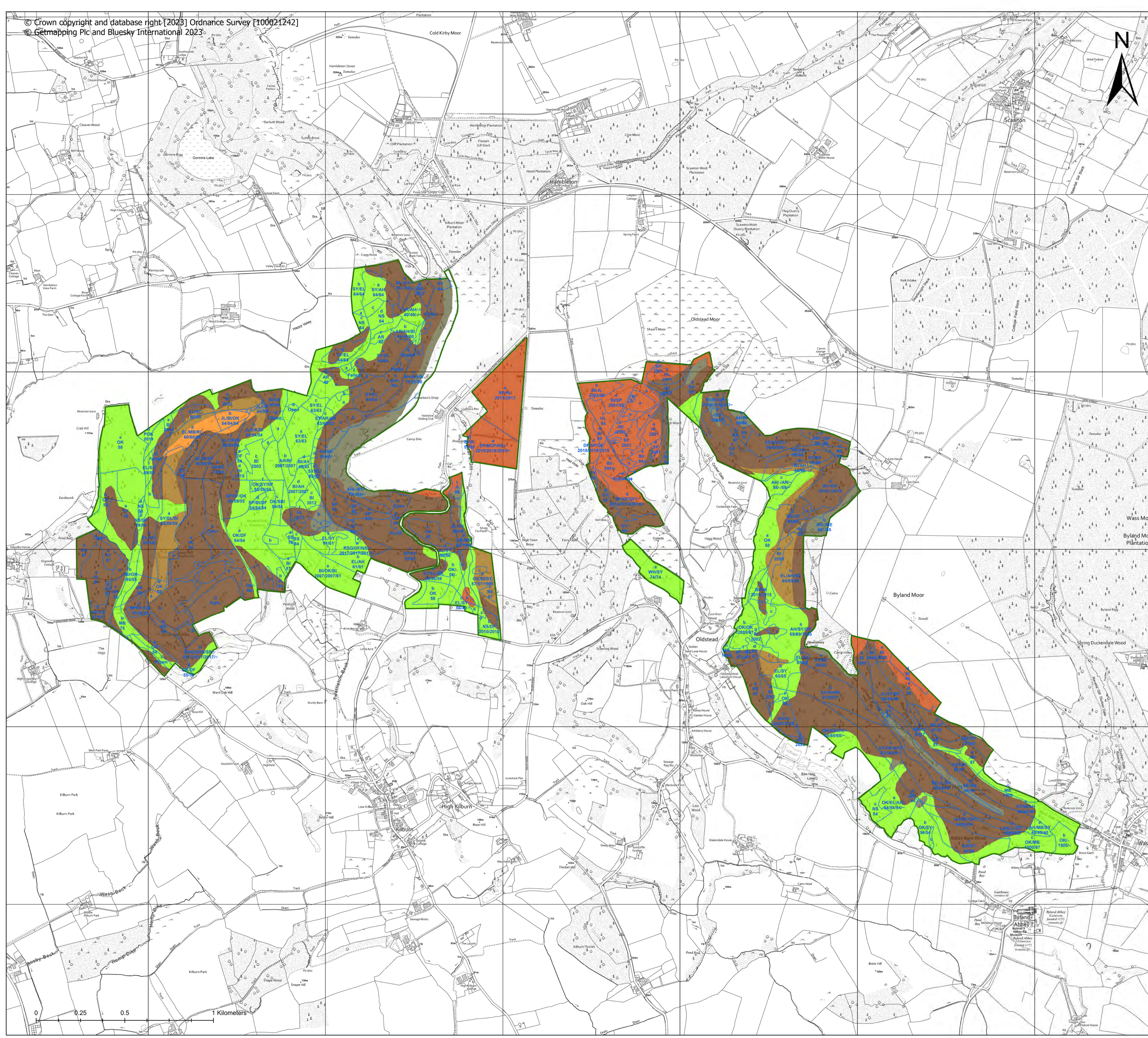
<sup>7</sup> Operations remain subject to other approvals for sensitive areas (e.g. SSSI, SAM etc). Subject to agreement of this tolerance table by relevant protected landscapes.

<sup>8</sup> Cumulative additional felling = 5 year rolling total area of growing trees felled (excludes dead and completely windblown trees) that were not approved for felling within the relevant felling period, in the initial approved Forest Plan. This includes both FS approved amendments and felling below thresholds. The intention is to identify instances where events result in more substantial shift in management requiring increasing need for review of forest plan proposals.

<sup>9</sup> For Yorkshire Forest District the "Forest Plan Area" will be utilized rather than "Forest Management Unit" when considering cumulative impact.








