Forestry Commission England

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

Yorkshire Forest District

Bumble Wood Forest Plan

FDP 10

2017

Outgang Road
Pickering
North Yorkshire
YO18 7EL
0300 067 4300

FOREST ENTERPRISE - Application for Forest Plan Approvals in England

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Bumble Wood

264.5 Hectares

Period of Plan: 2016 - 2025

1. Background

Bumble Wood Forest is part of a network of forests managed by Forest Enterprise (FE), Yorkshire Forest District, located within the North Riding Beat. It is situated approximately 6 kilometres south-west of Egton Bridge within the Central Moors of the North York Moors National Park.

The forest is freehold land secured by the Forestry Commission between 1957 and 1979 and was previously managed as rough pasture and moorland. A proportion of the land was already established with broadleaved woodland along Wheeldale Gill.

2. Describing the Site

2.1 Geology and Soils (FP Map 01)

Underlying geology is predominantly sedimentary sandstone, siltstone and mudstone of the Cloughton Formation formed in the mid-Jurassic period. Mudstone, sandstone and ironstone of the Saltwick Formation is present along the gill bottom.

The soils at Bumble Wood are predominantly typical surface-water gleys with ironpan soils across the upper reaches. Based on Forest Research Ecological Site Classification, soils are moist to very moist soil moisture regime (SMR) and poor to very poor soil nutrient regime (SNR). Although these characteristics are very limiting for choice of species, this need not limit the ongoing naturalisation toward site-native wooded heath habitat.

2.2 Tree Species (FP Map - 02)

Spruce, pine and broadleaf species occupy similar proportions across the forest. The most significant change during the last plan period has been the reduction of 1st rotation evergreen conifer to less than 30% of the forest area and the significant increase in open ground (developing heathland). Naturally regenerating pine and spruce are recolonising areas previously cleared of conifer and current estimates indicate 18 hectares of this mixed habitat type. Since 2003, almost 70 ha of mulching of naturally regenerating pole-stage conifers have already been carried out. During the previous plan period approximately 30 hectares of site native broadleaves were planted, contributing toward the gradual restoration of wooded heath.

2.3 Wind Damage (FP Map – 04)

The windthrow hazard classification ranges between 2 and 4. This should not prove a limiting factor in the short-term as there are no intentions to carry out thinning operations across this block. Crop stability may become an issue if proposed felling is significantly delayed and crop terminal height is reached before proposed felling is complete.

2.4 Landscape (Photographic montage)

The forest is situated in the 'Central and Eastern Moors' landscape character area[1] of the North York Moors National Park. Prior to de-coniferisation commencing, Bumble Wood was described as a plantation, "which appears to envelop this moorland dale and is very regular in shape, is an incongruous element in the landscape and intrudes on the moorland scene".

Today its contribution to the moorland landscape is very different with some areas having developed good heathland vegetation assemblages and appears to integrate well with the surrounding moorland. Recent felling's with conifer brash and bare ground still look 'raw' in comparison but will soften over time as heathland communities develop. Remaining spruce and Lodgepole pine still appear incongruous within this developing landscape and recently planted broadleaves have still to make their contribution once established.

2.5 People and Community (FP Map – 05)

As a freehold property, the site is dedicated as Open Access land through the Countryside Rights of Way Act (2000). There are no formal recreation facilities associated with this block and it experiences low levels of informal access by walkers.

2.6 Natural Heritage (FP Map – 05)

Bumble Wood Forest is important for a wide range of flora, fauna and bio-diverse habitats. Statutory sites within the forest include Scar End Wood Site of Special Scientific Interest (SSSI), cited for its relict upland oak woodland, details for which may be found at; http://www.sssi.naturalengland.org.uk

Ancient woodland is an important feature at Bumble Wood, accounting for nearly 9% of the forest area, parts of which are covered by the above SSSI designation. Species of note include breeding Nightjar, Small pearl-bordered fritillary and schedule 1 birds of prey. The site is completely bounded by the North York Moors SSSI/SAC/SPA and is developing improved ecological connectivity as the restoration process progresses.

[1] North York Moors National Park – Landscape Assessment 2003

The following bird species have been recorded in or adjacent to the forest and are considered important for the future management of this site; Lesser Redpoll, Willow Warbler, Tree Pipit, Nightjar and Golden Plover[2].

Significant areas of wet upland heathland are developing across those sites previously cleared of conifer crops and comprise a mosaic of open and wooded heath. Areas of wooded heath have varying proportions and densities of tree species including planted native broadleaves, juniper and regenerating pine and spruce.

A network of rivers, streams, water courses and drains pass through and adjacent to the forest, providing a large area of riparian habitat. These sites typically support a more diverse woodland structure where native broadleaf tree species, shrubs and ground flora can naturally regenerate, providing ecologically diverse habitat corridors between the moorland and the forest.

Colonies of Northern brown wood ant are established along the southern boundary of the remaining P81/61 spruce crops.

2.7 Cultural Heritage (FP Map 05)

Although there are no scheduled monuments across the site, several 19th century sheepfolds, boundary stones and trackways are recorded.

3. Describing the Project

3.1 Project Brief

- Continue the process of heathland and wooded heath restoration,
- manage natural and cultural heritage sites in accordance with their requirements as per agreed management plans,
- increase the proportion of native broadleaf cover across areas of conifer PAWS and along riparian zones.

3.2 Objectives

Environmental

- Maintain and improve the, cultural and heritage value of these woods, to be measured by Non-Government Organisations and FC systems accordingly.
- Improve the resilience and adaptation of the natural environment and realise the potential of these woods for nature and wildlife, to be measured by Natural England, NYMNP Authority and FC systems accordingly.

[2] BTO Bird Atlas data 2007 – 2011

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 landscape character within the North York Moors National Park 'Central and Eastern Moors character area'. To be measured by fixed-point photography.

Economic

- Maintain the land within our stewardship under UKWAS certification, to be measured by independent surveillance audits.

3.3 Constraints

- The stands of Sitka spruce, south of Wheeldale Beck have no roading infrastructure that will enable future harvesting of remaining conifers to be carried out,
- the Sitka spruce in compartments 1011 and 1012 south of Wheeldale Beck are effectively landlocked due to the incised section of moorland not owned or managed by the Forestry Commission. This creates a significant restriction to access this part of the forest,
- continued pressure for timber haulage on public highways across agreed access routes could seriously delay or prevent future harvesting and subsequent heathland restoration,
- continued management of high density conifer regeneration threatens overall objectives and will subject additional financial pressure on conservation budgets.

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 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 Bumble Wood this will include:

- Improve and maintain existing areas of developing open forest/wooded heath following some of the principles set out in Forestry Commission Practice Guide – 'Managing open habitats in upland forests (2014)'. Of particular interest are the general principles for keeping open habitats open and habitat-specific guidance for heathland. Future management will need to consider and address the continuance of conifer succession in both cost and practical implementation.
- Managing Veteran trees and PAWS as set out in – 'Ancient Woodland on the Forestry Commission Estate in England (March 2002)' and 'FEE Operations Instructions No. 3 (rev.2012), Ancient Woodlands'.

- 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, Long Term Retention Scots pine around Archy Crag, within and adjacent ancient woodland.

- Bluewath Beck passes through Wheeldale Gill and is currently identified as moderate status through the Water Framework Directive (WFD) assessment. Work undertaken through this plan will contribute to improving the water quality and aquatic ecology; through replacing existing conifer crops with open forest/wooded heath with principally broadleaf species and considering opportunities to address issues. This is particularly important for freshwater pearl mussel within this catchment and operational activity will need to ensure sedimentation is minimised.

