

Yorkshire Forest District

Wheldrake Wood Forest Plan

FP 57

2018

**Outgang Road
Pickering
North Yorkshire
YO18 7EL
0300 067 4300**

Forest Enterprise - Property

Forest District:	Yorkshire
Woodland or property name:	Wheldrake Wood
Nearest town, village or locality:	Wheldrake
OS Grid reference:	SE 660 467
Local Authority district/unitary Authority:	York City Council

Areas for approval

	Conifer	Broadleaf	Open
Felling			-
Restocking	5.80		-
Regeneration felling	5.80		

1. I apply for Forest Plan approval for the property described above and in the enclosed Forest Plan.
2. I confirm that the pre consultation, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC 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 any permission necessary for the implementation of the approved Plan.

Signed

Signed

Forest Management Director

Area Field Manager

District

Area

Date

Date of Approval..... **Date approval ends**.....

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Wheldrake Wood**Hectares: 115.7 ha****Period of Plan: 2018 - 2027****1. Background**

Wheldrake Wood Forest is part of a network of forests managed by Forest Enterprise (FE), Yorkshire Forest District, located within the York Beat. It is situated approximately 7 kilometres south-east of York.

The forest is freehold land secured by the Forestry Commission in the 1950's having previously been afforested in the 1850's.

2. Describing the Site**2.1 Geology and Soils (FP Map 01)**

The flat landscape is on glacial sedimentary deposits formed in the Quaternary period. Deposits are sand, silty and gravelly in nature and form part of the Naburn Sand Member. Underlying bedrock is fluvial sedimentary of the Sherwood Sandstone Group, ranging from coarse to fine grained material.

The soils at Wheldrake Wood are predominantly poorly drained groundwater gleys with drier parts of the wood providing areas of brown surface-water gley. Based on the Forest Research Ecological Site Classification (ESC), soils are classed as 'very moist' soil moisture regime (SMR) and 'poor' soil nutrient regime (SNR). Taking ESC climate change projections into account, these characteristics present a limited range of species suitable for growing across the site and one that would be expected to give rise to lowland woodland types; birch with purple moor grass (W4) and Scots pine with heather (W18).

2.2 Tree Species (FP Map - 02)

Pines are the dominant species group at 70% of the woodland area with broadleaves at 12% and the remainder comprised of other conifer species and open/felled land. There are few areas of mappable permanent open ground within the wood however, the network of forest roads and rides provide an excellent resource for herb-rich verges and heathland ground flora. The tables below provide a more detailed record of species present and the degree of change over since 1997:

Species	2018 Ha	2018 %	1997 %
Pine	80.69	70	86
Other evergreen conifers	6.85	6	
Spruce	5.34	5	
Larch	2.73	2	1
Broadleaves	13.64	12	3
Open/Other (PFE, car park)	6.42	6	9

2.3 Wind Damage

The wind throw hazard classification indicates a stable forest where 98% of the area is low hazard class 2 or less (1 most stable, 6 least stable) and there are no silvicultural restrictions regarding thinning options.

2.4 Landscape (Photographic montage)

The forest is situated in the Vale of York national character area¹, characterised by arable cultivation and rivers draining surrounding higher land which then run southwards through the Vale towards the Humber Basin. Woodlands over 2 hectares in size accounts for 5% of this national character area, significantly lower than the national average of 10%.

Under the previous plan there has been a gradual reduction in pine stands with an increasing proportion of broadleaf species present. Across a relatively flat, level landscape this change is not necessarily evident when viewed externally, although regular visitors walking through the wood will be aware of subtle changes in species composition.

2.5 People and Community (FP Map – 04)

This freehold property is dedicated as Open Access land through the Countryside Rights of Way Act (2000).

Although there are no formal public rights of way through the wood, it is well served by a network of forest roads, rides and tracks that are popular throughout the year with walkers, dog walkers, cyclists and horse riders.

There is a formal car park that can be accessed from Broad Highway at the eastern end of the block and is a popular destination for walkers and dog walkers visiting the forest.

¹ NCA 28 Vale of York

2.6 Natural Heritage (FP Map – 04)

Wheldrake Wood Forest is designated as a Site of Nature Conservation Interest (SNCI) and is locally important for a range of flora and fauna.

BTO Breeding Bird Survey data indicates the wood is close to recent siting's of a range of national and regionally important declining woodland birds including Bullfinch, Dunnock, Starling, Tree sparrow, Willow warbler and Yellowhammer (see Appendix 2).

The forest has long supported a successful bat box scheme with a number of species being recorded and actively using the boxes.

The network of forest roads and rides support an interesting range of herb-rich and lowland heathland ground flora.

A network of drains and ditches pass through and adjacent to the forest, although these have mainly ceased to functionally drain the property. These sites can support a more diverse woodland structure where native broadleaf tree species, shrubs and ground flora can naturally regenerate, providing ecologically diverse habitat corridors across the forest. Seasonal waterlogging can occur across a number of sites following prolonged periods of rain.

2.7 Cultural Heritage

There no recorded heritage features within or contiguous with the wood.

3. Describing the Project

3.1 Project Brief

- increase the proportion of broadleaf cover,
- consider the selection of site-appropriate tree species that will contribute toward a greater range of species diversity to maintain or increase timber productivity and increase resilience to plant health and biosecurity threats,
- increase the diversity of the age structure by use of appropriate silvicultural systems.

3.2 Objectives

Environmental

- Improve the resilience of the natural environment and realise the potential of these woods for nature and wildlife, to be measured by FC systems accordingly.
- Maintain and improve the ecological, cultural and heritage value of these woods, to be measured by Non-Government organisations and FE systems accordingly.

Social

- Encourage communities to become involved across these woods, its management and direction through consultation in planning and participation in volunteering.
- Maintain and improve the forests contribution to the surrounding landscape character by increasing species and structural diversity, to be measured by external and internal fixed-point photography.

Economic

- Maintain the land within our stewardship under UKWAS certification, to be measured by independent surveillance audits.
- Improve the economic resilience of these woods from a more diverse range of site appropriate conifer and broadleaf species, to be measured by the Production Forecast and Sales Recording Package.

3.3 Constraints

- Potential forest health issues (*Dothistroma*) on pine species with 2nd rotation stands currently suffering from high infection rates,
- Rhododendron growth creates dense stands of understorey across significant parts of the wood having a negative impact on future harvesting, forest regeneration and ecological condition.

3.4 Implementation

3.4.1 Conservation

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

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 Wheldrake Wood this will include:

- Increase and improve the deadwood resource as set out in – ‘Managing deadwood in forests and woodlands Practice Guide (2012)’. Areas of high ecological value across which deadwood resources could be encouraged include; riparian zones and ancient woodland.
- Increase the diversity of tree species and age structure that will maintain and improve favourable habitats for target species and identified habitats. This is particularly beneficial for the range of habitats and species recorded at Wheldrake Wood from which a selection has already been mentioned at 2.6 - Natural Heritage.

Minimum Intervention - Natural Reserves

Natural Reserves are sites that are predominantly woodland which have been set aside where biodiversity is the prime objective. As far as reasonably practicable this is a permanent designation and will be managed on a minimum intervention system.

There are currently no areas of Natural Reserve designated across Wheldrake Wood.

Long Term Retentions (LTR)

These are stable stands or clumps of trees that are important to retain for landscape or biodiversity reasons and will be retained beyond their economic rotation but still managed under an appropriate silvicultural system i.e. thinning may still be carried out.

Through this plan, 7.49 hectares of mixed Corsican pine and birch will be managed as LTR.

Invasive species

Rhododendron grows extensively across the property and is present from seedling through to mature growth stage. Through this plan, management to gradually reduce the area of rhododendron will continue to be carried out.

3.4.2 Timber Harvesting

We will continue to sustainably harvest timber from small-scale group felling and thinning's, 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 Wheldrake Wood.

3.4.3 Landscape

Wheldrake Wood is located in the Vale of York, an area of flat arable farmland with few remaining woods of this size. Due to the flat terrain, external views are limited to those experienced from adjacent county highways.