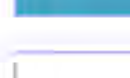
Kilburn & Oldstead Forest Plan  
FP Map 01 - Soils  
Scale: 1:10,000  
When Printed @ A1  
Created: July 2023

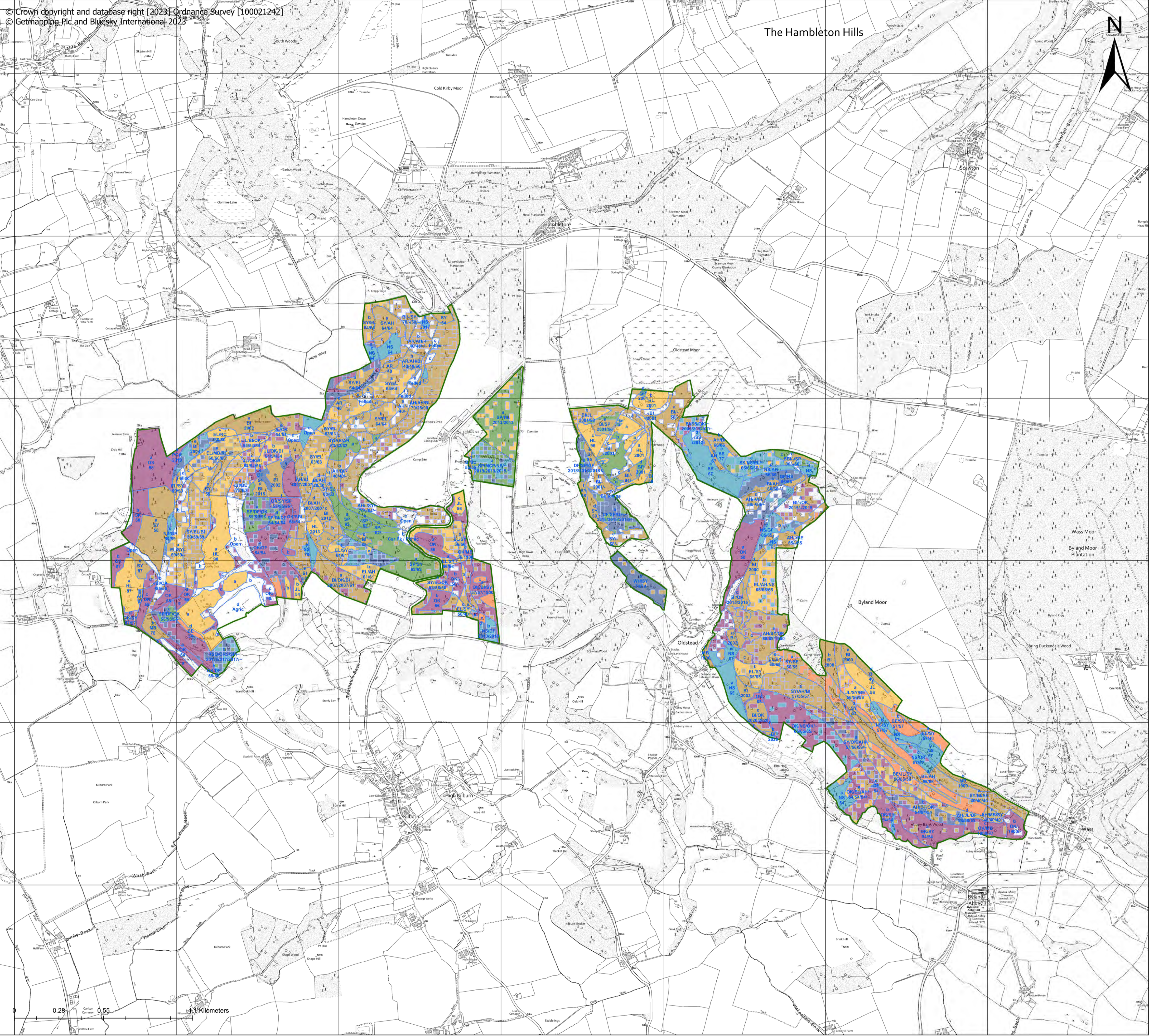
- Typical Brown Earth
- Podzolic Brown Earth
- Typical Podzol
- Ironpan Soil
- Typical Surface-Water Gley
- Scree





Kilburn & Oldstead Forest Plan  
FP Map 02 - Current Species  
Scale: 1:10,000  
When Printed @ A1  
Created: July 2023

-  Beech
-  Larch
-  Oak
-  Other Broadleaves
-  Other Conifers
-  Pine
-  Spruce
-  Open, Felled etc

