**Note 1**: These records are drawn from a database of all reports of all *breeding season* birds submitted by volunteer and professional surveyors, as casual records or as part of effort based surveys. It should be treated as indicative, and not an absolute or definitive assessment of priority woodland birds within locality. **Note 2**: These records provide an overview of bird abundance and proximity to the application area, however, many have specific habitat needs it should not be taken that they will automatically benefit from the

**Note 3**: Garden warbler and willow warbler not included in records database but are priority species in EM woodland bird project.  $\checkmark$  means they are likely to benefit from the proposed management.

application

#### **North York Moors**

#### **Ingleby Greenhow Forest Design Plan**

#### **FDP 11**

#### May 2011

Outgang Road Pickering North Yorkshire YO18 7EL 01751 472771



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#### **APPENDICES**

1. Consultation Record

#### **Ingleby Greenhow**

546.8 Ha



#### Period of Plan: 2011 - 2021

#### 1. Background

Ingleby Greenhow is located along the northern scarp of the Cleveland Hills, south of Great Broughton and Ingleby Greenhow villages, on the edge of the North York Moors National Park. It lies on a steep curving hillside above a relatively flat plain, and has acquired prominence in the local landscape.

#### 2. Describing the Site

#### 2.1 Geology and Soils

The underlying geology is of oolitic sandstone and shale, with mudstone and boulder clay deposits on the lower slopes and thin limestone beds.

At Botton Head, jet-mining exposure of Jurassic shale's has revealed plant material in the sediment layers. Remains of conifers and cycads amongst others from the middle Jurassic were reason enough for the site to be designated as a SSSI.

Soils are predominantly brown earth across the mid to upper slopes that become skeletal, stony soils along the scarp slope and gleys on the lower slopes where drainage is impeded. There are also extensive areas of mining spoil at the surface associated with its industrial past. The majority of this block has a medium nutrient status with a moist to very moist moisture regime. As a consequence the soils currently support a wide range of productive conifer and broadleaf species.

In common with other woods along this scarp, Ingleby Greenhow has areas that are challenging for forestry operations. Harvesting becomes expensive on the steeper slopes, where there is a machine-limitation compounded by surface rockiness.

#### 2.2 Tree Species

Pine and spruce are the dominant species groups at 24% and 21% respectively of the overall area, distributed across all soil types. Larch and broadleaf species are the next largest species groups, accounting for 16% and 13% by area. Hemlock, cedar and fir species are minor components.



Over the last Design Plan period, broadleaf species have increased from 9% to 13% of the overall area, with birch forming the main component. Other broadleaves include ash, alder, beech, birch, oak and sycamore.

#### 2.3 Wind Damage

Windthrow hazard measurements indicate the wood is relatively windfirm ranging from WHC 1 to 4, although on the upper slopes and badly gleyed soils tree stability is less certain. Recent significant windblow events across Battersby Plantation and Greenhow Moor in 2005 support the latter. In light of this, management options may be restricted with regard to practising Continuous Cover Forestry and extending the rotation age of productive conifer crops.

#### 2.4 Landscape

Ingleby Greenhow is situated in the Cleveland Hills, Upland Fringe landscape character area on the scarp between the Cleveland Hills plateau and the plain to the north. Over its 12 kilometre length it is never more than 650 m wide, and is often much narrower. It occupies the entire slope in places although more commonly up to a quarter of this was never included in the original purchase. The aspect varies from northerly to westerly and the wood is often in the shade of the hill slope, providing back-lit conditions.

Although predominantly coniferous in character, following recent management and conversion to broadleaf species it is becoming more mixed, particularly around Clay Bank and the upper margins of Battersby Plantation. Awkward species boundaries are masked to a certain degree by the back-lit conditions at Broughton Bank but the boundary between forest and open hill is harsh and artificial in places. Recent felling and restructuring along the forest edge has reduced this negative landscape impact, especially along Battersby Plantation/Greenhow Bank.

#### 2.5 People and Community

The car park at Clay Bank provides a starting point for a large network of pathways: some formal FE paths, a number of rights of way, and more general access to the surrounding woodlands.

The Cleveland Way long-distance footpath passes along the top of the scarp slope above the woodlands, and there are a number of green lanes passing through the forest.



The incline track, along which the Rosedale Railway down Greenhow Bank once ran, is now one of many popular bridleways passing through the woodland and enjoyed by walkers, horse-riders and pedal cyclists. Concessionary bridleway access is also highly valued by the community, with the strategically important link west from Clay Bank to Kirby Bank being particularly valued by horse-riders

Although registered as open access under CROW legislation, potential for an increase in recreational use and facilities is limited.

#### 2.6 Natural Heritage

The woods are predominantly secondary plantation conifer/broadleaf woods, although 69 hectares of low-lying land associated with alder carr and ash woodland are designated as Plantation on Ancient Woodland Site (PAWS). In addition, there are a small number of ancient veteran oaks recorded across the site.

There are two SSSI/SAC/SPA sites across the forest. Botton SSSI cuts across compartment 1057 and part of the North York Moors SSSI/SAC/SPA across compartment 1058. Broughton Bank SSSI and parts of North York Moors SSSI/SAC/SPA lie contiguous to the majority of the upper boundary.

Records indicate a wide range of breeding bird species utilise the woodland habitat at Ingleby Greenhow. Several of these are identified as priority woodland bird species including Lesser spotted woodpecker, Woodcock, Willow and Marsh tit, Bullfinch, Garden warbler and Tree pipit.

The recent creation of wetland areas and ponds has developed favourable habitat conditions for a range of amphibious and reptilian species.

#### 2.7 Cultural Heritage

Although there are no scheduled ancient monuments recorded at Ingleby Greenhow, there are numerous records associated with the sites industrial past linked to stone quarrying and jet mining.



#### 3. Describing the Project

#### 3.1 Project Brief

- increase the proportion of native broadleaf cover, particularly across areas of PAWS and the upper slopes adjacent moorland SSSI
- increase the diversity of the age structure by adjusting current felling patterns throughout the wood and enhance external and internal edges
- consider the selection of alternative main tree species that will contribute toward a greater range of species diversity to maintain or increase timber productivity
- manage designated sites in accordance with statutory requirements as per agreed management plans

#### 3.2 Objectives

- Conserve ancient and veteran trees and continue the restoration of PAWS to native dominant woodland, to be measured by the sub-compartment database.
- Ensure SSSI's are maintained in target condition, to be monitored through liaison with Natural England.
- Maximise and maintain a sustainable supply of timber from site-appropriate conifer and broadleaf species, to be measured by the Production Forecast and Sales Recording Package.
- Increase the woodlands contribution to the Cleveland Foothills Upland Fringe landscape character area where upland margins appear blocky. To be measured by fixed-point photography.