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

The forest is gradually evolving from one that was previously conifer-dominant toward more mixed woodland. The ongoing management by Low Impact Silvicultural Systems (LISS) is helping to create a more varied forest structure and species composition which is evident when viewed internally from forest roads and rides.

The combination of continued LISS management, small-scale group felling and identifying stands of long term retention will continue to develop an increasingly species and structurally diverse woodland that will make a positive contribution within the landscape.

3.5 Plan (FP Map 05)

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 management and future habitat maps.

3.6 Areas (FP Map 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	Projected volume (m ³)
LISS* 2017 - 2026	5.80	5	2500

* As the whole of Wheldrake Wood will be managed using LISS, by definition there will be no clearfelling. Where advanced regeneration is present, canopy gaps up to 0.5 ha will be created to release the regeneration. Where shelterwood strip felling is to be carried out, there will be no felling above this limit in the proposed plan. During the plan period, it is proposed all areas of LISS will receive a silvicultural intervention. As a result of this intervention, the above area of woodland cover will be felled through the processes of group felling and strip shelterwood systems and restocked by direct planting and/or natural regeneration.

3.6.2 Breakdown of constituent areas.

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

The overall diversity of the woodlands will increase over time as the proportion of broadleaf species increases through the development of more mixed woodland at a component level.

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, the pre commencement meeting before scheduled works begin and for supervisory visits during the operation.

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.

3.7.2 Standards

All operations within the forest will be carried out in accordance with the certification standard for the U.K Woodland Assurance Standard and the **U.K Forestry Standard 2017, version 4**.

3.7.3 Harvesting

See 3.4.2. Forestry Commission staff will monitor work through regular site visits to ensure all guidelines and contract conditions are adhered to.

Clearfell V's Low Impact Silvicultural Systems

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'.

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.

See Appendix 3 – LISS Justification.

3.7.4 Haulage

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

All timber traffic will be managed in line with the Road Haulage of Round Timber Code of Practice, Fourth Edition (2012), which aims to improve the safety and environmental standards of the timber haulage industry.

3.7.5 Restocking

Conifer

The areas of strip shelterwood and group felling carried out as part of LISS 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. A range of timber

producing conifer species as set out in Appendix 3 and Appendix 4 'Species by soil type' will help inform restocking options.

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 conifer species will be planted, whilst accepting up to 20% natural regeneration of a mixed broadleaf component across these sites.

As indicated at 3.7.1 Planning, 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.

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

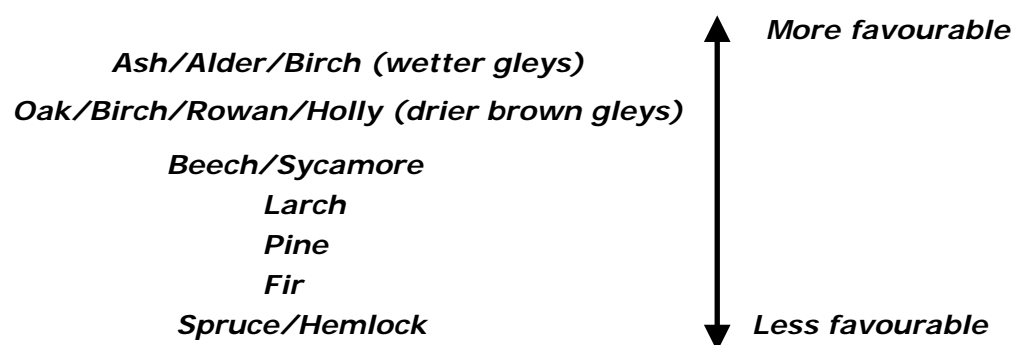
Broadleaf

There are no Ancient Woodland Sites across Wheldrake Wood.

On non-PAWS sites planned for conversion to broadleaf woodland, we will accept natural regeneration of both native and non-native species i.e. beech, sycamore.

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 regenerated, where broadleaf species will comprise at least 80% of the woodland component mix.

Broadleaf regeneration on non-PAWS areas



4. Monitoring

4.1 Clearfells

Through this plan we do not anticipate carrying out any clearfelling.

4.2 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 at least 2000 saplings per hectare after 10 – 15 years, these should be evenly spread over 90% of the site.

4.3 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 2021. 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

4.4 UKWAS Compliance Table

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	115.7	100	20,971	100
Total Wooded area	109.3	94	16,535	79
Natural Reserves – Plantation (1%)	Nil	Nil	170	1
Natural Reserves – Semi-natural (5%)	Nil	Nil	85	6
Long-term Retentions and Low Impact Silvicultural Systems (>1%)	115.7	100	6,909	33
Area of conservation Value (15%) Including Designations; PAWS, AW, ASNW, NR, LTR and LISS	115.7	100	8,666	41

5. Determination of Impact Significance and Mitigation

5.1 Native Woodland

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

Major threats to native woodland are:

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

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

5.2 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 Wheldrake Wood. 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 a range of species throughout the woodland (Appendix 2 – Priority woodland bird and lepidoptera species).

Consultee	Date Contacted	Date response received
Statutory Consultees		
Forest Services	16/03/2018	
Non Governmental Organisation		
Environment Agency	20/06/2018	20/06/2018
Neighbours		
Swallow Hall	27/06/2018	27/06/2018
Blackwoods	27/06/2018	
Community Groups		
York City Council	20/06/2018	
Wheldrake Parish Council	20/06/2018	
Forest District		
Others		
Dave Wainwright - Butterfly Conservation Group	02/03/2018	28/03/2018
BTO		01/06/2018
		15/06/2018

Issues Raised

Overview of previous plan performance provided, draft objectives and issues/opportunities agreed for plan renewal as part of the internal scoping meeting.

Project brief and objectives sent to inform process of Forest Plan renewal.

D Fyfe happy to receive draft plans for consultation.

Project brief and objectives sent to inform process of Forest Plan renewal.

Brief discussion with Mrs Scutt. Overall happy with how woods are managed although noted heavy people presence, particularly dog walkers, some of whom have little control over their dogs and sometimes had issues with uncontrolled dogs straying onto golf course.

Project brief and objectives sent to inform process of Forest Plan renewal.

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Project brief and objectives sent to inform process of Forest Plan renewal.

Overview of previous plan performance provided, draft objectives and issues/opportunities agreed for plan renewal as part of the internal scoping meeting.

Email sent asking for any relevant information regarding moths and butterflies associated with the wood.

Email response from DW that nothing particularly noteworthy requiring special attention and continued management of wood to develop areas of existing broadleaf and understorey.

Data received, acknowledged and relevant data included in plan documentation.

District response to issues

A range of internal issues were discussed reviewing past and future objective. A record of issues raised and discussed was shared with participants 19/06/2018.

Sympathised with issue and noted recent erection of notices requesting owners clean up dog mess and remove from forest.

A range of internal issues were discussed reviewing past and future objective. A record of issues raised and discussed was shared with participants 19/06/2018.

Data request for Bird Atlas data 2007 - 2011

Confirmation from District Ecologist agreeing with species of interest either within or close to wood that will benefit from management as set out in Appendix 2.

Appendix 2 – Priority woodland bird species

Bird Species ¹	Forest location	Habitat enhancement
Willow warbler Bullfinch Dunnock Yellowhammer Tree sparrow Starling	Within 3km of forest location.	Work through operations to enhance rides and the creation of a more diverse and graduated woodland edge. Create and maintain successional woodland/birch scrub and manage wood to encourage/maintain standing deadwood.
Woodcock	Developed shrub layer.	Continue selective thinning and small-scale felling as part of LISS management, this will allow the development of shrub layer structure, increased structural and species diversity and standing deadwood.

¹ Source – BTO Bird Atlas data for SE6244 and SE6750 Grid Square

The Breeding Bird Survey is run by the British Trust for Ornithology (BTO) and is jointly funded by the BTO, the Joint Nature Conservation Committee (JNCC) (on behalf of the statutory nature conservation bodies: Department of Agriculture, Environment and Rural Affairs - Northern Ireland, Natural England, Natural Resources Wales and Scottish Natural Heritage), and the Royal Society for the Protection of Birds (RSPB).