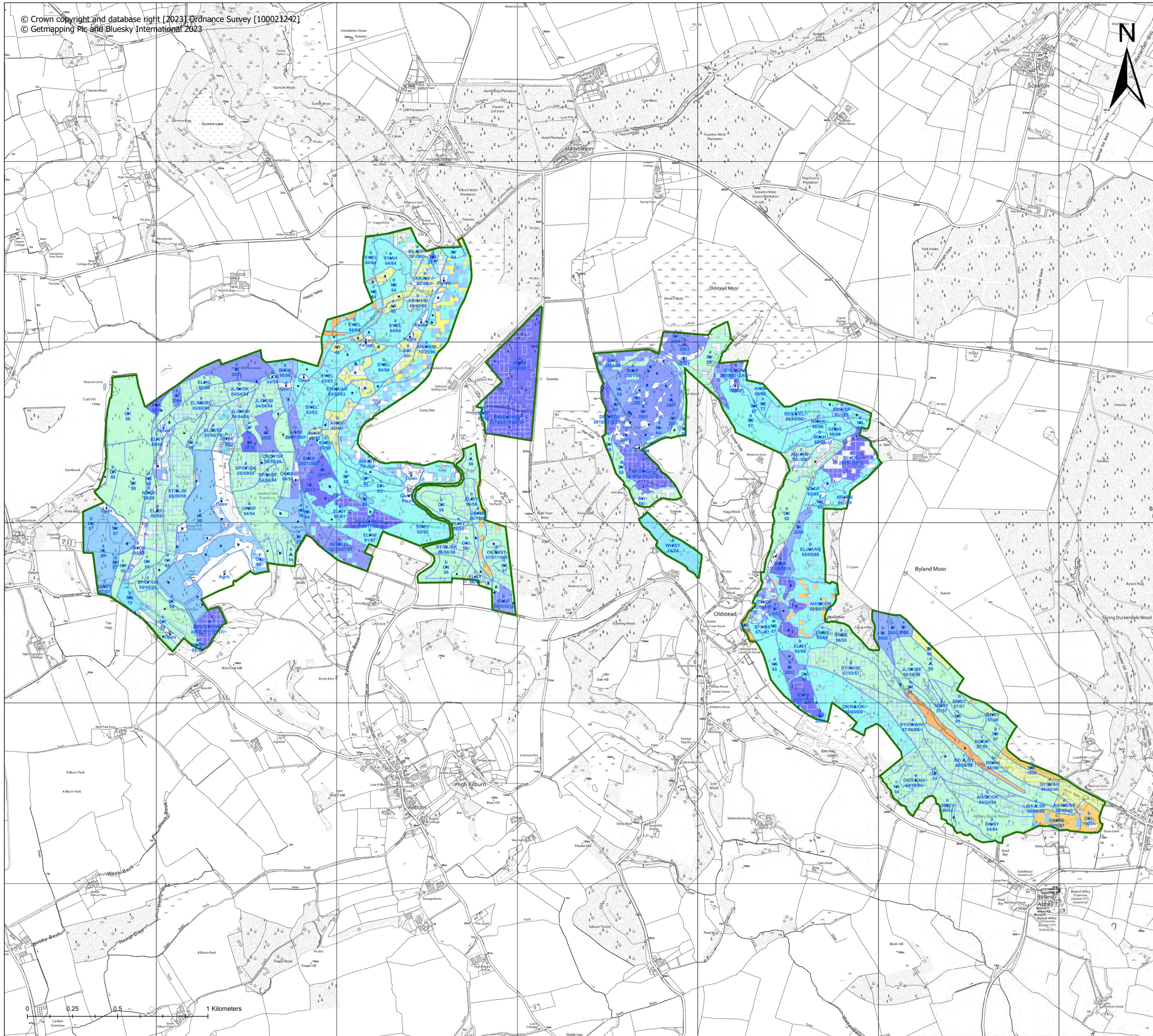
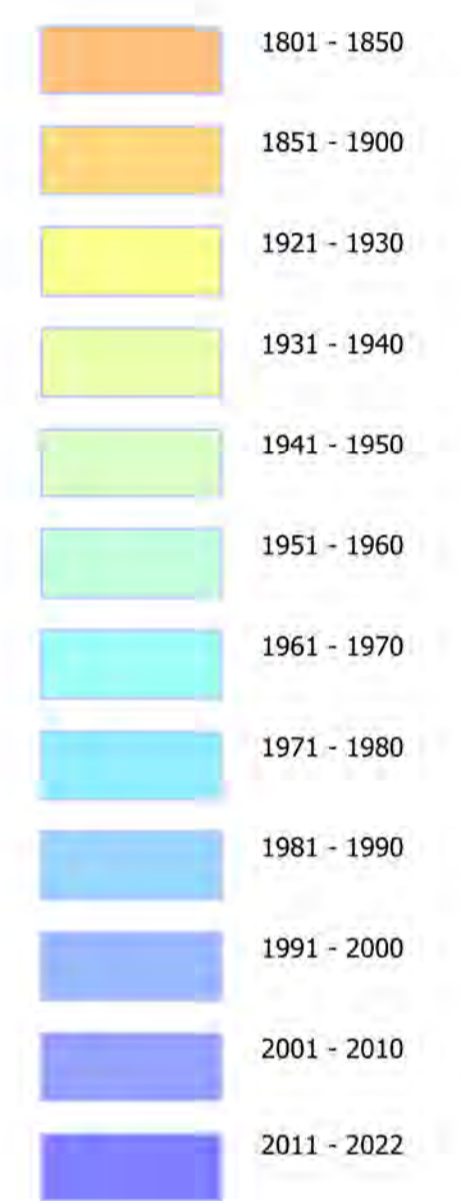


Kilburn & Oldstead Forest Plan

FP Map 03 - Age Class

Scale: 1:10,000  
When Printed @ A1

Created: July 2023





Kilburn & Oldstead Forest Plan  
FP Map 04 - Management Information  
Scale: 1:10,000  
When Printed @ A1  
Created: July 2023

-  Kilburn/Oldstead Block
-  Overhead powerline
-  Public Right of Way
-  Watercourses
-  Waymarked Walk
-  Heritage
-  Scheduled Monument
-  Ancient & Semi-Natural Woodland
-  Ancient Replanted Woodland

**Proposed Harvesting Map**

The map shows how we intend to manage tree felling in Kilburn & Oldstead in order to meet the multiple objectives of management there.