#### 3.3 Constraints

- inadequate roading infrastructure restricts access for harvesting timber across parts of the forest
- steep slopes and rocky terrain reduces economic viability of managing and harvesting upper reaches of the scarp slope



- previous scale of felling coupe design and recent windblow clearfells create issues of adjacency for future felling
- projected climate change scenarios and forest pest and diseases are likely to challenge future tree species choice



#### 3.4 Implementation

#### 3.4.1 Conservation

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

Archaeological sites

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

#### Ecological sites

All work sites are surveyed prior to any operations 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 Ingleby Greenhow this will include:

- Managing Veteran trees and PAWS as set out in 'Ancient Woodland on the Forestry Commission Estate in England (March 2002)'
- Maintain designated sites in favourable condition. Reference will be made to site-specific management plans where these identify particular management issues that need to be addressed. Major restoration of North York Moors SSSI/SAC/SPA from conifer woodland to upland heath at compartment 1058 is planned to start 2023.
- Increase the diversity of species and age structure that will maintain and improve favourable habitat for identified target species.

#### 3.4.2 Timber Harvesting

We will continue to sustainably harvest timber both from clearfell and thinnings, and where appropriate 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 Ingleby Greenhow.



#### 3.4.3 Landscape

The woods at Ingleby Greenhow lie within the North York Moors National Park, a designated landscape. Views are varied, ranging from middle distant views of Battersby Plantation from Clay Bank car park and nearby settlements of Great Broughton and Ingleby Greenhow to the shade covered slopes of Broughton Bank. Clear views of the latter are often masked due to the back-lit conditions created by its aspect. With several public rights of way and open access designated under CROW legislation, woodland views are experienced by all who walk along or within the forest area.

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

In part, the previous design was deemed to present logistical problems due to the small-scale nature of some of the felling coupes, and the lack of internal windfirm boundaries resulting in subsequent windblow. Clearfell areas have been designed to rationalise previous coupes 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 the clearfell system produces will enhance both external and internal views of the woodlands.

The adoption of Continuous Cover Forestry (CCF), principally at Clay Bank, will contribute toward the creation and retention of species and structurally diverse woodlands within the landscape. Previously designated areas of CCF at Broughton Bank are back reverted to clearfell due to the lack of sustainable access.



#### 3.5 Plan

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 in the fell and restock maps.

#### 3.6 Areas

#### 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 A1 Forest Design Plan folder.

Folling	Area besteres	% of total area
Felling	Area - hectares	
2011 – 2016 Clearfell	85.90	16
2017 – 2021 Clearfell	51.24	9
Continuous Cover	99.00	18
Minimum Intervention	39.46	7

#### 3.6.2 Breakdown of constituent areas.

A management information map showing the location and detail of the constituent areas can be found in the A1 Forest Design Plan folder.

Habitat type (based on principal species planted)	Area – hectares	%age of total area
Conifer	209.78	38
Broadleaf	254.33	47
Temporary open space (clearfell)	38.00	7
Heathland, and planned open areas	44.44	8



#### 3.7 Methods / Forest Operations

#### 3.7.1 Planning

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

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

#### 3.7.2 Standards

All operations within the forest will be carried out according to guidance contained in the U.K Forestry Standard, the U.K. Woodland Assurance Scheme, and will adhere to the guidance given in the Forestry Commission Guideline Publications (Forests and Water, Forests and Archaeology, Forest Nature Conservation, Forest Recreation)

#### 3.7.3 Harvesting

The majority of the timber is likely to be sold standing and then contractors will be employed by the purchaser to carry out the work. Staff from both the timber buyer and the Forestry Commission will monitor work through regular site visits to ensure all guidelines and contract conditions are adhered to.

#### Clearfell V's Continuous Cover Forestry

All plans are required to consider lower impact silvicultural systems (LISS) in windfirm conifer plantations as opposed to traditional clearfell systems. This decision is based upon the methodology provided in FC Information Note 40 – 'Transforming Even-aged Conifer Stands to Continuous Cover Management'.

At Ingleby Greenhow, challenging topography and fertile soils precludes the choice of LISS for the majority of current and successor stands. However, LISS will be considered at Clay Bank as part of the long-term restoration of conifer



PAWS to site native species, and other areas being restored to broadleaf woodland. The continuation of clearfell sites provides favourable conditions for breeding Nightjar.

#### 3.7.4 Haulage

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

All timber traffic will be managed in line with the Road Haulage of Round Timber Code of Practice (2003), which aims to improve the safety and environmental standards of the timber haulage industry.

#### 3.7.5 Restocking

Conifer

The areas of clearfell in the design plan will be replanted to diversify species and age structure and 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. At Ingleby Greenhow this will include Douglas fir across the deeper brown earth soil types and Lodgepole pine (of a suitable provenance) alongside Scots pine across the shallower, skeletal soils.

Although identified as suitable by ESC, Corsican pine is no longer considered appropriate for restocking due to forest health issues and there are concerns regarding the long term sustainability of larch. Although larch will no longer be restocked in pure stands, it will still be planted in mixture with other conifers at no more than 25%. Western hemlock is not appropriate for restocking due to its poor timber quality and its invasive nature through natural regeneration. This is a particular issue adjacent to ASNW and conifer PAWS restoration sites.

Although Sitka spruce is considered unsuitable by ESC at the 2080 high scenario, it will continue to be used on gleyed, water receiving sites at the foot of the scarp slope where predominantly westerly and northerly aspects prevail. It is felt that localised conditions that reduce the impact of moisture deficit values will allow the retention of this species across these sites.

Unless restocking conifer sites with single species, reference to Mixed Conifer on the Restock Map will be used to describe those areas where a range of species will be planted across the site as follows:



Lower to mid slope- SS (gleys), DF/HL (brown earths)Mid slope- DF, SP, HLMid to upper slope- SP, LP, HL

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

The continuous cover areas will be managed to encourage natural regeneration, although enrichment planting may be considered if regeneration is not successful or to further diversify the current range of species.

Other minor species will be grown where these currently exist through CCF management i.e. NS/GF/NF or may be considered for species diversification i.e. Macedonian pine/Oriental spruce/Coast redwood.