Appendix 3 – CCF justification

Site Factor	Suitability Score	Comment
Wind Hazard Classification: class 1 to 2	1	Tree stability should not present an issue.
Soil fertility: Poor (typical groundwater gley)	1	Achieving successful natural regeneration is often easier on less fertile sites as here where vegetation competition can be greater. Issues at Wheldrake include bramble and rhododendron growth.
Current species suitability: SP, LP, DF,	2 – Suitable	Existing species offers a narrow selection that can be developed for natural regeneration with only birch showing any capacity to develop advanced regeneration. As a site-improving pioneer species, birch can be incorporated as A suitable nurse species where developing mixed woodland composition.

With a combined score ranging from 4 to 5, initial analysis indicates the whole of Wheldrake achieves a good to moderate site ranking for transformation to Low Impact Silvicultural System (LISS) management.

































On the basis of the above information, we will consider LISS across even-aged conifer stands using a range of conifer species (SP, LP, DF and birch, but also enrichment planting with Macedonian pine, Western red cedar, Oriental and Serbian spruce and Giant and Coast redwood where conditions allow), aiming for a simple stand structure.

We will adopt a Shelterwood system through a combination of thinning, group and strip felling (0.25 to 0.50 ha per group/strip) and replanting with suitable species.

The Forest Research ESC table below supports the range of target species considered for natural regeneration and those where enrichment planting will increase species diversity.

[Wheldrake LISS SE656467] Future Climate Analysis - 5km Area Projection UKCIP02

Species	2050 Lo			2050 Hi			2080 Lo			2080 Hi		
	Lim Factor	Suitability	Yield	Lim Factor	Suitability	Yield	Lim Factor	Suitability	Yield	Lim Factor	Suitability	Yield
Corsican pine	SNR		16	SNR		16	SNR		16	SNR		16
Lodgepole pine	SNR		12	SNR		12	SNR		12	AT5		6
Macedonian pine	SNR		12	SNR		12	SNR		12	AT5		10
Maritime pine	SMR		10	SMR		10	SMR		10	SMR		10
Monterey/Radialta pine	SMR		16	SMR		16	SMR		16	SMR		16
Scots pine	SNR		12	SNR		12	SNR		12	MD		10
Weymouth pine	SMR		6	SMR		6	SMR		6	SMR		4
Norway spruce	SNR		18	MD		14	MD		14	AT5		2
Oriental spruce	SNR		14	SNR		14	SNR		14	SNR		12
Serbian spruce	SNR		14	SNR		14	SNR		12	SNR		8
Sitka spruce	MD		12	MD		8	MD		10	MD		2
Sitka spruce(VP)	MD		16	MD		10	MD		10	MD		2
Douglas fir	SMR		18	SMR		18	SMR		18	MD		12
Hybrid larch	MD		8	MD		0	MD		2	MD		0
Japanese larch	MD		6	MD		2	MD		2	MD		0
European larch	MD		8	MD		4	MD		4	MD		0
Western red cedar	SNR		16	SNR		16	SNR		16	MD		10
Japanese red cedar	MD		8	MD		2	MD		4	MD		0
European silver fir	MD		14	MD		10	MD		10	MD		0
Grand fir	MD		20	MD		12	MD		14	MD		0

Noble Fir	MD		0	MD		0	MD		0	AT5		0
Nordmann fir	SNR		14	SNR		14	SNR		14	AT5		6
Pacific fir	CT		20	CT		20	CT		18	AT5		8
Leyland cypress	SNR		16	MD		16	MD		16	AT5		4
Western hemlock	CT		20	MD		20	CT		20	AT5		2
Giant redwood	SNR		12	SNR		12	SNR		12	SNR		8
Coast redwood	SNR		16	SNR		16	SNR		16	MD		14
Lawson's cypress	SNR		16	MD		14	MD		14	MD		8

Appendix 4 - Restock species by soil type

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

BOLD CAPITAL/INFILL	Cat A Major species - currently widely used with no supply problems and should continue to play an important role
Bold lower case italics	Cat B Minor species - Species that either currently play a minor role but have demonstrated their suitability being part of a species range to diversify our forests. Climate change may increase or reduce their use
Normal lower case	Cat C Secondary species - Species with little information on forest performance but possible choice based on Arboreta. Use on small-scale experimental basis for now but may increase if favourable results

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

[source data](http://www.forestry.gov.uk/forestry/infid-8mad67) http://www.forestry.gov.uk/forestry/infid-8mad67

Refer to cell comments for specific species notes

No planting where >1m peat depth

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

Yorkshire Forest District Wheldrake Forest Plan—FP57



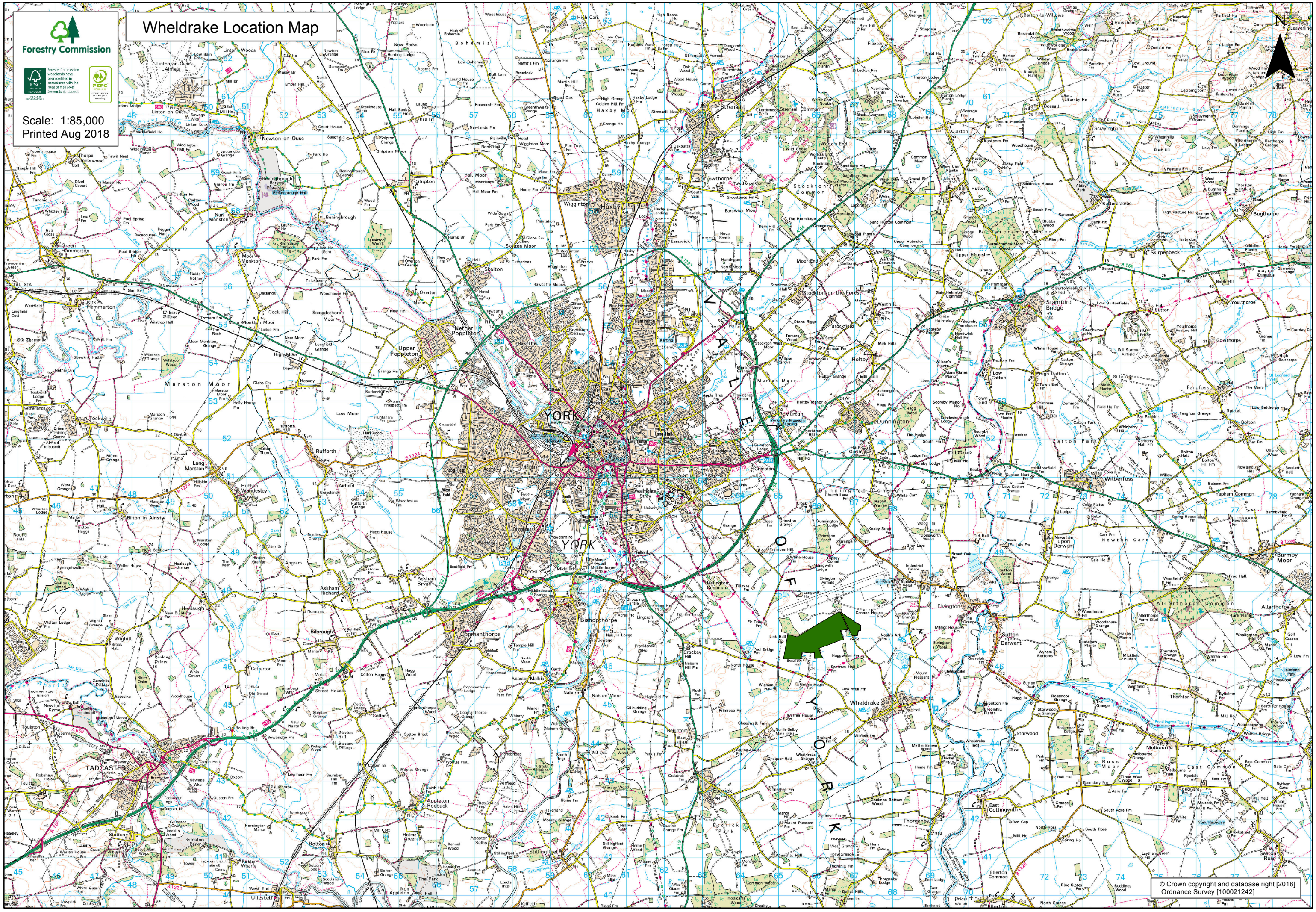
Forestry Commission woodlands have been certified in accordance with the rules of the Forest Stewardship Council.