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.

Through this plan 19.68 ha are designated Natural Reserve across Scar End 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 13.74 ha of Scots pine around Archy Crag are designated LTR.

Invasive species

There are currently no known invasive species that impact across this plan.

3.4.2 Timber Harvesting

We will continue to harvest timber by clearfelling. These operations will be planned and controlled to ensure due regard for all other objectives of management at Bumble Wood.

3.4.3 Landscape

Bumble Wood Forest lies within the North York Moors National Park, a protected and designated landscape, where the remaining conifer crops have a diminishing negative impact within the landscape as felled areas become more integrated with the surrounding moorland.

Where previously the forests upper margins presented incongruous and regular margins which didn't respond to landform, the forest area is now much reduced although further work is required. In particular, P1980's spruce crops to the south-west of the property present a harsh conifer element within the moorland dale when viewed from Hamer Bank Road and continues to detract from the open moorland scene.

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

3.5 Plan (FP Map 06)

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.

3.6 Areas (FP Maps 08 and 09)

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)
2017 – 2021 Clearfell	**16.91**	**6**	**3420**
2022 – 2025 Clearfell	**20.64**	**8**	**4920**
Natural Reserve	**19.68**	**7**	**nil**

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.

Habitat type - (based on principal species established)	Area – hectares		% age of total area	
	2016	2066	2016	2066
Conifer	95.78	26.45	36	10
Broadleaf	43.69	57.88	17	22
Wooded heath	125.03	180.17	47	68

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 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 2011 i.e. Forests and biodiversity, Forests and climate change, Forests and historic environment, Forests and landscape, Forests and people, Forests and soils, Forests and Water.

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.

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

Broadleaf

The few remaining areas of conifer PAWS in Scar End Wood will be restored to the appropriate native woodland types primarily through the recruitment of natural regeneration of native species.

On non-PAWS sites planned for conversion to open forest/wooded heath, we will accept natural regeneration of native species and carry out enrichment planting where regeneration fails to establish. Target NVC Woodland Types are W4 – Birch with purple moor-grass and W16 Oak-birch with bilberry.

Preferred species regeneration on PAWS/open forest areas

More favourable

Alder/Birch/Willow (lower slopes)

Oak/Birch/Rowan/Holly (mid to upper slopes)

Larch

Pine

Spruce

Less favourable

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. Lodgepole pine, Sitka spruce) threatens the native woodland community, it will be removed as soon as practicable.

Open forest/Wooded heath

It is proposed to develop a mosaic of successional habitat through natural succession of heathland communities and native woodland enrichment planting. This will create a mosaic of wooded heath, combining elements of heathland flora with native broadleaves and a small proportion (no more than 20% by area) of conifer tree cover. Habitat networks will be maintained and established across parts of the forest that will enhance and maximise the movement of flora and fauna by increasing the permeability both within and outwith the forest area. The development of these sites will be beneficial for a range of heathland and woodland species. We do not intend to manage these sites for future timber production.

Natural regeneration will be assessed and the risk it poses to the objectives of the plan considered. Where dense shade or invasive species (i.e. Lodgepole pine, Sitka spruce) threatens heathland and native woodland communities, it will be removed as soon as practicable.

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 will require a formal amendment of the plan plus the agreement of and approval by Forest Services staff, as per CSM 6.

4.2 Restock

Over the lifetime of restoration from secondary plantation to open forest/wooded heath, we will ensure existing trees and future areas of young trees across the site achieves tree crown cover of more than 20% of the ground. This ensures compliance with the definition of woodland as set out in Forestry Commission England, Forest Services document; Action Note 093 – Definition of woodland and trees.

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.

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 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 Bumble Wood forest. Maintaining a mixed resource of temporary and permanent open space will provide suitable habitat for Nightjar, Woodcock and other priority flora and fauna species within the forest area.

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 Bumble Wood. This will improve and enhance the habitat network within the woodlands and benefit protected species. Continuing development across a mosaic of open and wooded habitats will benefit a range of bird species associated with each habitat type – Appendix 2.

Appendix 2 – Priority woodland and open habitat bird species

Bird Species [1]	Forest location	Habitat enhancement
Nightjar Golden Plover	Wooded heath, heather moorland	Continue sequential conifer felling and restoration to alternative habitats to ensure continuity of open areas; a mosaic of open structure woodland/wooded heath.
Lesser redpoll Tree pipit Willow warbler	Gill woodland and conifer plantation	Continue sequential conifer felling and restoration to remove pressure from adjacent conifer plantation, this will allow the development of shrub layer structure and increased structural and species diversity. Expand diverse riparian woodland habitat, create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.

[1] Source – BTO Bird Atlas data for SE98 grid square.

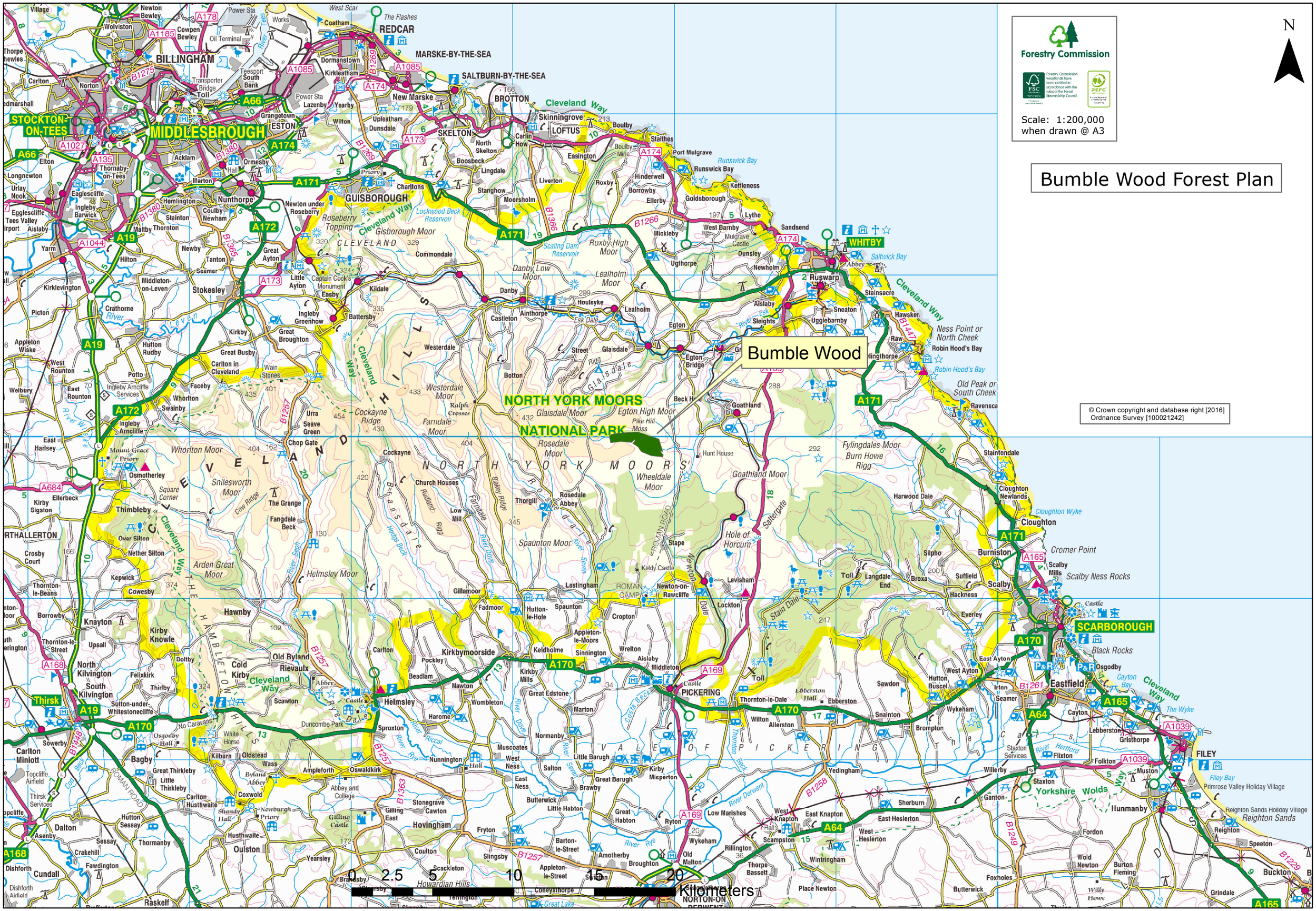
The Breeding Bird Survey is run by the British Trust for Ornithology (BTO) and is jointly funded by the BTO, the Joint Nature Conservation Committee (JNCC) (on behalf of the statutory nature conservation bodies: Department of Agriculture, Environment and Rural Affairs - Northern Ireland, Natural England,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