Natural regeneration across clearfell areas will be assessed and the risk it poses to the objectives of the plan considered as to its retention or removal.

#### Broadleaf

The PAWS at Ingleby Greenhow range from W7 – Alder/ash across the wetter, base-rich sites and W9 - Upland mixed broadleaf with dogs mercury and W10 – Lowland mixed broadleaf woodland with bluebell elsewhere. The woods at Clay Bank will be restored through the adoption of CCF management and implemented by successive thinnings and small group fellings to allow more light to reach the forest floor and so encourage natural regeneration of site native species. Other sites will be restored following clearfell of existing semi-mature/mature conifer stands.

On none PAWS sites planned for conversion to broadleaf woodland we will accept natural regeneration of both native and non-native species i.e beech, sycamore.

#### Species regeneration on PAWS areas

Ash/Alder Ash/Alder Birch/Rowan Oak Beech, other broadleaf species Scots Pine Larch Douglas fir Spruces Western Hemlock

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 (such as Western Hemlock or rhododendron) threatens the native woodland community, it will be removed as soon as practicable. Where the risk is lower it will be allowed to reach a harvestable size and removed as part of a routine felling or thinning operation.

#### Heathland/Wooded heath

Although the land at sub compartment 1058a falls within North York Moors SSSI (unit 25)/SAC/SPA and is currently assessed as being in favourable condition, we intend to clearfell the existing spruce crop in 2023. The site will be allowed to naturally regenerate and create a mosaic of upland heath and native broadleaf/mixed woodland. This treatment will also be applied to existing conifer stands adjacent SSSI's that we do not intend to manage for future timber production.



#### 4. Monitoring

#### 4.1 Clearfells

All clearfell areas are managed spatially using the Sub Compartment Database to ensure the boundaries and designs are accurately reproduced on the ground. Significant variances in the areas to be felled require a formal amendment of the plan plus the agreement of and approval by FC regional staff, as per CSM 6.

#### 4.2 Restock

All restock areas where timber production is an objective will be planted/naturally regenerated and monitored to ensure that the number of established trees / ha fully meets the requirements of OGB\*4. This document has mandatory requirements on the monitoring of the crop in Year 1 and Year 5 to ensure the establishment of at least 2500 trees / ha.

#### 4.3 Continuous Cover

Continuous cover areas will be monitored using the methods and procedures contained in OGB\*7. Similar in scope to the methods employed for restock areas, where timber production is the aim we need to have 2000 saplings / ha after 10 – 15 years, these should be evenly spread over 90% of the site.

#### 4.4 Design Plan

All design plans are formally reviewed "mid term" and this plan, its aims and objectives and its success at achieving those aims and objectives will be formally reviewed in 2015. This time period can be shortened if circumstances change significantly or if parts of the plan prove detrimental to the overall aims and objectives.

\*Operational Guidance Booklet



#### 5. Determination of Impact Significance and Mitigation

#### 5.1 Ancient and Native Woodland

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

Major threats to ancient and native woodland are:

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

Through this plan, we will continue to apply local and national policy and best practice guidance for the restoration of PAWS.

#### 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 within and outwith Ingleby Greenhow, particularly adjacent designated heathland SSSI/SAC/SPA's.



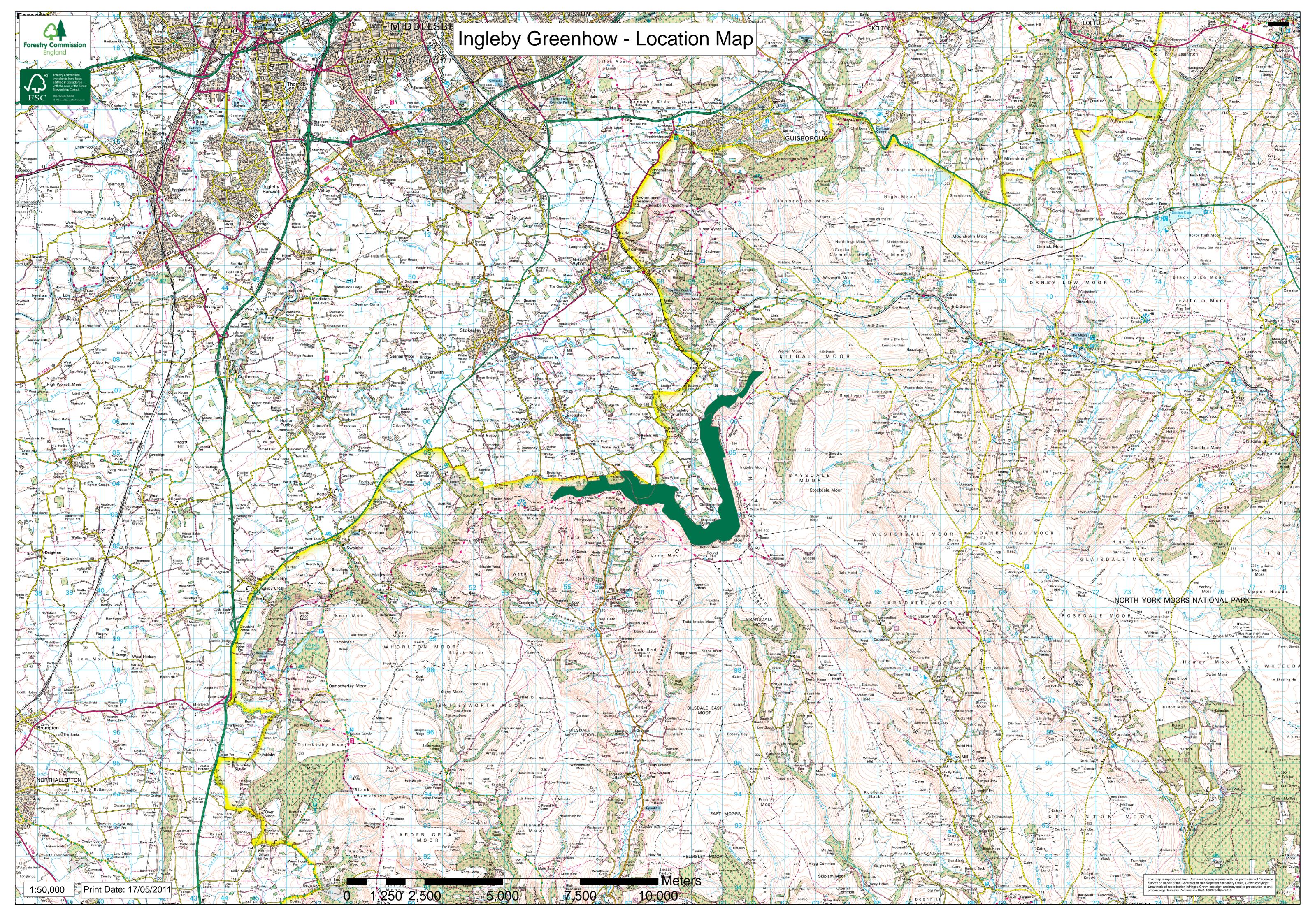
#### 5.3 Other Objectives

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 Ingleby Greenhow. This will improve and enhance the habitat network within the woodlands and benefit protected species.