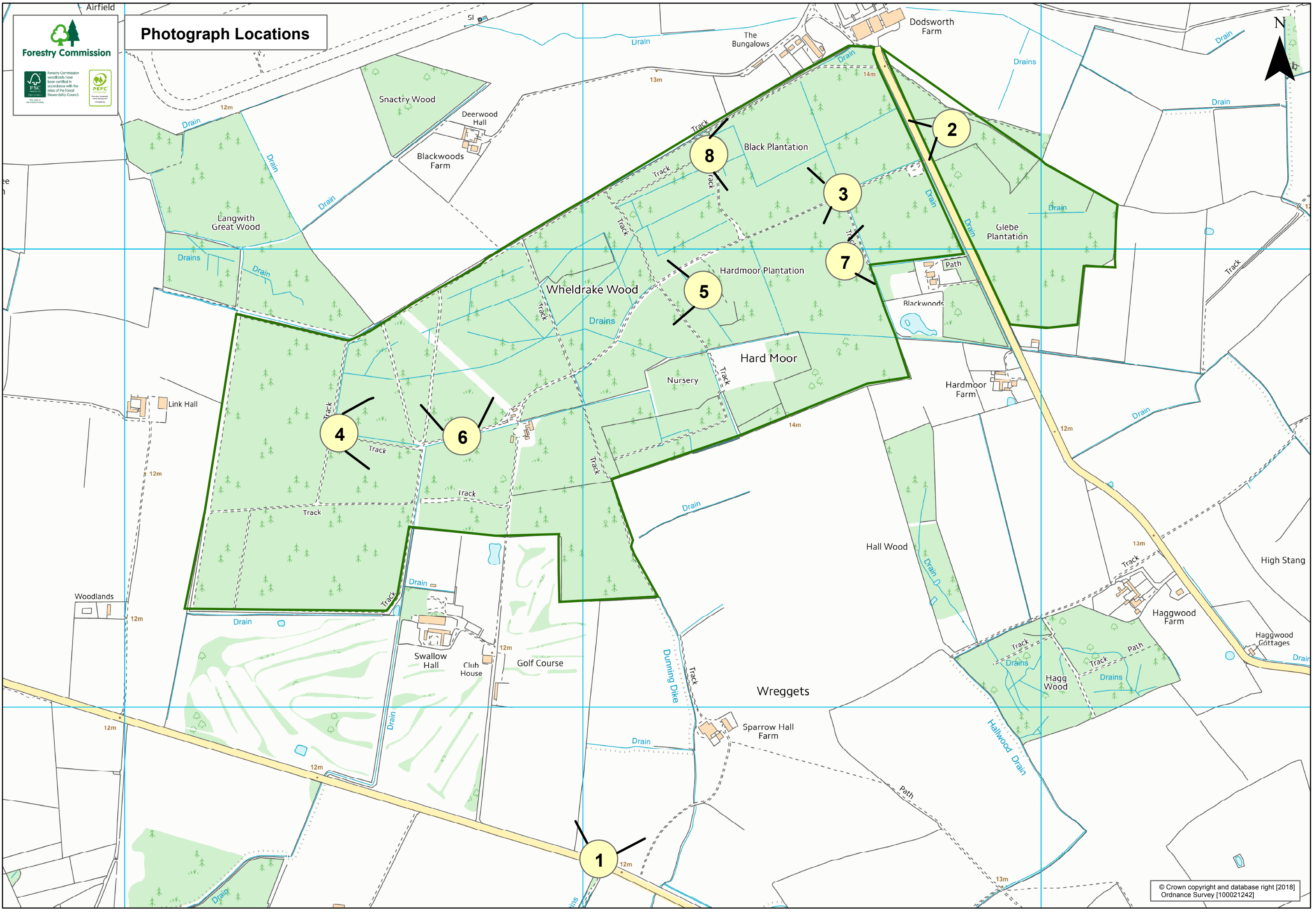
Wheldrake Location Map

Scale: 1:85,000
Printed Aug 2018





Photograph Locations



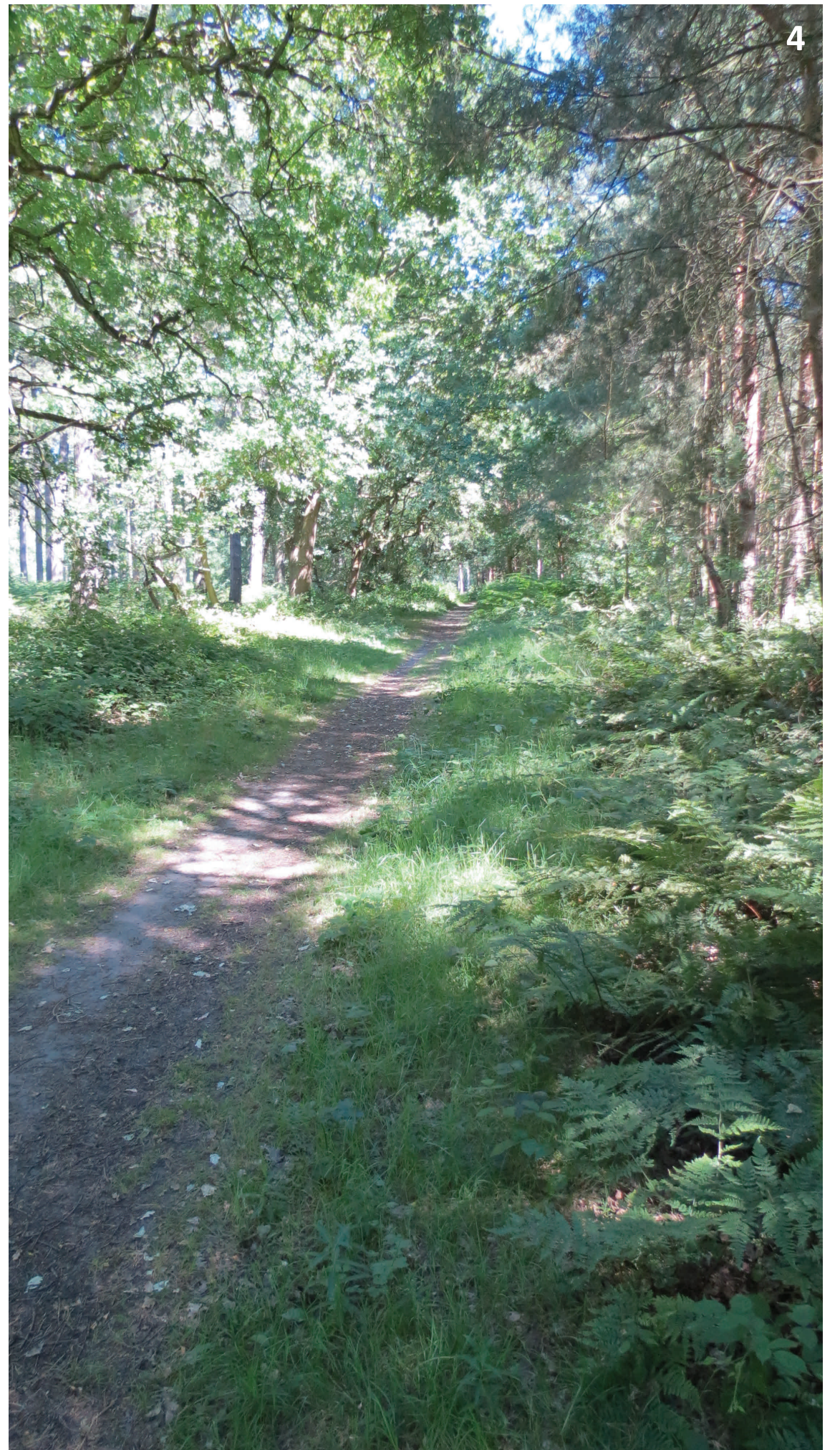
View from Wheldrake lane looking onto the southern perimeter of the forest. The forest sits well within the landscape, presenting a stable woodland edge that has changed little since the previous plan of 2006. The angular outline of the external perimeter is not evident when viewed from the road and is further softened by the mature trees along field boundaries and the developing trees at Swallow Hall Golf Course. Future management through Low Impact Silviculture will maintain this view, subject to the potential impacts from severe weather events, pests or diseases.