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

Forestry Commission England

Yorkshire Forest District

Bumble Wood Forest Plan—FP10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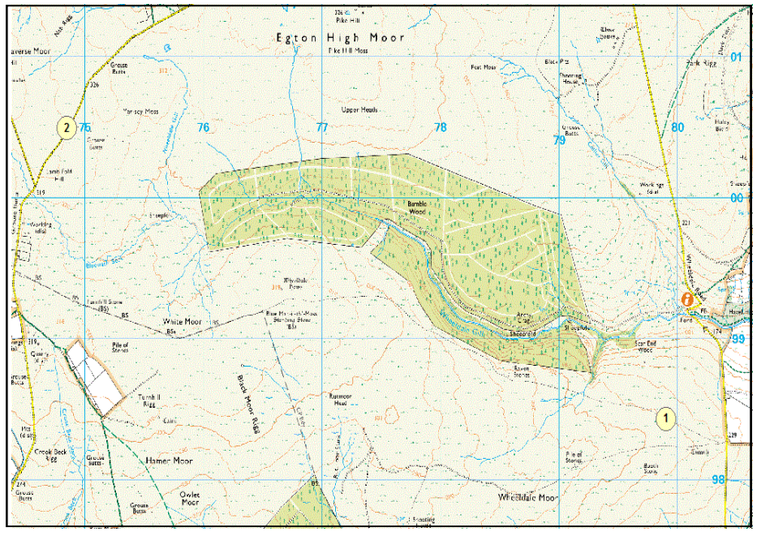
Howardian Hills
Vale of Pickering



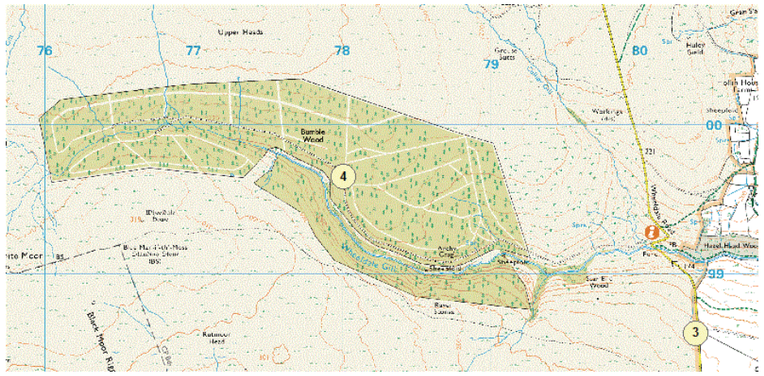
Bumble Wood

Yorkshire Forest District

Forest Plan 10

View 1: Brimstone Sike and Wheeldale Gill from Wheeldale Moor – SE79899843. Views from the permissive footpath south of the property present a closer view into the developing moorland and open woodland habitats, although 'still to be felled' conifers with their regular-shaped boundaries cover the upper slopes of the moorland gill.

View 2: Bumble Wood from Hamer Bank road – NZ48000040. The conversion from conifer plantation to developing heather moorland and open woodland is very obvious from this location, although the remaining P81 spruce still dominates this part of the moorland gill. Future felling and restoration will significantly improve this developing landscape. Naturally regenerating conifers still present a risk and will need to be managed to ensure they do not re-establish to the detriment of the overall restoration objectives.



Bumble Wood

Yorkshire Forest District

Forest Plan 10

View 3: Bumble Wood from Wheeldale Road—SE80389860. Developing heather moorland is starting to blend and merge across the forest property with Egton High Moor following recent felling north-west of Brimstone Sike. Proposed felling to the east of the sike will further develop and enhance the restored landscape. The sweeping arc of P81 spruce south of Wheeldale Gill still dominates this moorland gill.

View 4: Internal view looking west from SE78019965. Where previously even-aged, single species conifer crops dominated large parts of the forest; these areas are now developing into a mosaic of semi-natural heathland and woodland habitats. Naturally regenerating conifers still present a risk and will need to be managed to ensure they do not re-establish to the detriment of the overall restoration objectives.