Continuing development of species and structural diversity will benefit habitats for priority woodland bird species throughout the woodland.





**VIEW 1: View from White Post Farm to Broughton Bank.** Species boundaries are masked to some extent by the back-lit conditions but the boundary between forest and open hill is harsh and artificial. A narrow belt of retained trees at compartment 1068 looks awkward in the landscape.





**VIEW 3:** View from contour road at Greenhow Plantation to Battersby Plantation. Recent felling operations start to break up the harsh geometric line between evergreen conifers and the adjacent moorland. The route of the Incline Track is very prominent from this point.





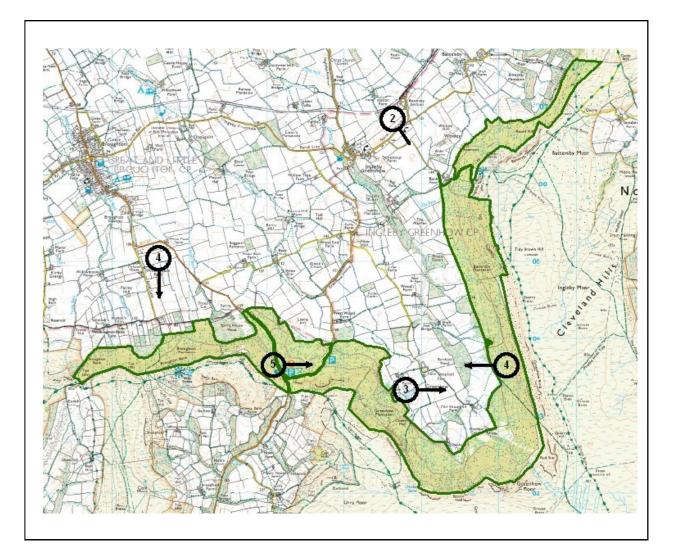
VIEW 5: View from Clay Bank car park to Battersby Plantation. Visitors experience two management systems from this point. Views of well thinned conifer stands and developing mixed woodland by Continuous Cover Forestry systems below the car park and high forest/clearfell across at Battersby offer a more dramatic impact.

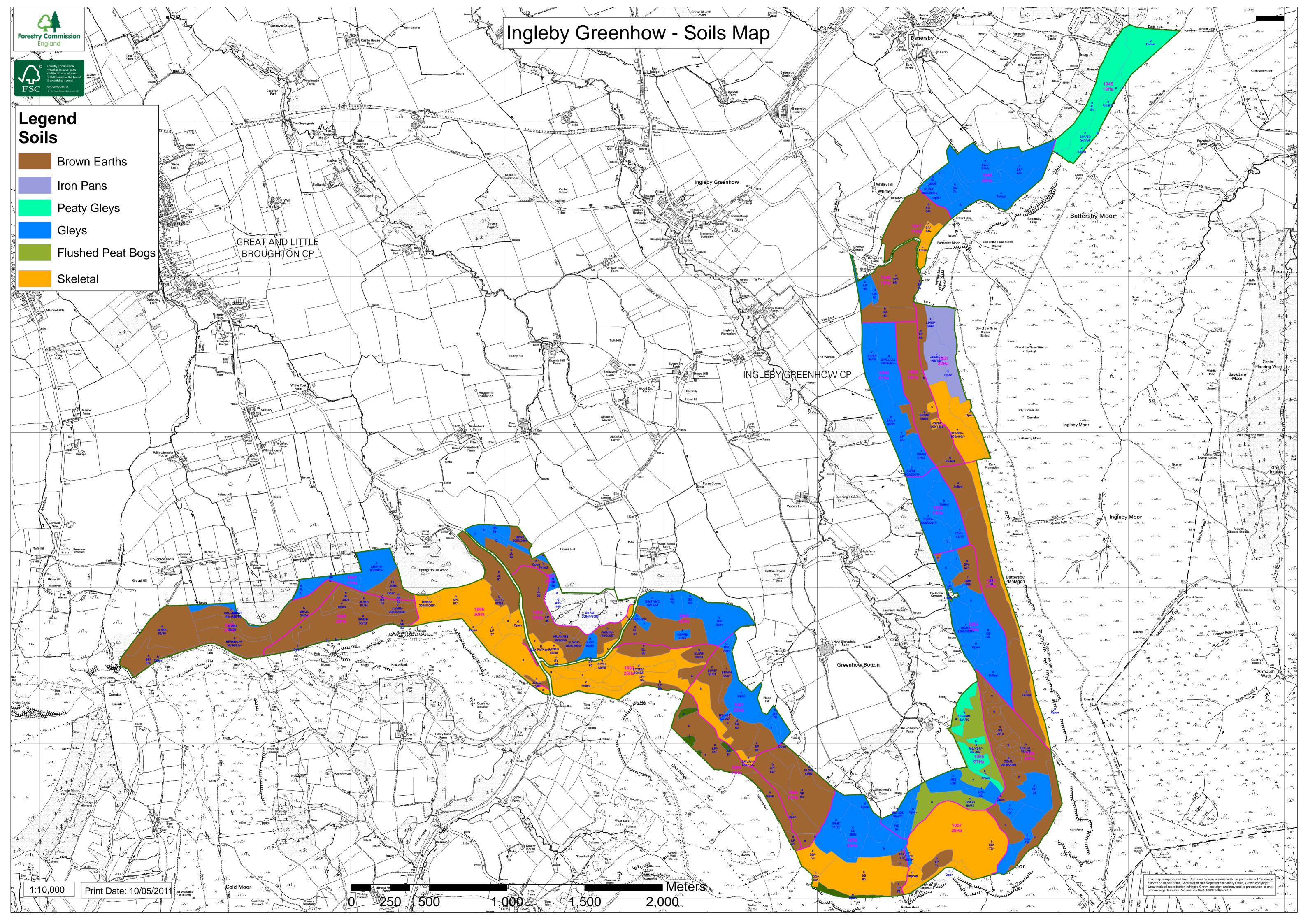
### Ingleby Greenhow Location Map and Photographic Views