View of forest entrance and Hard Moor car park off Broad Highway. Recent thinning and small-scale group felling has significantly opened up the forest canopy adjacent to the car park, increasing structural diversity, developing a mixed conifer and broadleaf composition. Species and structural diversity will be maintained and where appropriate increased over the lifetime of the plan.



Forest roads, tracks and rides. Internal access routes provide opportunities to develop a network of semi-natural habitat corridors with herb-rich verges adjacent to different canopy layers. Ongoing management will maintain and develop these for the benefit of a wide range of wildlife and visitors alike.



Low Impact silviculture. Managing these stands through low impact silvicultural systems causes less rapid change to the landscape and physical environment than high forest, clear felling. These sites are now establishing an understorey of alternative conifer species i.e. Douglas fir, Western red cedar and Coast redwood, as well as naturally regenerating pine and birch.



Rhododendron. An invasive species, rhododendron can quickly close canopy and shade out ground vegetation preventing natural regeneration of ground flora and tree species alike, as experienced in the stand of Scots pine below. Well timed active management can reverse this trend. The area of semi-mature birch had previously been affected by rhododendron which has since been mechanically and chemically treated, and is now starting to recover with woodland ground flora recolonising the site.



Common orchids are a familiar sight along the network of herb-rich verges.



Deadwood habitat. Large dimension standing and fallen deadwood provides niche habitats for a wide range of fungi, invertebrates and mammal species. Managing areas of long-term retention provides further opportunities to develop these ecologically important resources.

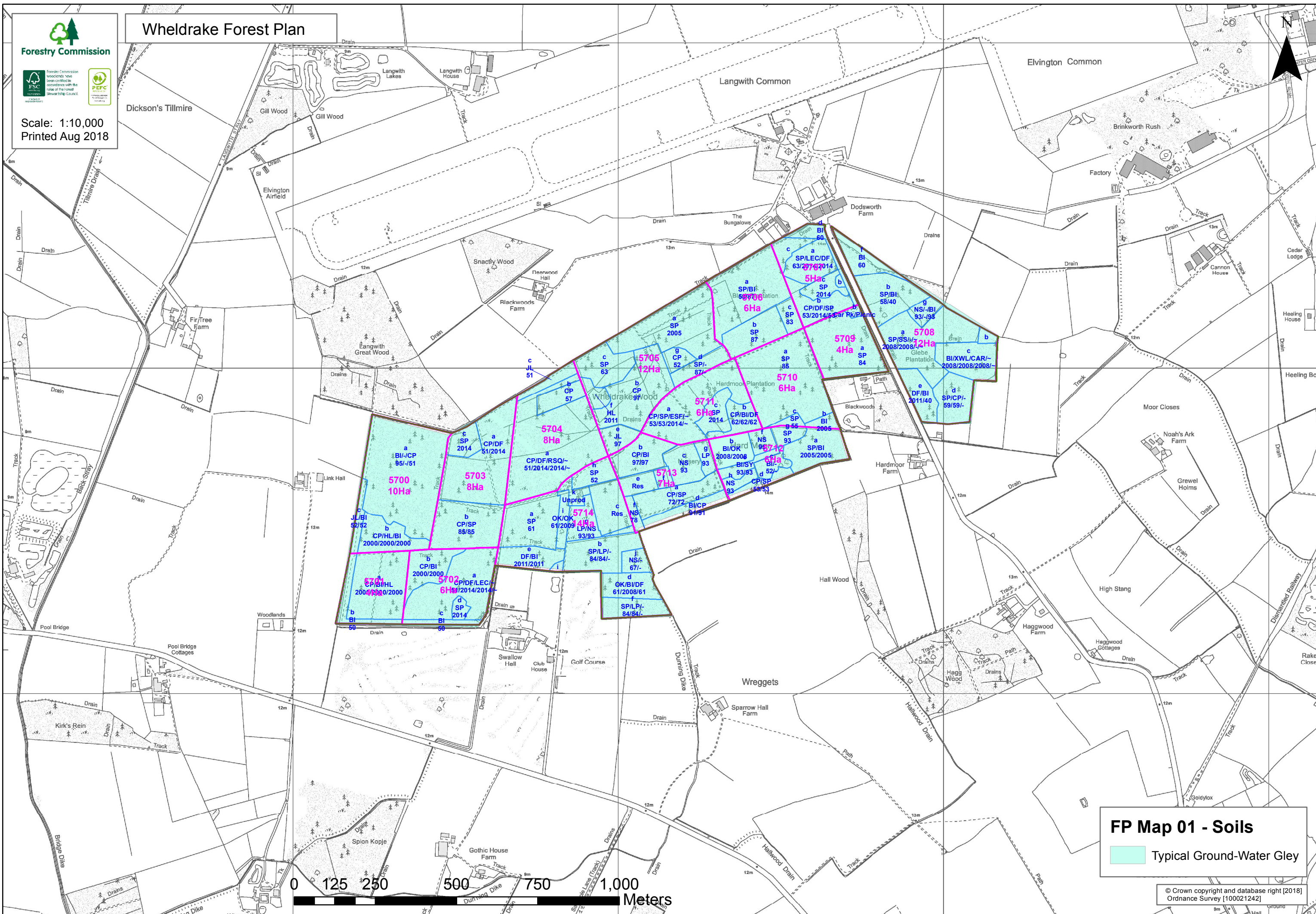




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FP Map 01 - Soils
Typical Ground-Water Gley

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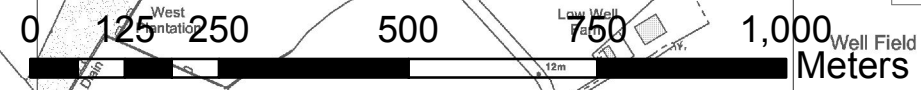
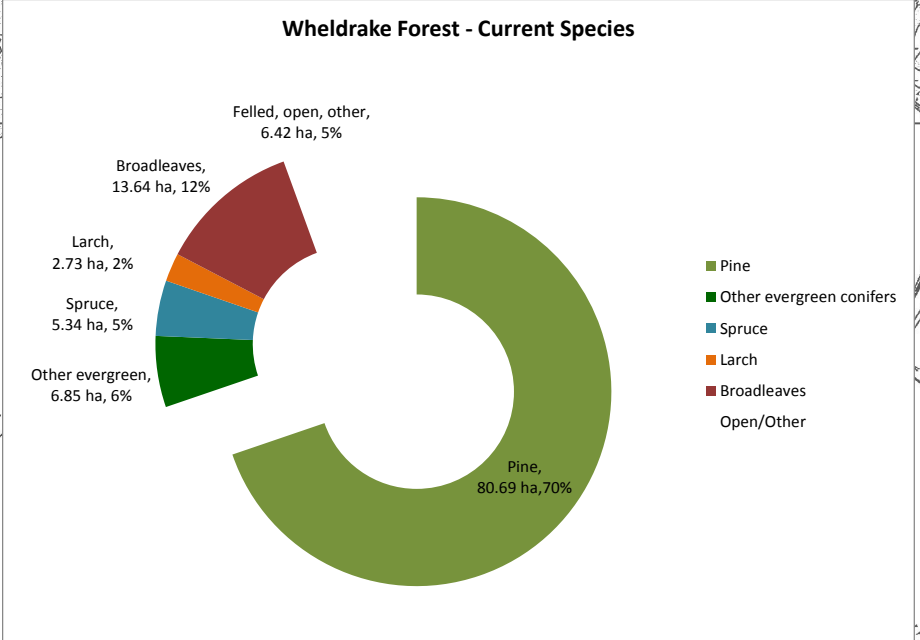
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FP Map 02 - Current Species