Bumble Wood Forest Plan

Forestry Commission

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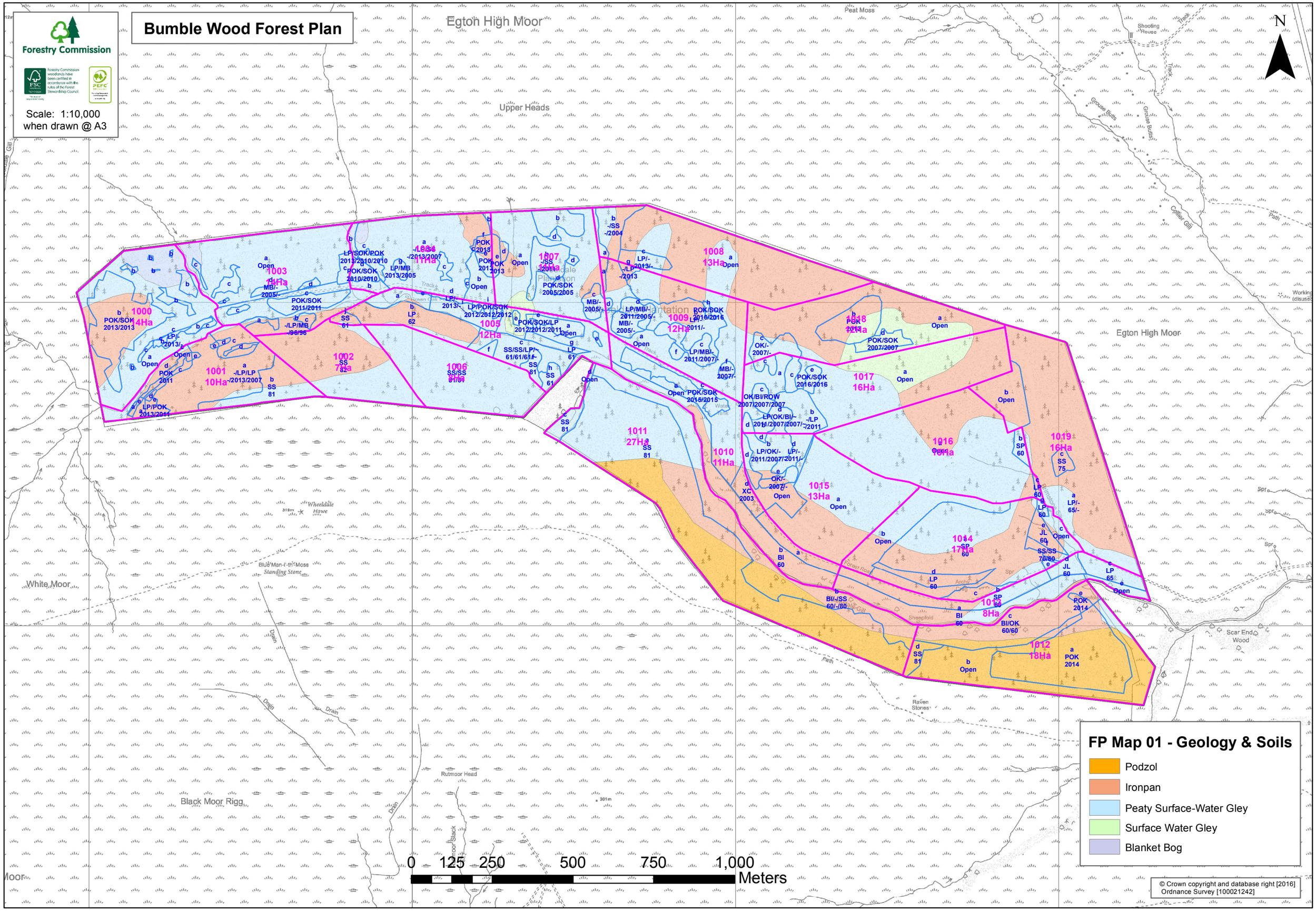

FP Map 01 - Geology & Soils

- Podzol
- Ironpan
- Peaty Surface-Water Gley
- Surface Water Gley
- Blanket Bog

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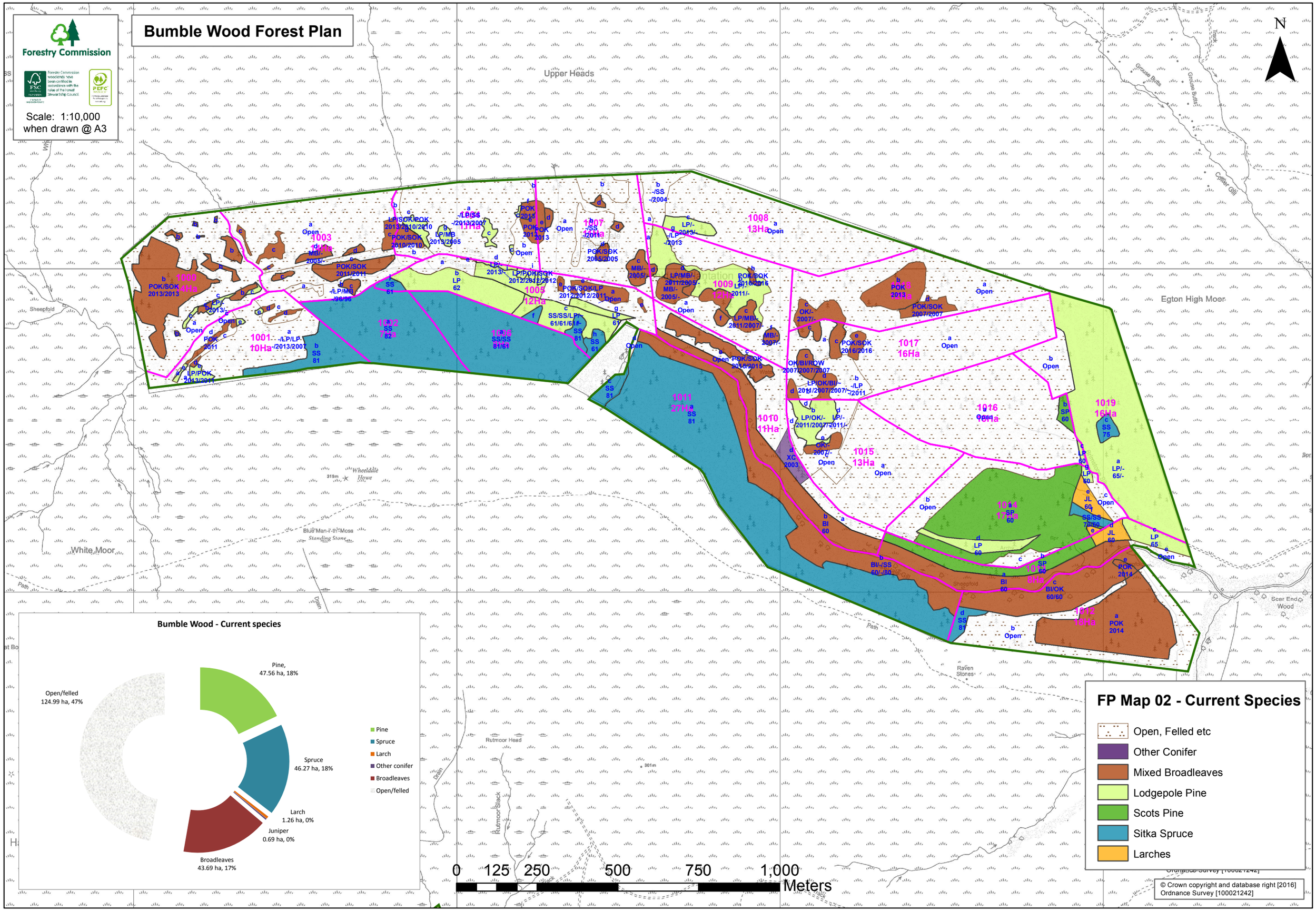