**Clearfells**

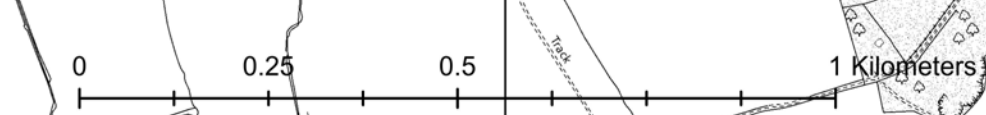
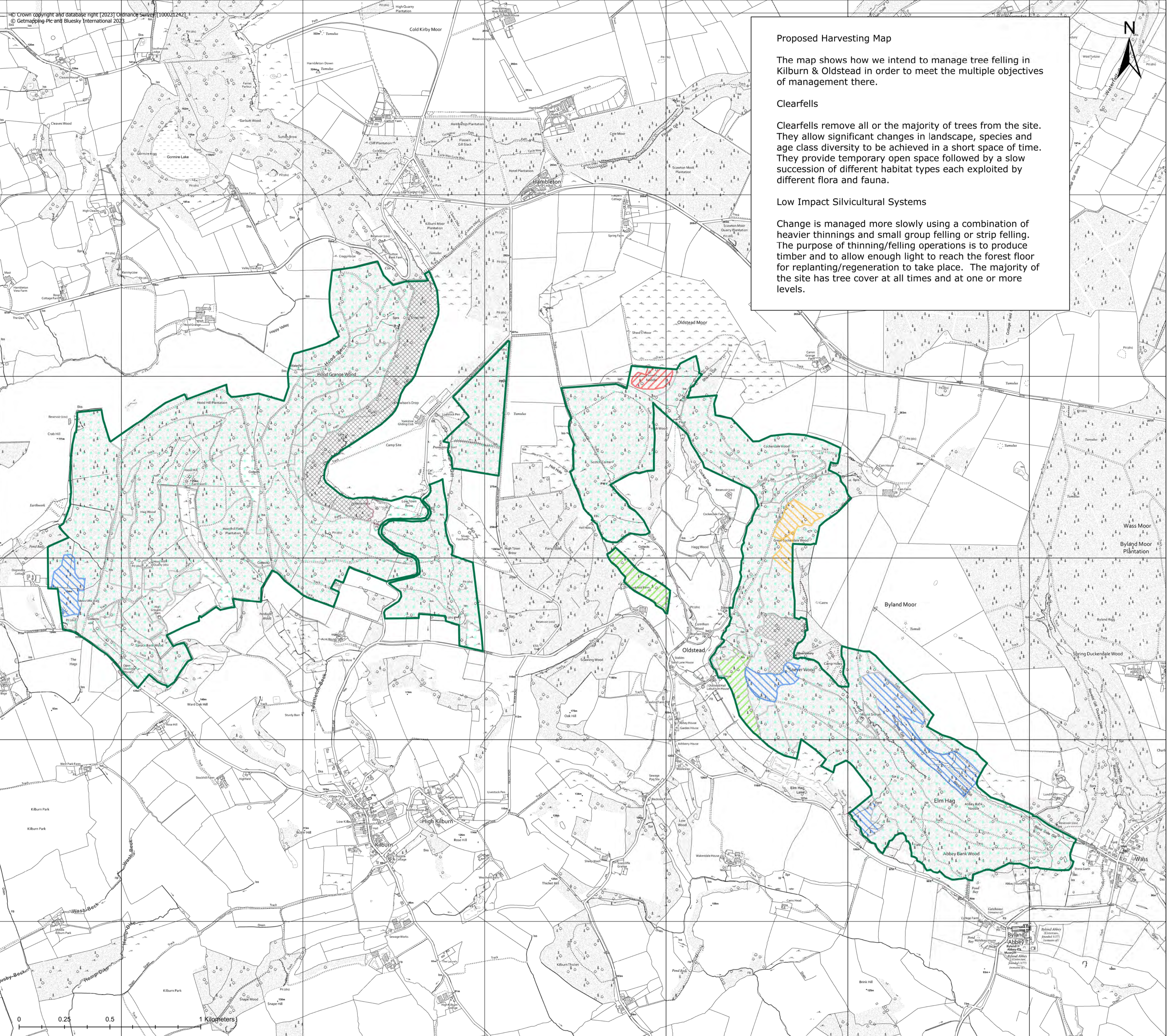
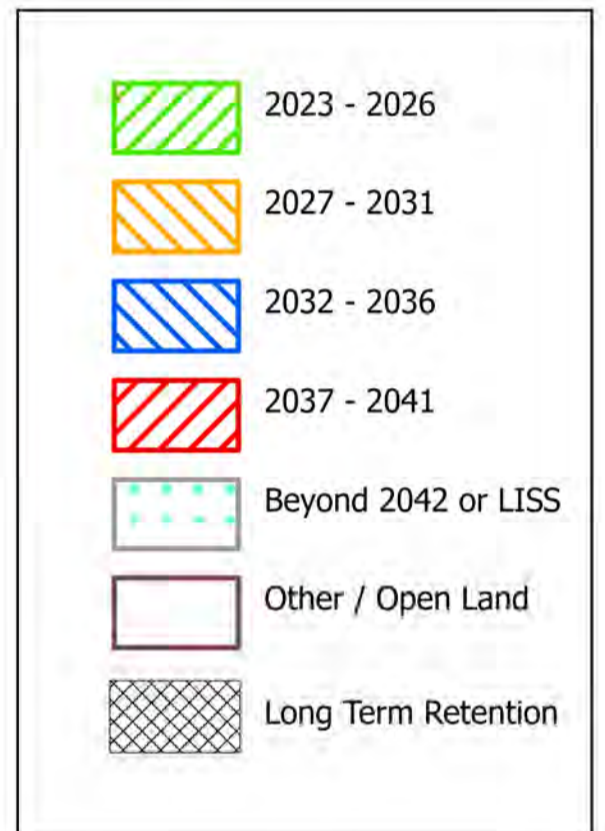
Clearfells remove all or the majority of trees from the site. They allow significant changes in landscape, species and age class diversity to be achieved in a short space of time. They provide temporary open space followed by a slow succession of different habitat types each exploited by different flora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