- Pine
- Other evergreen conifers
- Spruce
- Larch
- Broadleaves
- Open/Other

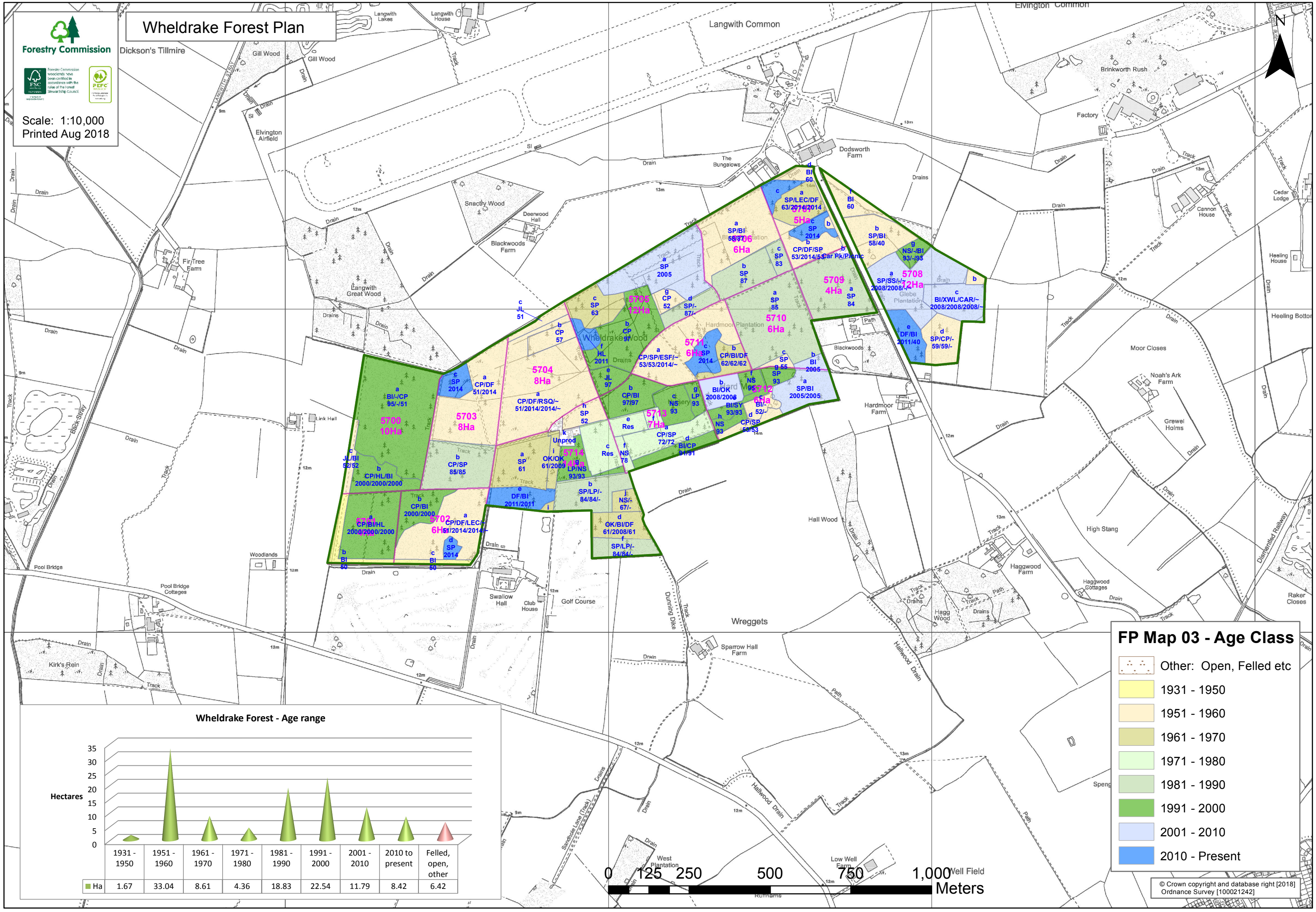


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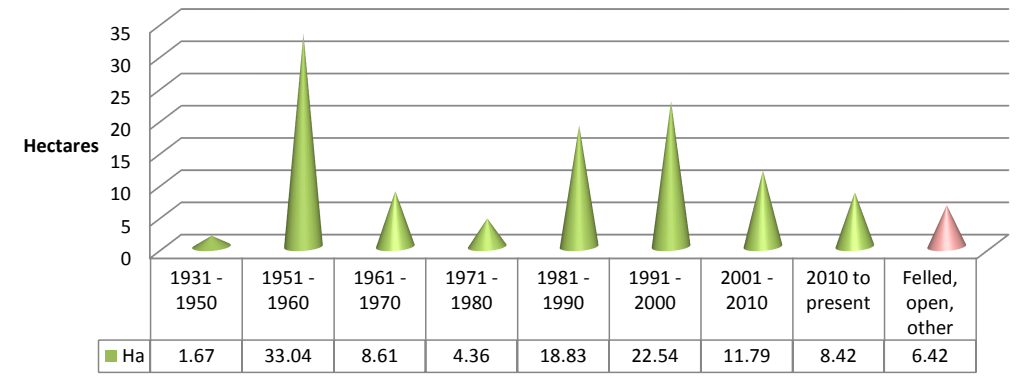


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Wheldrake Forest - Age range



FP Map 03 - Age Class

- Other: Open, Felled etc
- 1931 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2010 - Present