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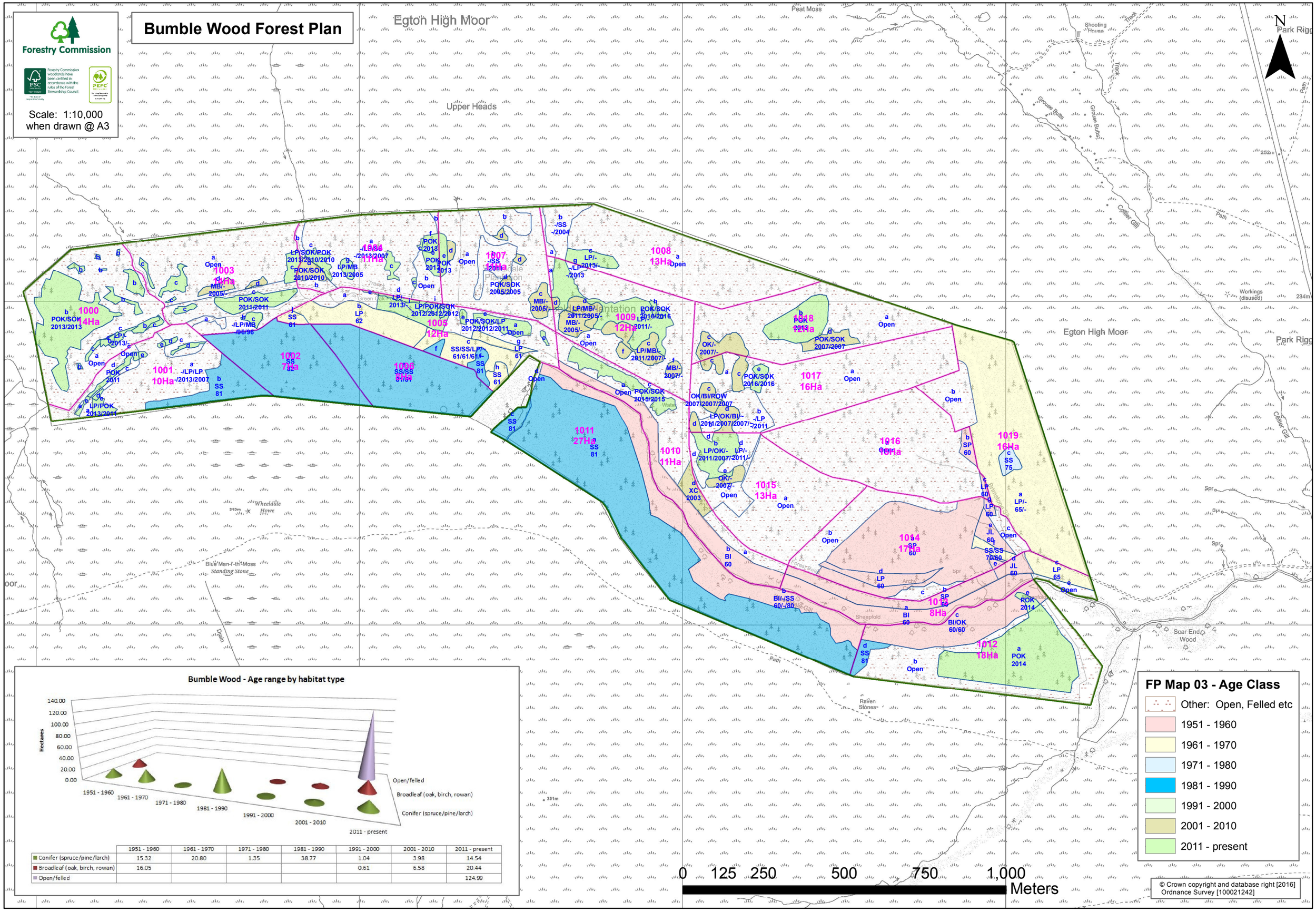

	1951 - 1960	1961 - 1970	1971 - 1980	1981 - 1990	1991 - 2000	2001 - 2010	2011 - present
Conifer (spruce/pine/larch)	15.32	20.80	1.35	38.77	1.04	3.98	14.54
Broadleaf (oak, birch, rowan)	16.05				0.61	6.58	20.44
Open/felled							124.99

FP Map 03 - Age Class

- Other: Open, Felled etc
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2011 - present

Bumble Wood Forest Plan

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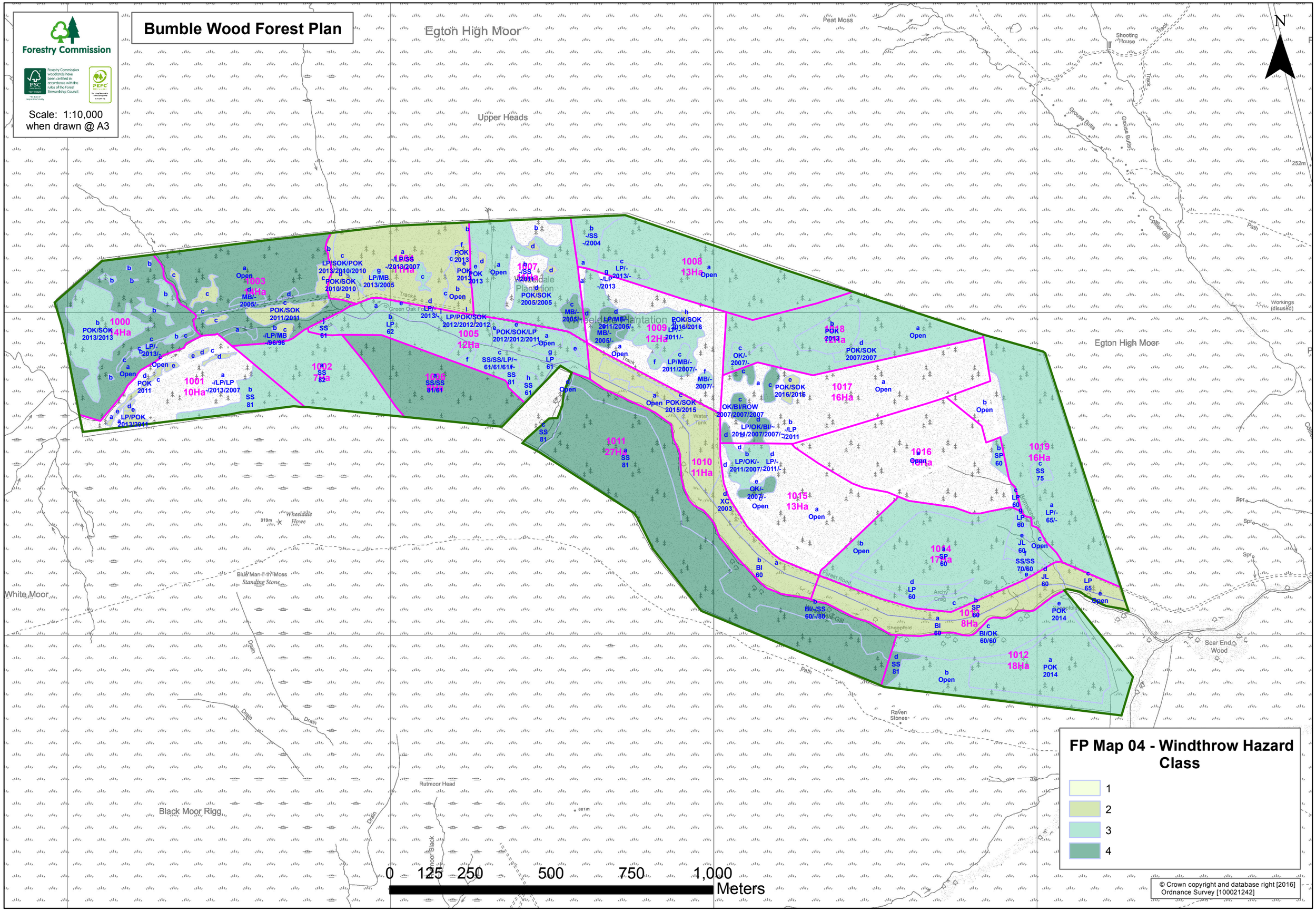