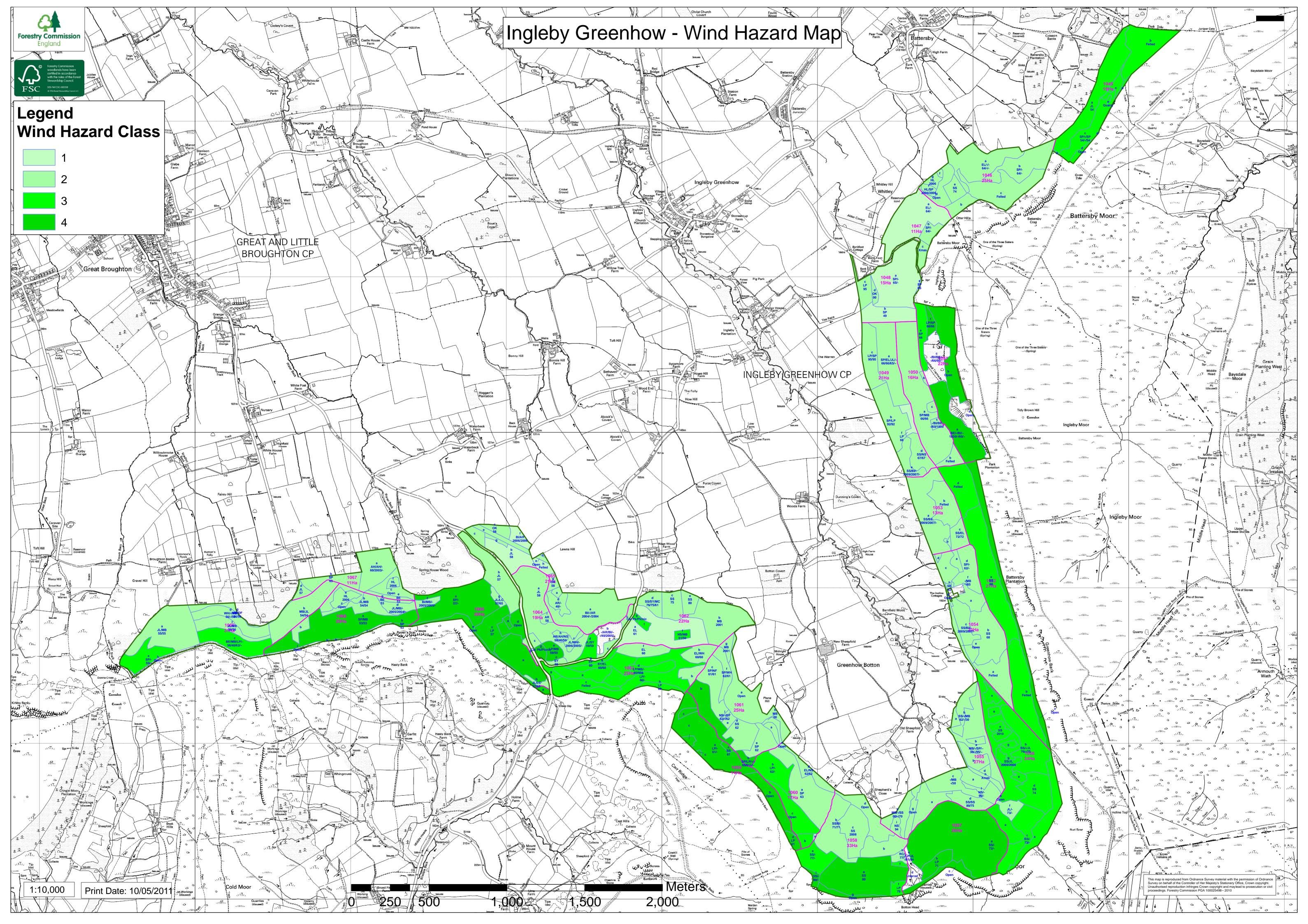
VIEW 2: View from Ingleby Greenhow to Battersby Moor. Views of even-aged crops and harsh species boundaries between larch and pine stands. Future felling and restocking will look to create a more diverse range of age and species.

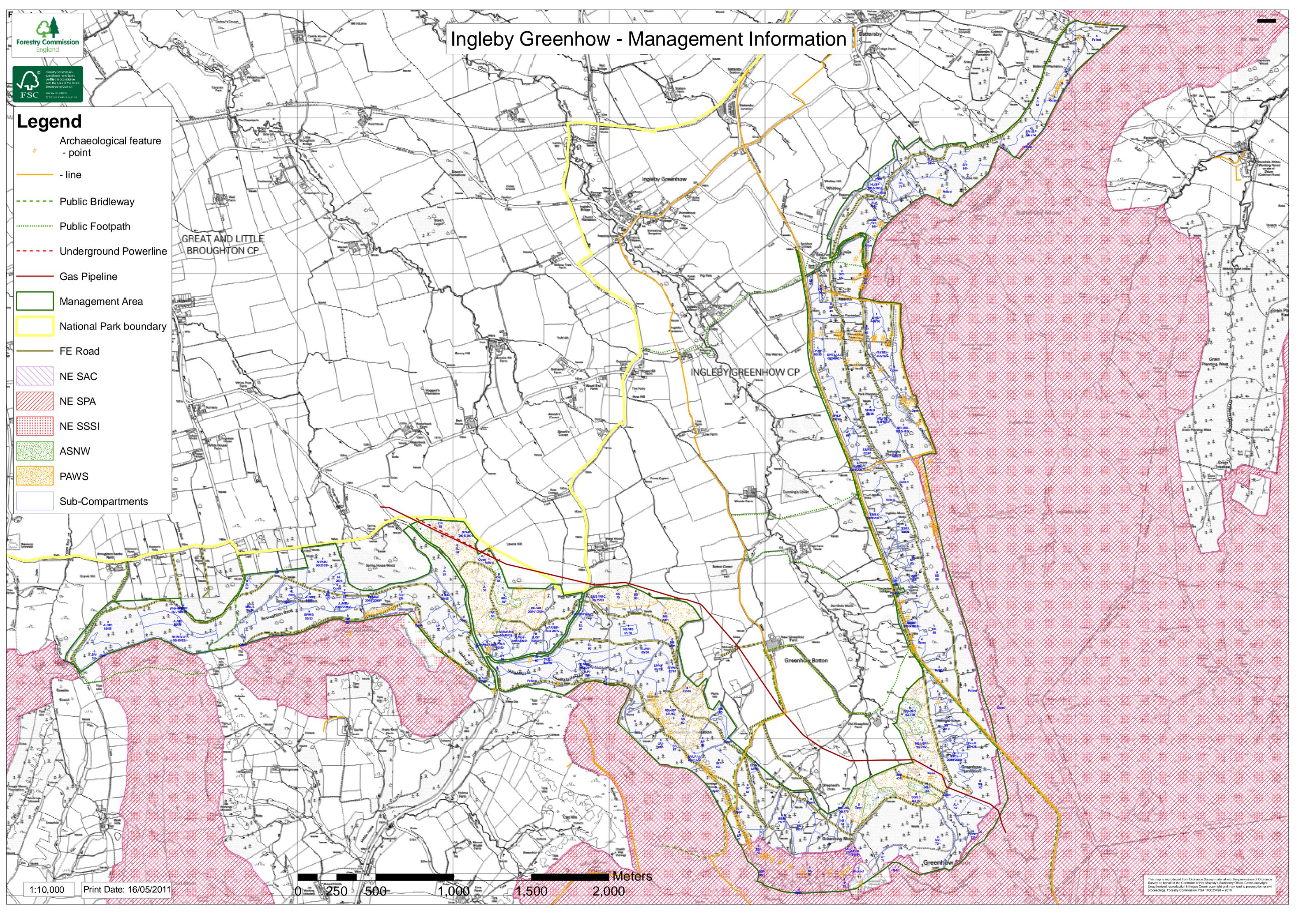
VIEW 4: View from bottom of Incline Track to Greenhow Plantation. Conversion from conifer to broadleaf woodland starting to become apparent at and adjacent to Ancient Woodland Sites above Midnight Farm. Recent felling operations start to break up the harsh geometric line between evergreen conifers and the adjacent moorland.