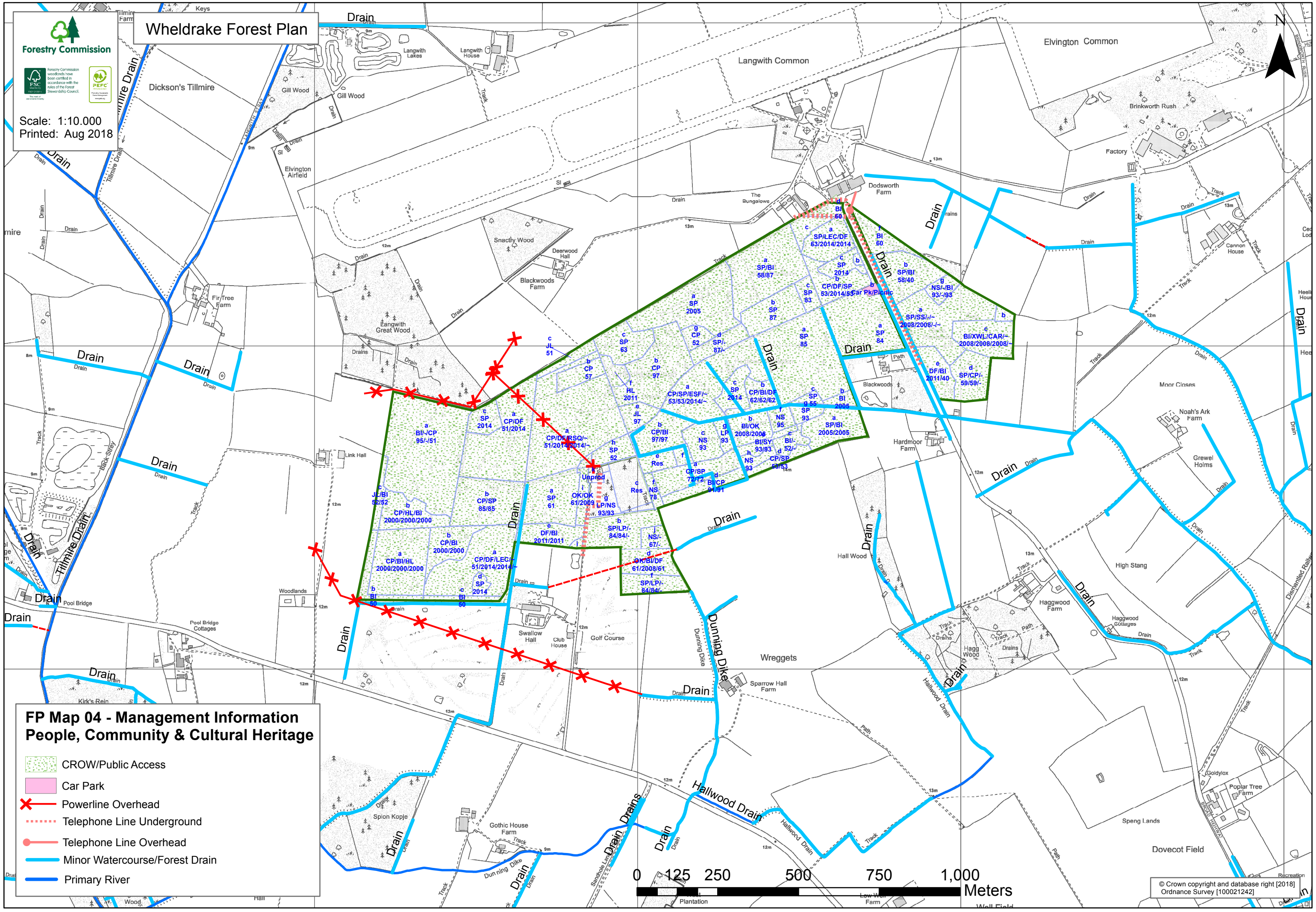


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FP Map 04 - Management Information People, Community & Cultural Heritage

- CROW/Public Access
- Car Park
- Powerline Overhead
- Telephone Line Underground
- Telephone Line Overhead
- Minor Watercourse/Forest Drain
- Primary River





Wheldrake Wood
Concept and Analysis

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

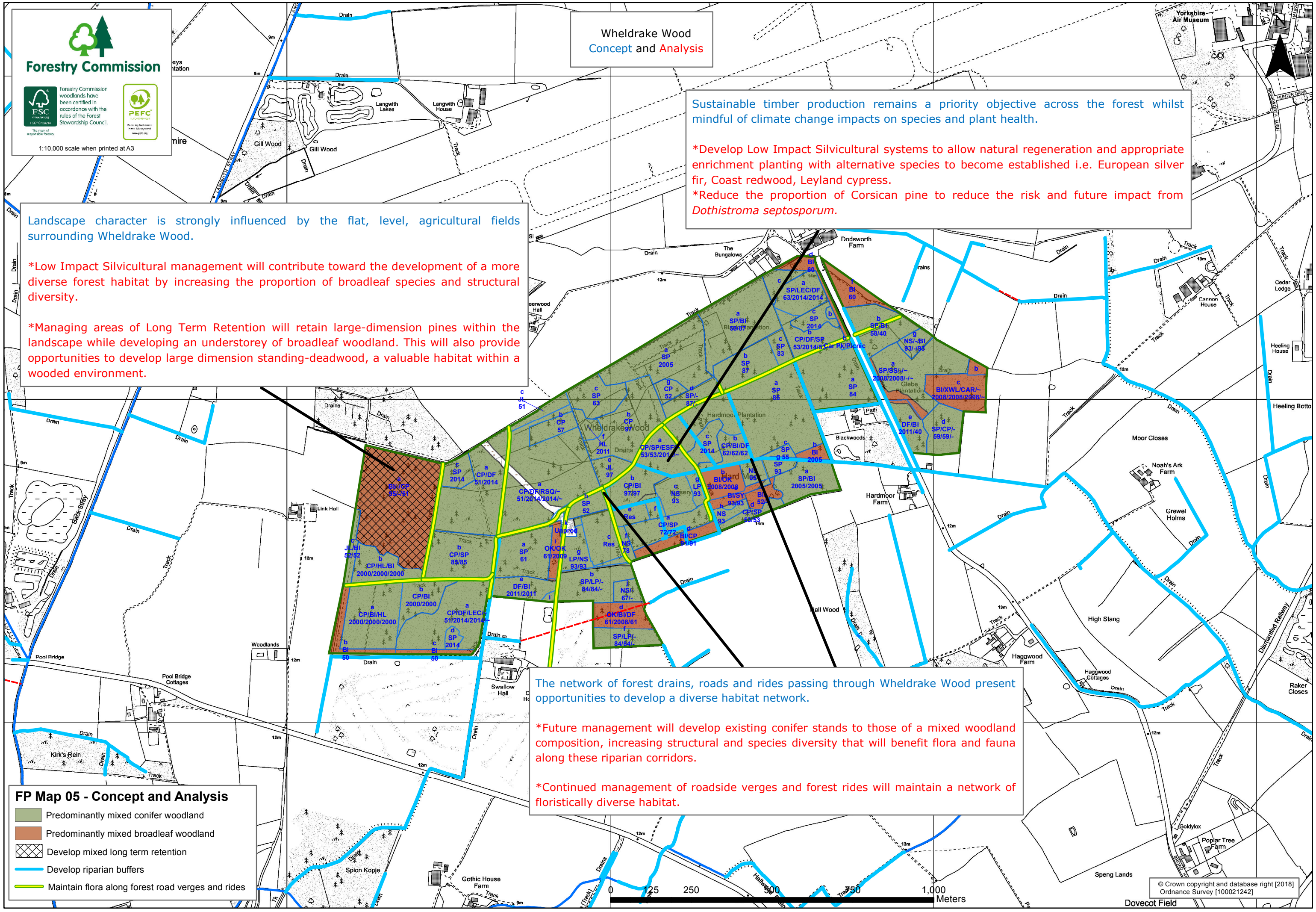
*Develop Low Impact Silvicultural systems to allow natural regeneration and appropriate enrichment planting with alternative species to become established i.e. European silver fir, Coast redwood, Leyland cypress.

*Reduce the proportion of Corsican pine to reduce the risk and future impact from *Dothistroma septosporum*.

Landscape character is strongly influenced by the flat, level, agricultural fields surrounding Wheldrake Wood.

*Low Impact Silvicultural management will contribute toward the development of a more diverse forest habitat by increasing the proportion of broadleaf species and structural diversity.

*Managing areas of Long Term Retention will retain large-dimension pines within the landscape while developing an understorey of broadleaf woodland. This will also provide opportunities to develop large dimension standing-deadwood, a valuable habitat within a wooded environment.



The network of forest drains, roads and rides passing through Wheldrake Wood present opportunities to develop a diverse habitat network.

*Future management will develop existing conifer stands to those of a mixed woodland composition, increasing structural and species diversity that will benefit flora and fauna along these riparian corridors.

*Continued management of roadside verges and forest rides will maintain a network of floristically diverse habitat.

FP Map 05 - Concept and Analysis

- Predominantly mixed conifer woodland
- Predominantly mixed broadleaf woodland
- Develop mixed long term retention
- Develop riparian buffers
- Maintain flora along forest road verges and rides