**Low Impact Silvicultural Systems**

Change is managed more slowly using a combination of heavier thinnings and small group felling or strip felling. The purpose of thinning/felling operations is to produce 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.



**Kilburn & Oldstead Forest Plan**  
 FP Map 05 - Proposed Felling  
 Scale: 1:10,000  
 When Printed @ A1  
 Created: July 2023



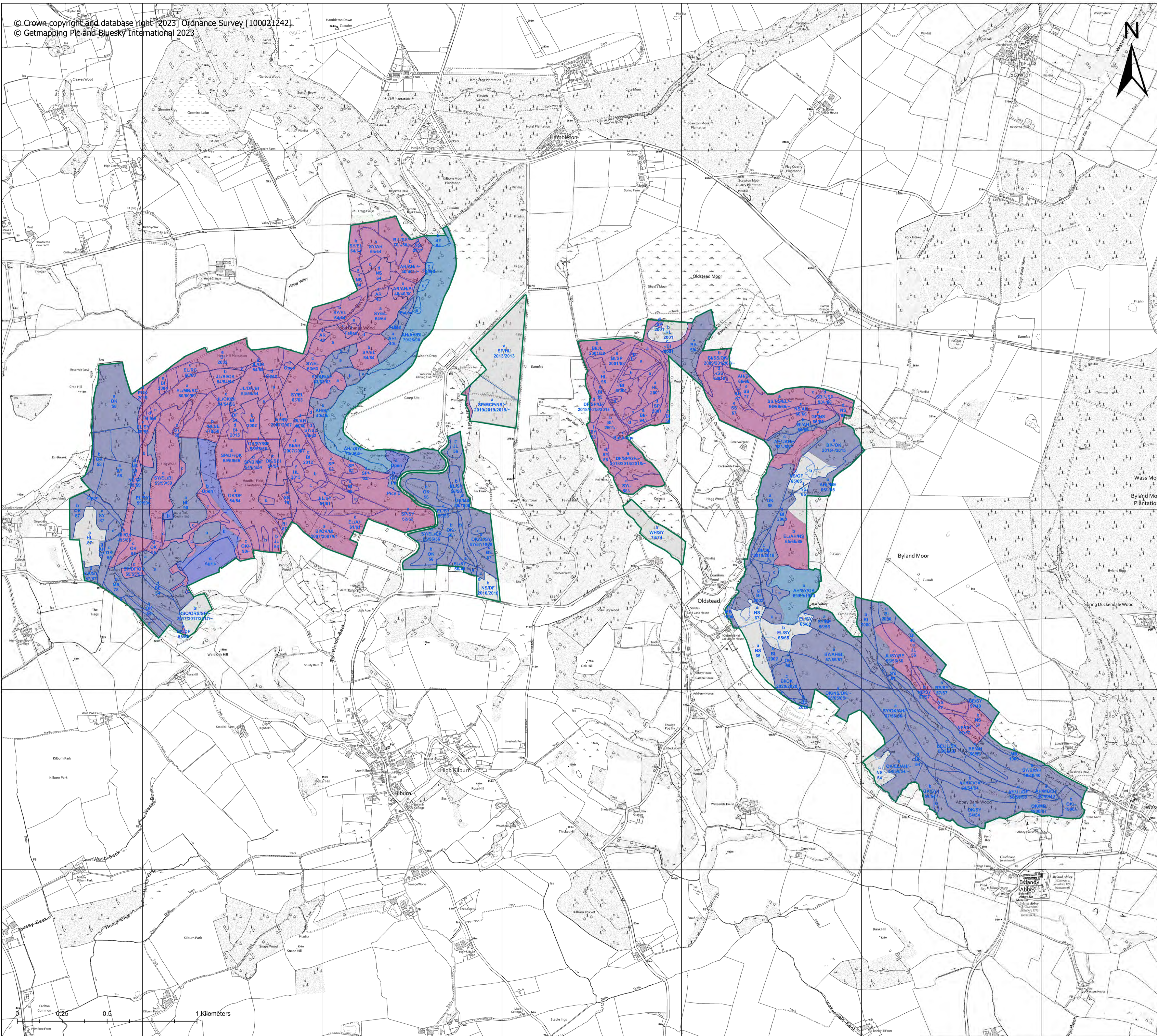
All timber arising from the Forestry England estate represents a negligible risk under the Timber and Timber Products Placing on the Market Regulations (UKTR) and UK FLEGT Regulations