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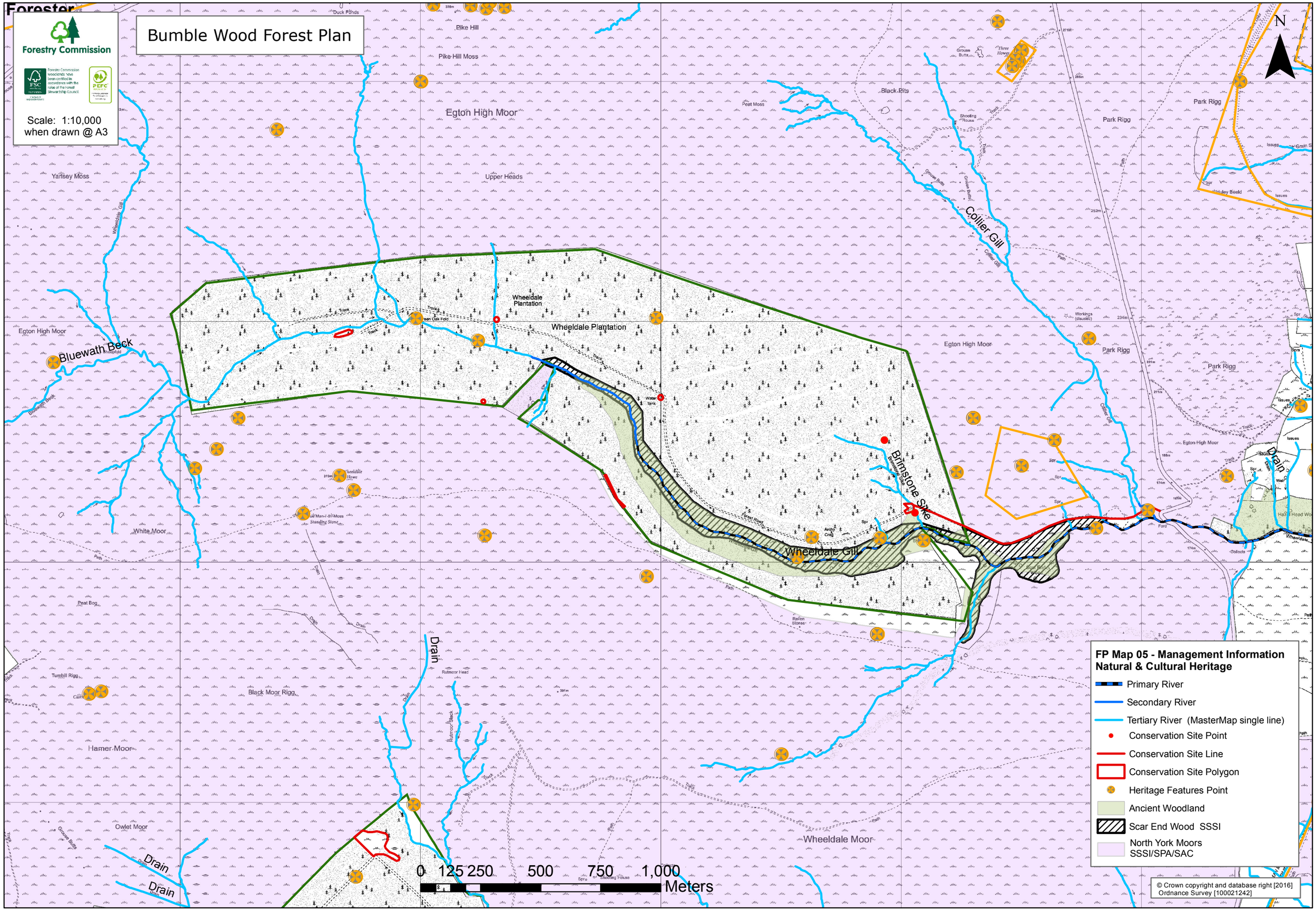

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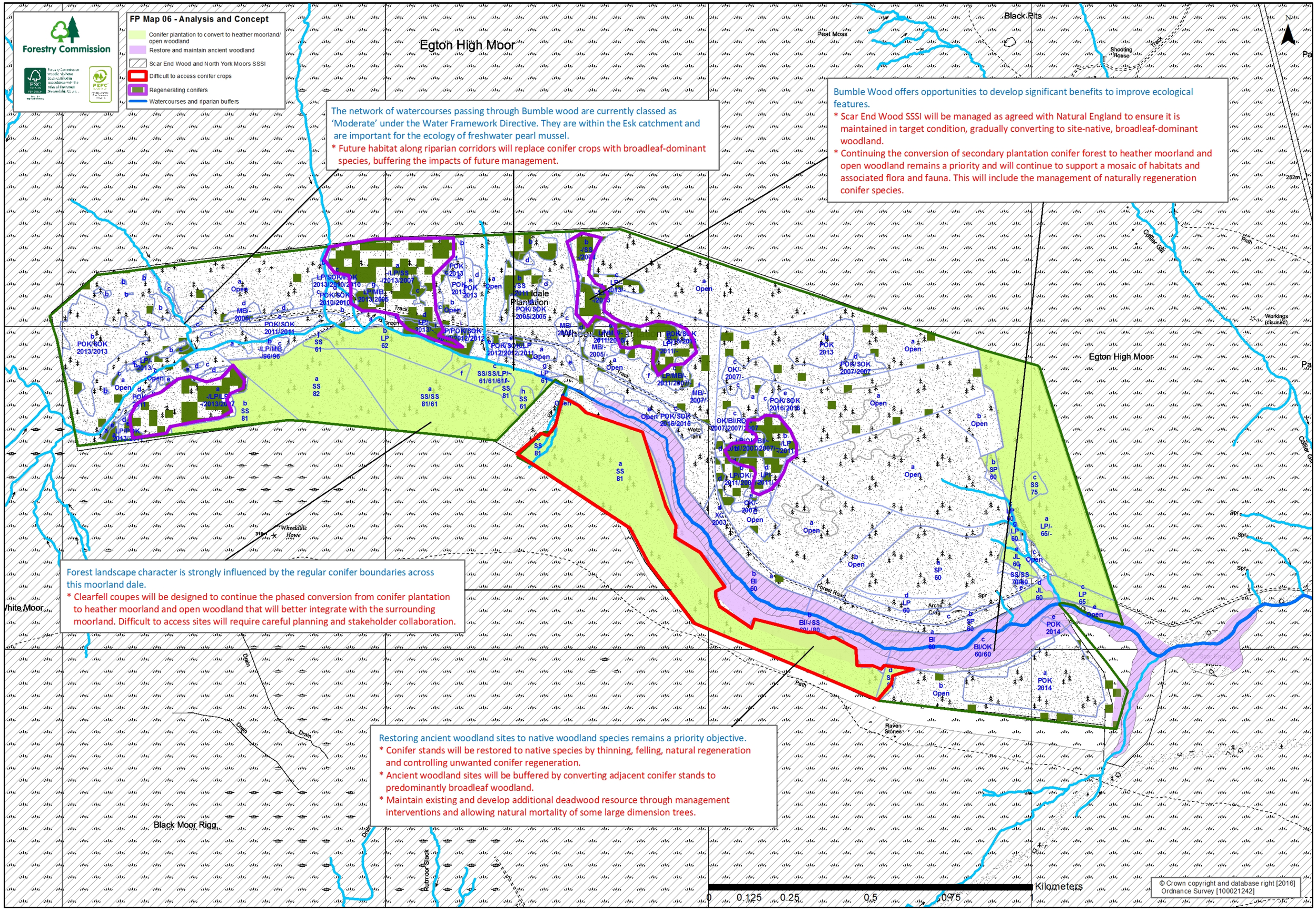

The network of watercourses passing through Bumble wood are currently classed as 'Moderate' under the Water Framework Directive. They are within the Esk catchment and are important for the ecology of freshwater pearl mussel.

* Future habitat along riparian corridors will replace conifer crops with broadleaf-dominant species, buffering the impacts of future management.

Bumble Wood offers opportunities to develop significant benefits to improve ecological features.