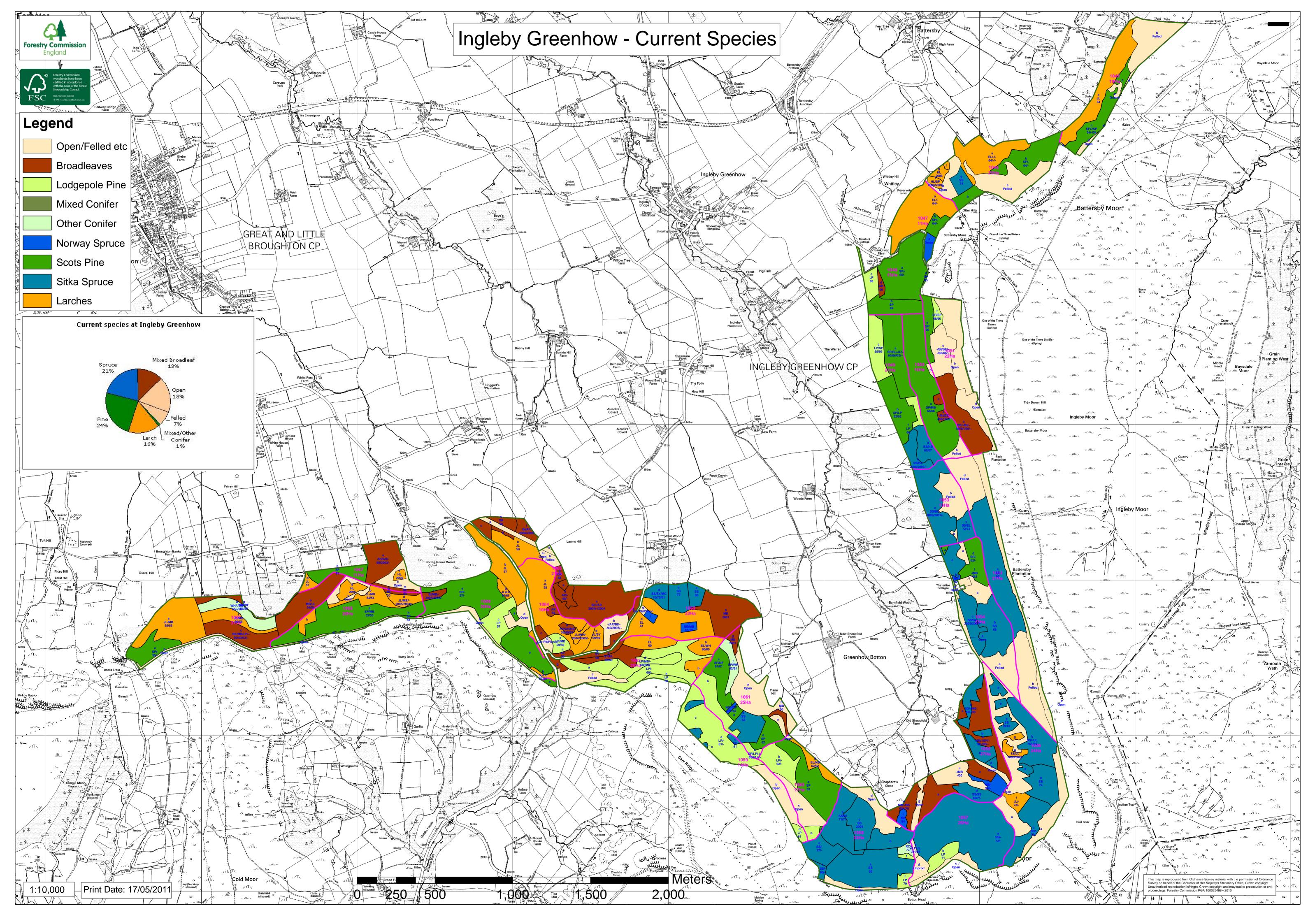


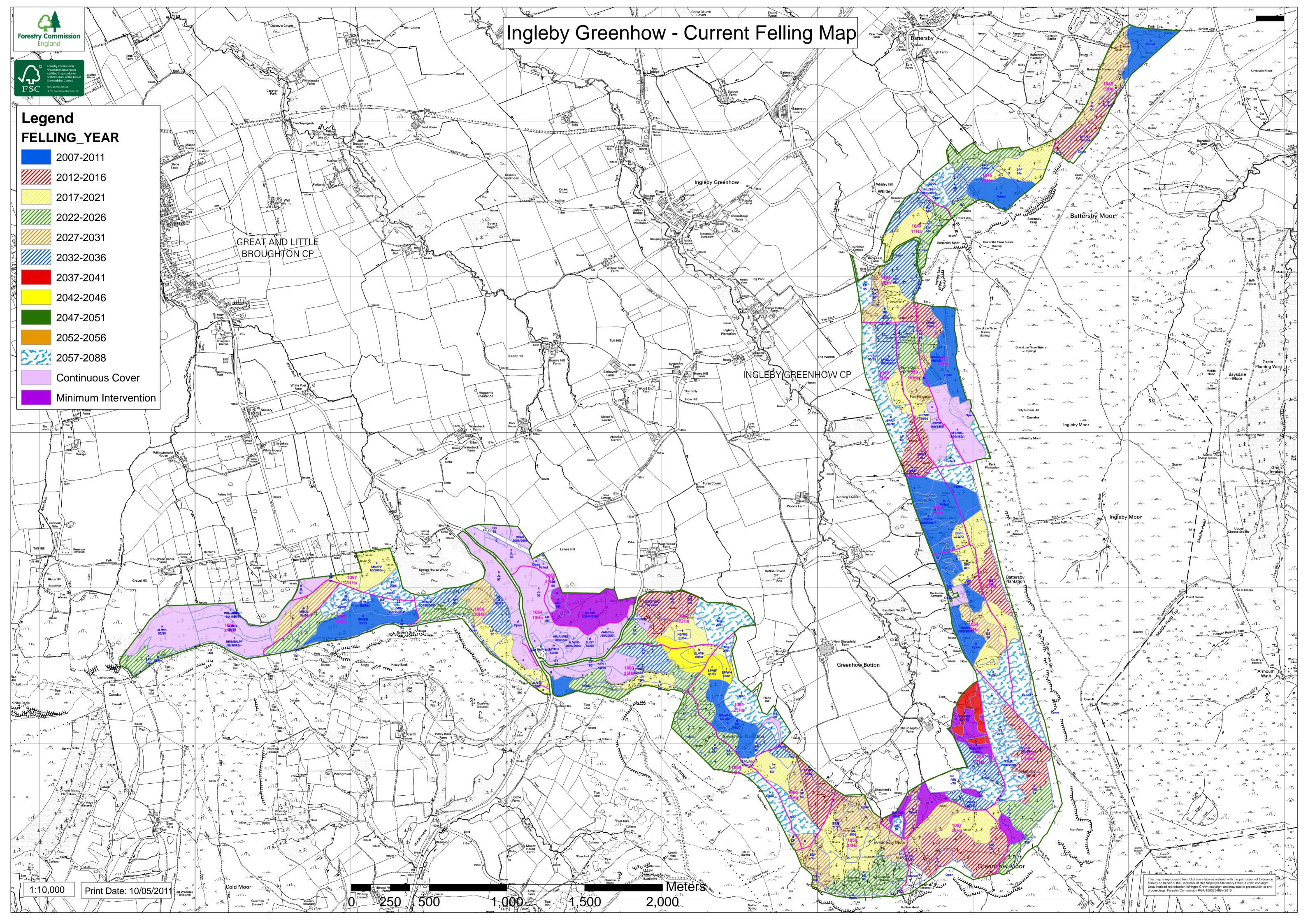


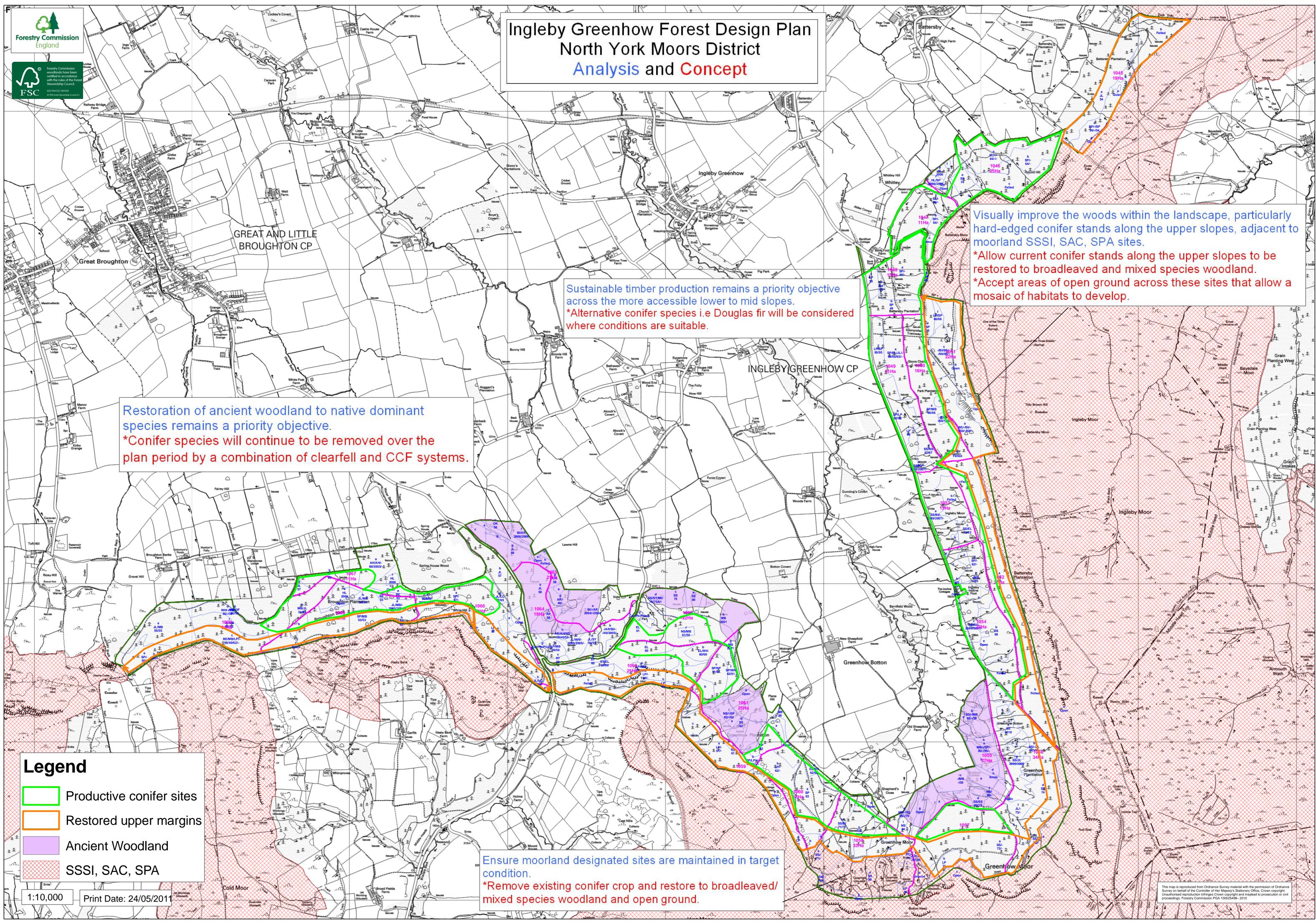


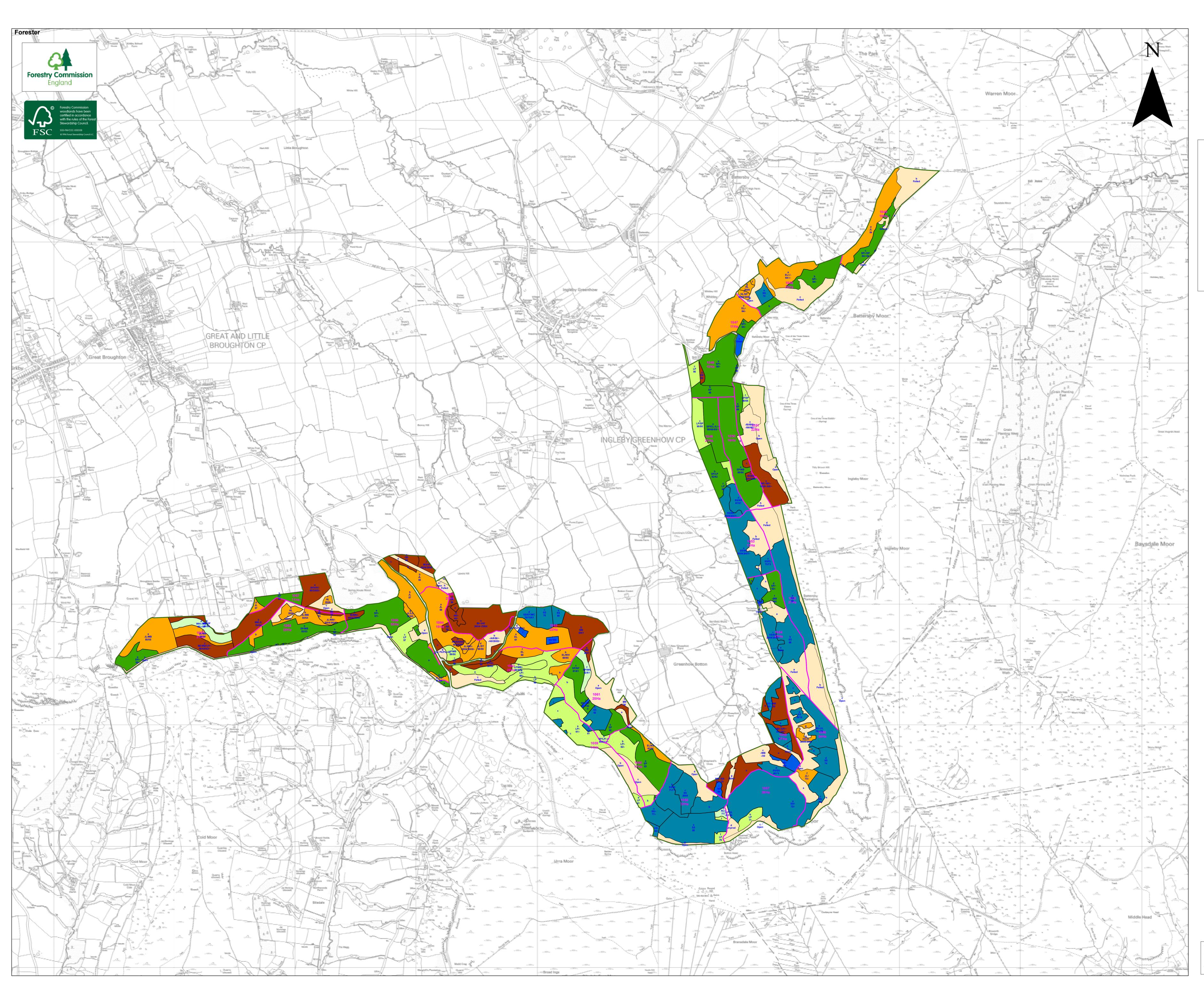