Kilburn & Oldstead Forest Plan  
FP Map 06 - Management Type

Scale: 1:10,000  
When Printed @ A1

Created: July 2023

-  Clearfell
-  Group shelterwood
-  Irregular shelterwood (general)
-  Natural Reserve
-  Other/Open Land



0 0.25 0.5 1 Kilometers



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



The maps shows the main species group 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.

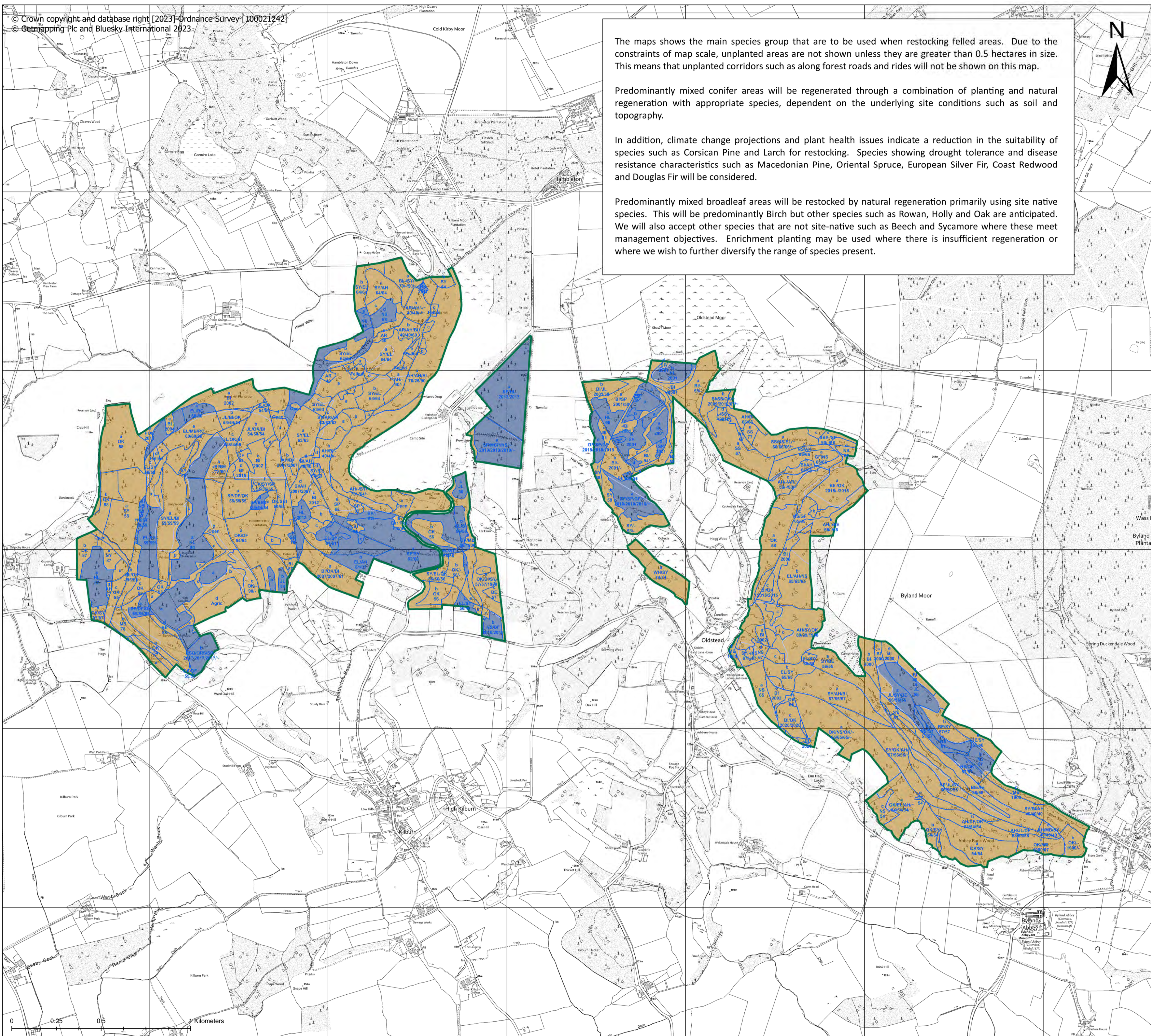
In addition, climate change projections and plant health issues indicate a reduction in the suitability of species such as Corsican Pine and Larch for restocking. Species showing drought tolerance and disease resistance characteristics such as Macedonian Pine, Oriental Spruce, European Silver Fir, Coast 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.