* Scar End Wood SSSI will be managed as agreed with Natural England to ensure it is maintained in target condition, gradually converting to site-native, broadleaf-dominant woodland.
* Continuing the conversion of secondary plantation conifer forest to heather moorland and open woodland remains a priority and will continue to support a mosaic of habitats and associated flora and fauna. This will include the management of naturally regeneration conifer species.

Forest landscape character is strongly influenced by the regular conifer boundaries across this moorland dale.

* Clearfell coupes will be designed to continue the phased conversion from conifer plantation to heather moorland and open woodland that will better integrate with the surrounding moorland. Difficult to access sites will require careful planning and stakeholder collaboration.

Restoring ancient woodland sites to native woodland species remains a priority objective.

* Conifer stands will be restored to native species by thinning, felling, natural regeneration and controlling unwanted conifer regeneration.
* Ancient woodland sites will be buffered by converting adjacent conifer stands to predominantly broadleaf woodland.
* Maintain existing and develop additional deadwood resource through management interventions and allowing natural mortality of some large dimension trees.

Bumble Wood Forest Plan

Forestry Commission

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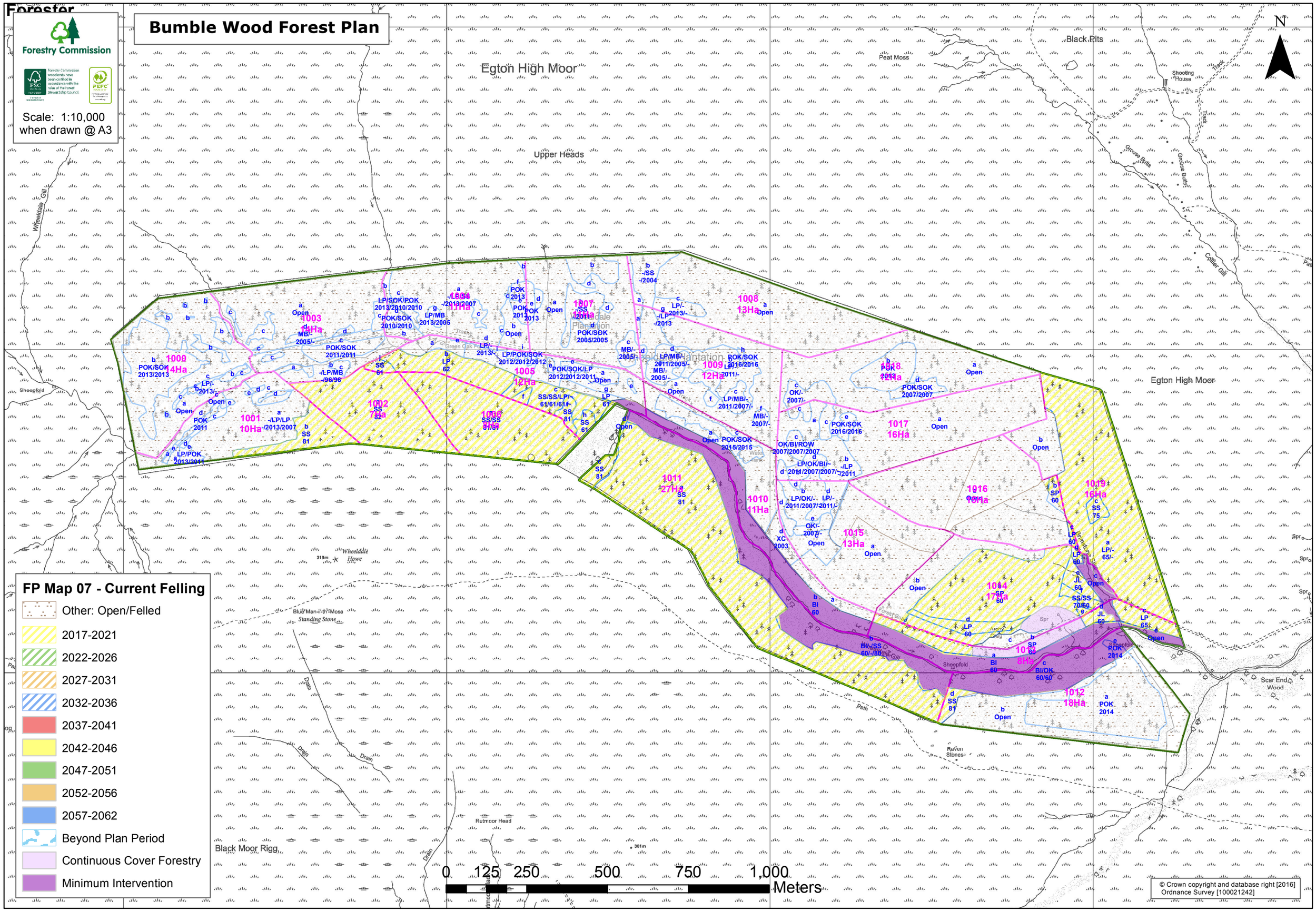
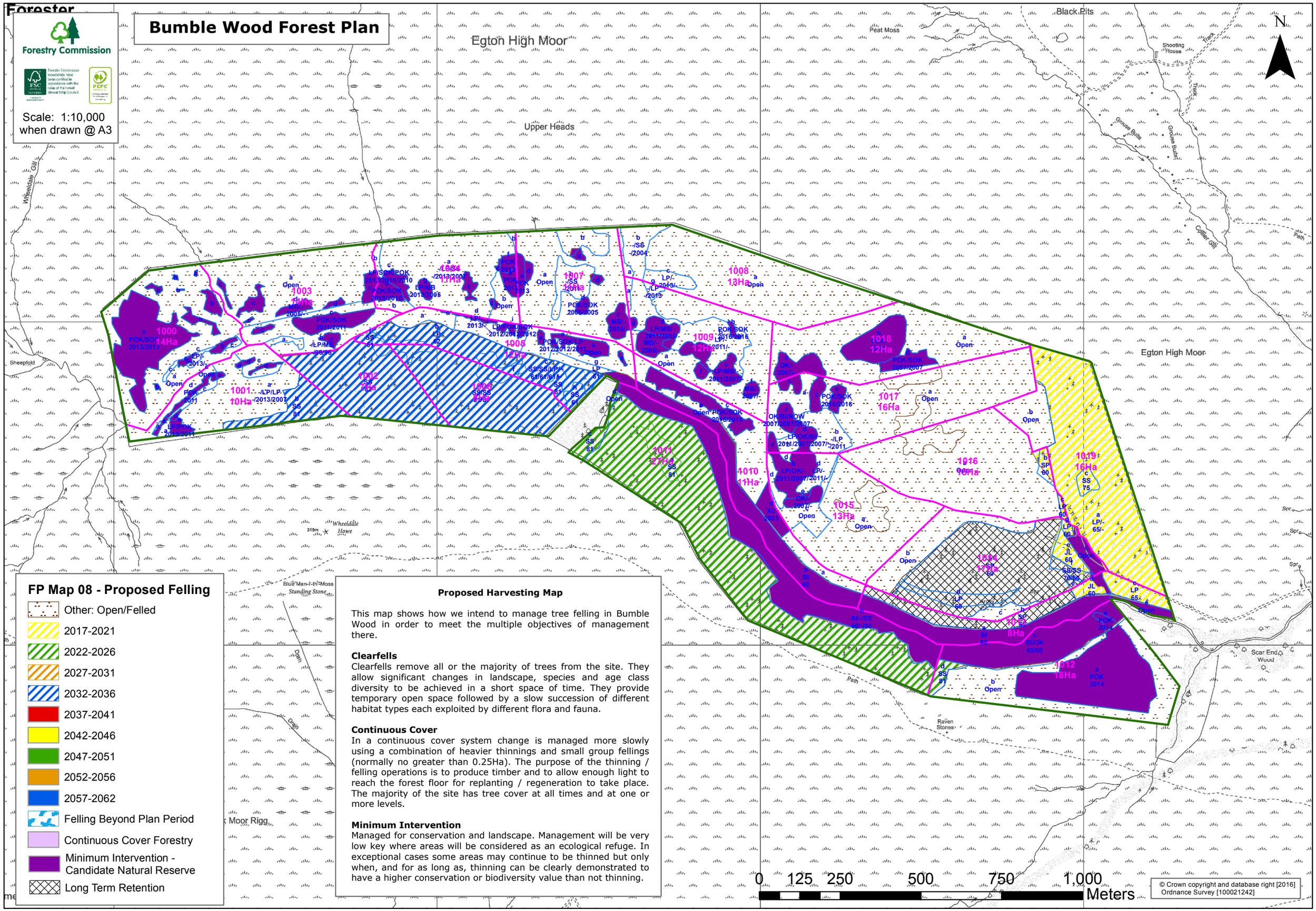