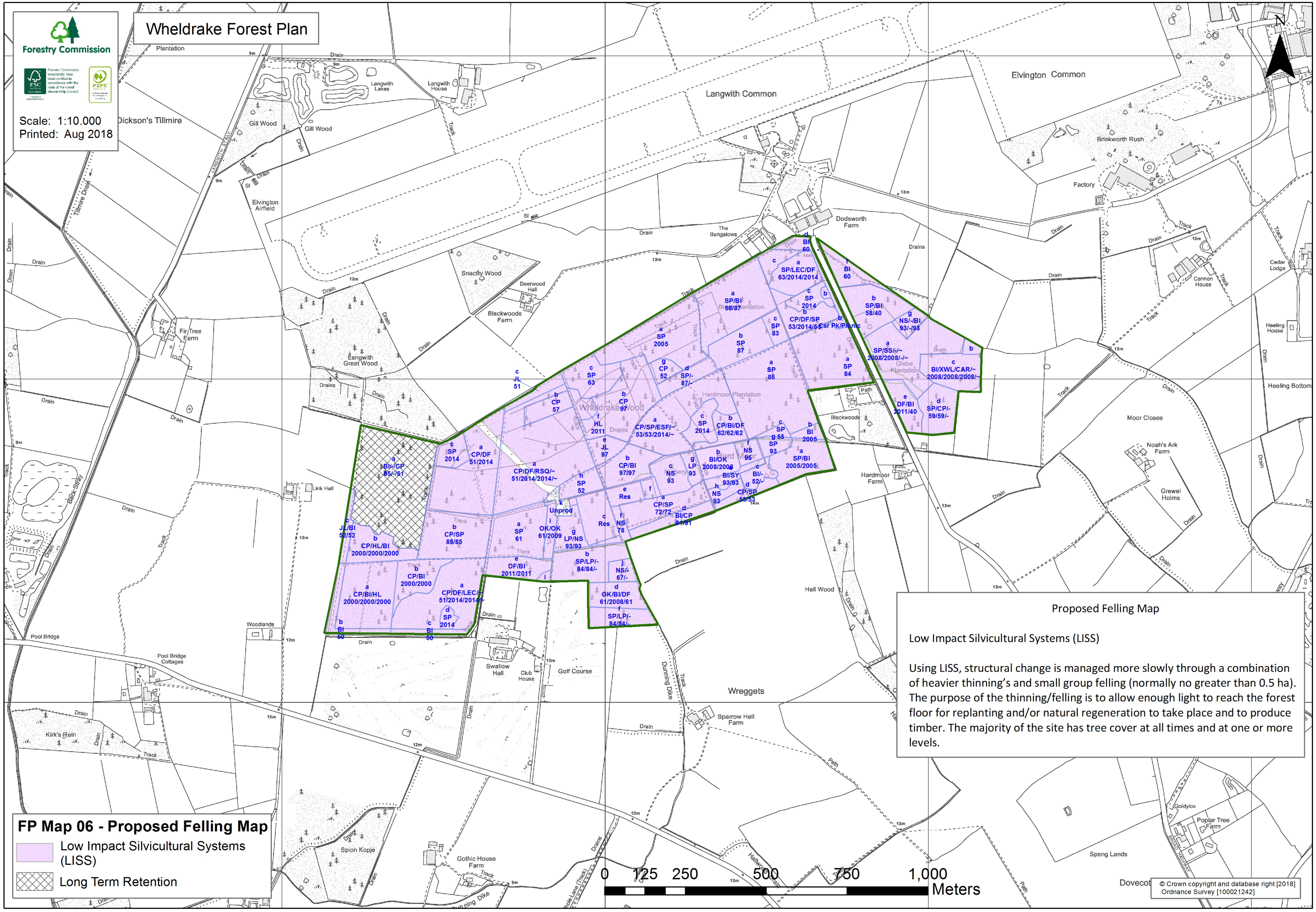


Forestry Commission
Woodlands have been certified in accordance with the rules of the Forest Stewardship Council




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



Proposed Felling Map

Low Impact Silvicultural Systems (LISS)

Using LISS, structural change is managed more slowly through a combination of heavier thinning's and small group felling (normally no greater than 0.5 ha). The purpose of the thinning/felling is to allow enough light to reach the forest floor for replanting and/or natural regeneration to take place and to produce timber. The majority of the site has tree cover at all times and at one or more levels.

FP Map 06 - Proposed Felling Map

-  Low Impact Silvicultural Systems (LISS)
-  Long Term Retention

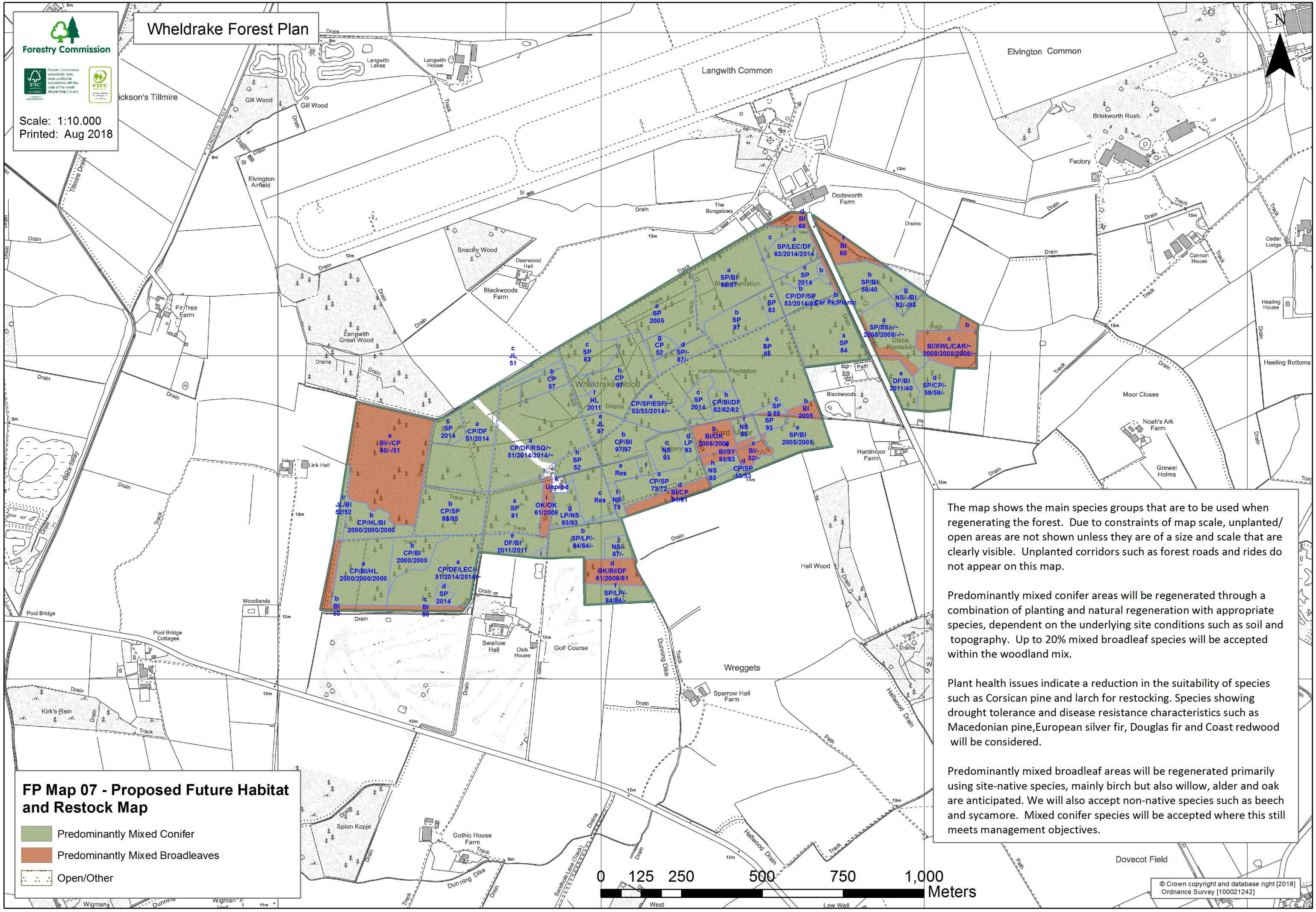


Forestry Commission

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

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Wheldrake Forest Plan



FP Map 07 - Proposed Future Habitat and Restock Map

- Predominantly Mixed Conifer
- Predominantly Mixed Broadleaves
- Open/Other

The map shows the main species groups that are to be used when regenerating the forest. Due to constraints of map scale, unplanted/open areas are not shown unless they are of a size and scale that are clearly visible. Unplanted corridors such as forest roads and rides do not appear 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. Up to 20% mixed broadleaf species will be accepted within the woodland mix.

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, European silver fir, Douglas fir and Coast redwood will be considered.

Predominantly mixed broadleaf areas will be regenerated primarily using site-native species, mainly birch but also willow, alder and oak are anticipated. We will also accept non-native species such as beech and sycamore. Mixed conifer species will be accepted where this still meets management objectives.