Kilburn & Oldstead Forest Plan  
FP Map 07 - Future Habitat & Restock  
Scale: 1:10,000  
When Printed @ A1  
Created: July 2023

-  Predominantly Mixed Broadleaf
-  Predominantly Mixed Conifer



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

\* The introduction of alternative conifer species such as Macedonian pine, Grand fir and Coast redwood, will be considered for restocking where conditions are suitable. In addition, site-improving broadleaf species such as Aspen and Alder may be included as a component of productive mixed species.

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

Forest landscape character is strongly influenced by the undulating landscape, steep-sided escarpment of Roulston Scar and by the slopes below and the flat arable land that makes up Byland Moor.

\* Continue to design clearfell coupes that respond to landform and increase structural diversity, moving away from even-aged, single species crops to uneven aged, mixed conifer/broadleaf woodland.  
\* Manage remaining areas using lower impact, alternative to clear fell systems, increasing structural and species diversity.

Hood Hill (the site of 12th Century Castle) and the Kilburn White Horse are key features of the forest within the wider landscape.

\* Operations will be planned to sensitively maintain the contribution made by these features to the landscape.






Restoration and maintenance of ancient woodland sites that are resilient to potential threats from climate change remains a priority objective across the forest.

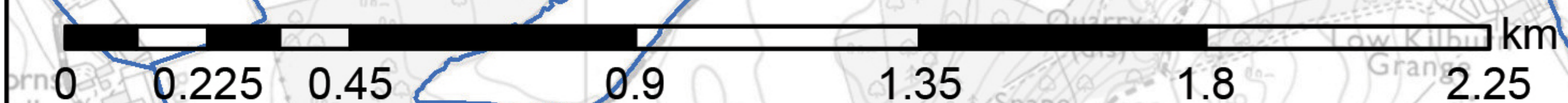
\* Conifer stands will be restored to native species by a combination of felling, thinning, natural regeneration and reducing the negative impacts of invasive species. Enrichment planting will be carried out where primary species are unlikely to become established through natural regeneration.

\* Where practicable, ancient woodland sites will be buffered by converting adjacent conifer stands to predominantly mixed broadleaf woodland.

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

Legend

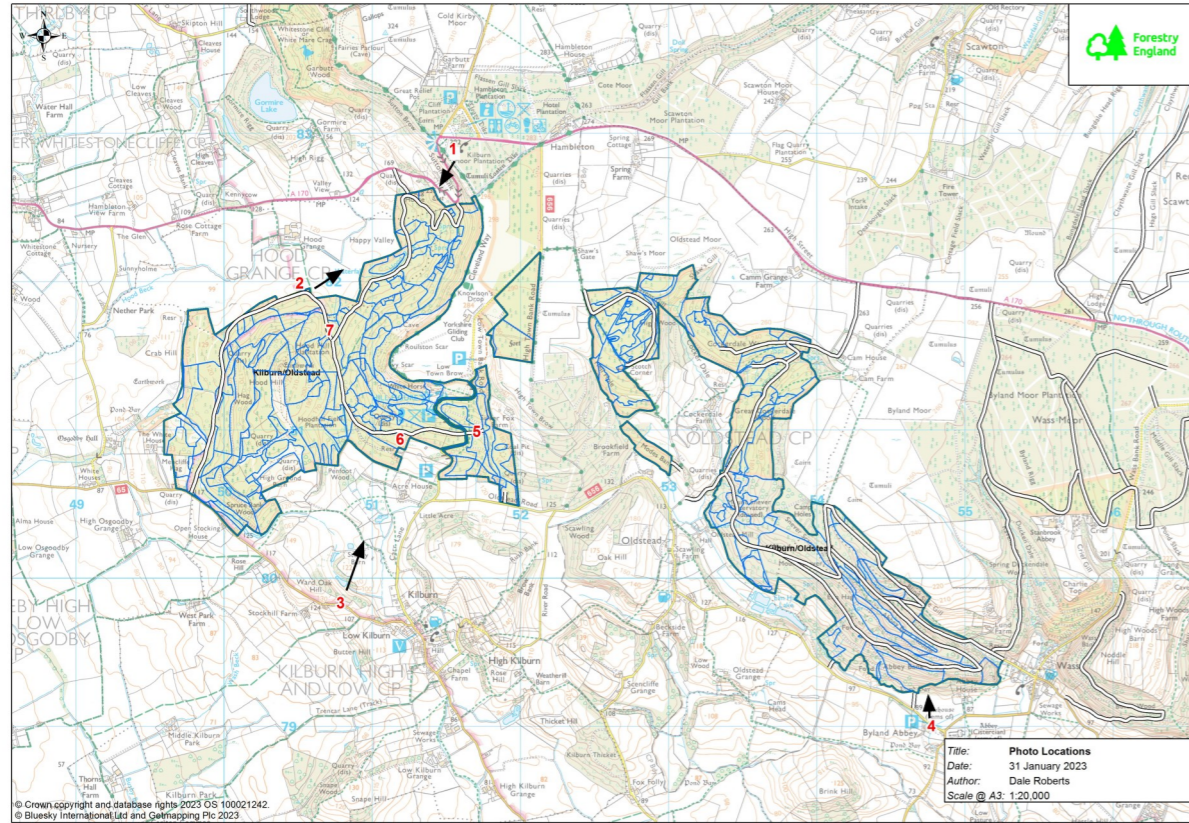
-  Manage as predominantly mixed broadleaf
-  Manage as predominantly productive mixed conifer
-  Ancient & Semi Natural Woodland
-  Ancient Replanted Woodland
-  Watercourses and riparian habitats