Bumble Wood Forest Plan

Forestry Commission

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

Scale: 1:10,000 when drawn @ A3



FP Map 08 - Proposed Felling

- Other: Open/Felled
- 2017-2021
- 2022-2026
- 2027-2031
- 2032-2036
- 2037-2041
- 2042-2046
- 2047-2051
- 2052-2056
- 2057-2062
- Felling Beyond Plan Period
- Continuous Cover Forestry
- Minimum Intervention - Candidate Natural Reserve
- Long Term Retention

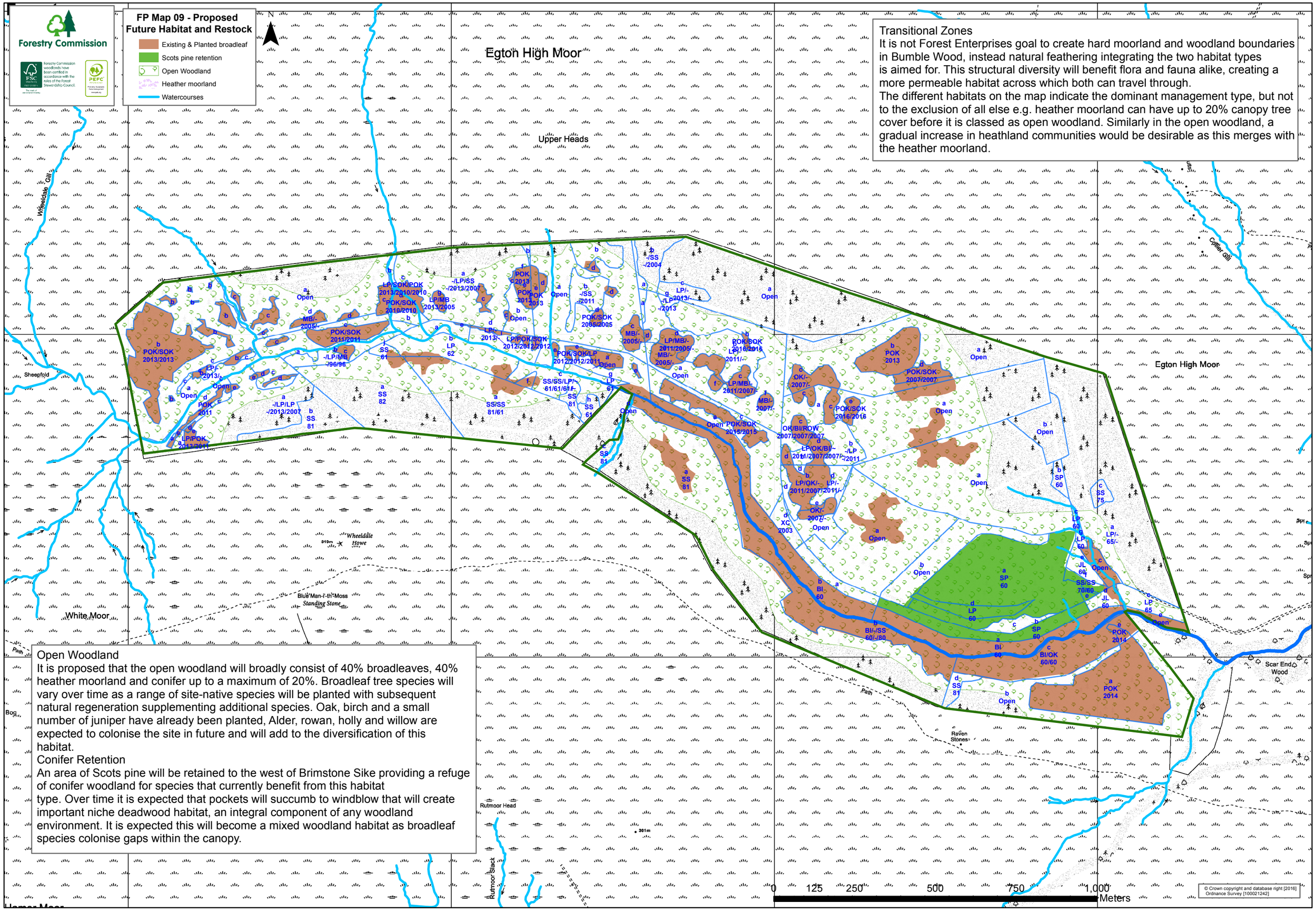
Proposed Harvesting Map

This map shows how we intend to manage tree felling in Bumble Wood 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.

Continuous Cover
In a continuous cover system change is managed more slowly using a combination of heavier thinnings and small group fellings (normally no greater than 0.25Ha). The purpose of the 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.

Minimum Intervention
Managed for conservation and landscape. Management will be very low key where areas will be considered as an ecological refuge. In exceptional cases some areas may continue to be thinned but only when, and for as long as, thinning can be clearly demonstrated to have a higher conservation or biodiversity value than not thinning.



Transitional Zones
It is not Forest Enterprises goal to create hard moorland and woodland boundaries in Bumble Wood, instead natural feathering integrating the two habitat types is aimed for. This structural diversity will benefit flora and fauna alike, creating a more permeable habitat across which both can travel through.
The different habitats on the map indicate the dominant management type, but not to the exclusion of all else e.g. heather moorland can have up to 20% canopy tree cover before it is classed as open woodland. Similarly in the open woodland, a gradual increase in heathland communities would be desirable as this merges with the heather moorland.

Open Woodland
It is proposed that the open woodland will broadly consist of 40% broadleaves, 40% heather moorland and conifer up to a maximum of 20%. Broadleaf tree species will vary over time as a range of site-native species will be planted with subsequent natural regeneration supplementing additional species. Oak, birch and a small number of juniper have already been planted, Alder, rowan, holly and willow are expected to colonise the site in future and will add to the diversification of this habitat.
Conifer Retention
An area of Scots pine will be retained to the west of Brimstone Sike providing a refuge of conifer woodland for species that currently benefit from this habitat type. Over time it is expected that pockets will succumb to windblow that will create important niche deadwood habitat, an integral component of any woodland environment. It is expected this will become a mixed woodland habitat as broadleaf species colonise gaps within the canopy.