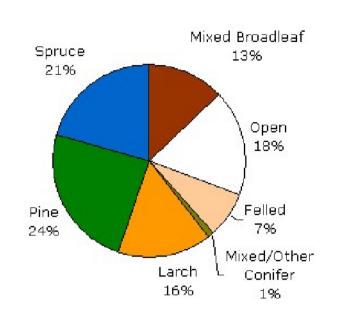


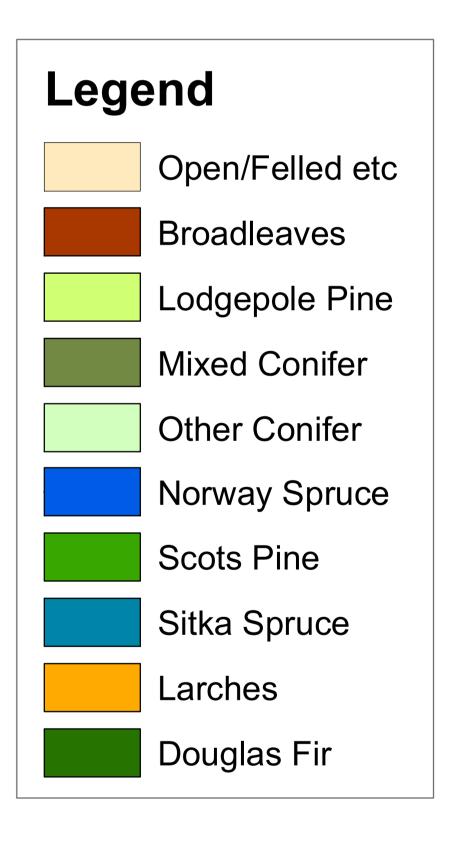


# Ingleby Greenhow

# **Existing Species Map**

### Pie Chart to show the planted area in % in Ingleby Greenhow







## Scale: 1:10,000

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