# Forest Design Plan

## Kilburn and Oldstead

### External Photographs



1— SE 5154 8281

View from near Sutton Bank on the Cleveland Way showing the prominent Hood Hill and the dominant escarpment that is the eastern boundary of Kilburn Forest.



2 — SE 5061 8194

View of western edge of Kilburn demonstrating how the forest sympathetically sits within the landscape and form an integral part of the landscape character



3— SE 5075 7982

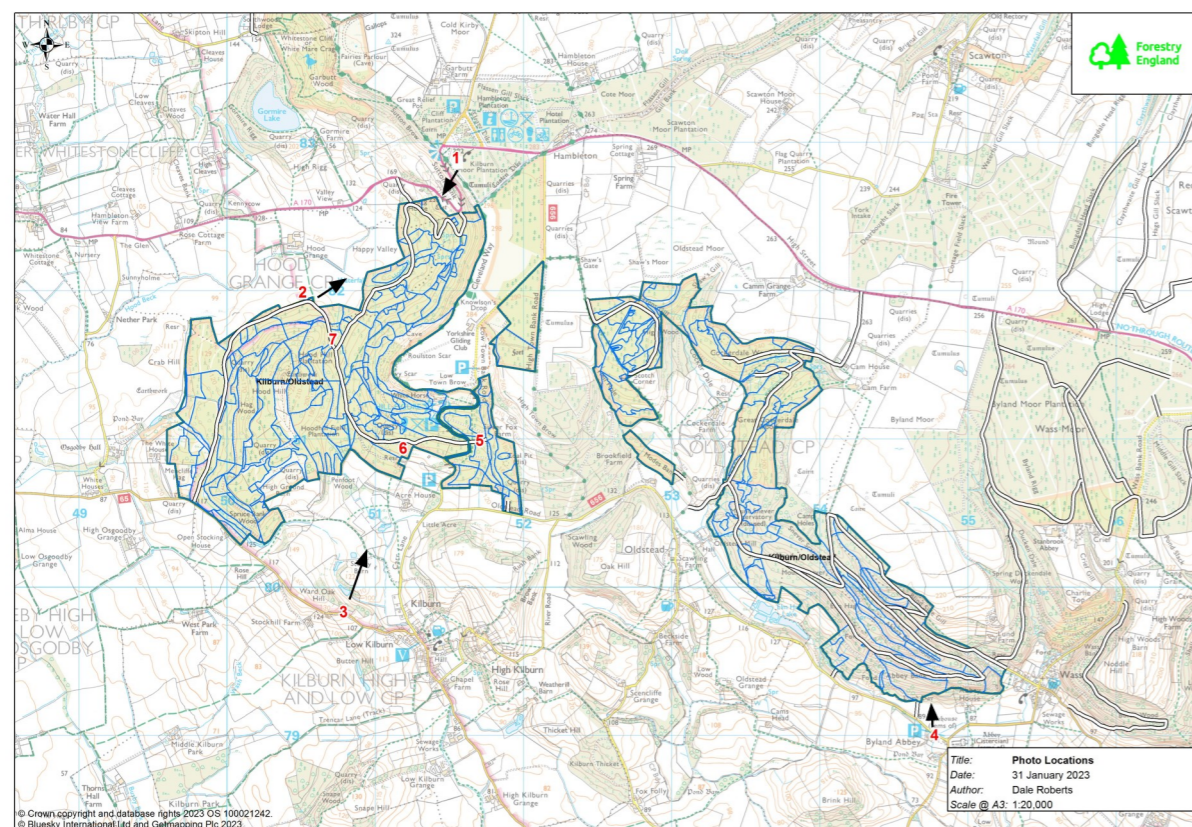
View towards Kilburn White Horse across agricultural fields, demonstrating how the forest forms an integral part of the landscape character

4— SE 5472 7906

View towards Abbey Bank Wood adjacent to agricultural fields, demonstrating how the block forms an integral part of the landscape character



**Forest Design Plan**  
**Kilburn and Oldstead**  
**Internal Photographs**



5 — SE 5164 8098

A typical internal view of Lower Impact Silvicultural System (LISS) management of mixed species stands that has taken place across Kilburn and Oldstead



6 — SE 5116 8099

A locally typical example of LISS associated regeneration felling showing good development, enhancing species and structural diversity, whilst maintaining landscape sensitivity across both Kilburn and Oldstead.



7 — SE 5070 8166

An internal view towards the escarpment demonstrating typical diversity of species and landscape sensitivity