

Hagg Wood Forest Plan FP 56

2024

Yorkshire Forest District



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



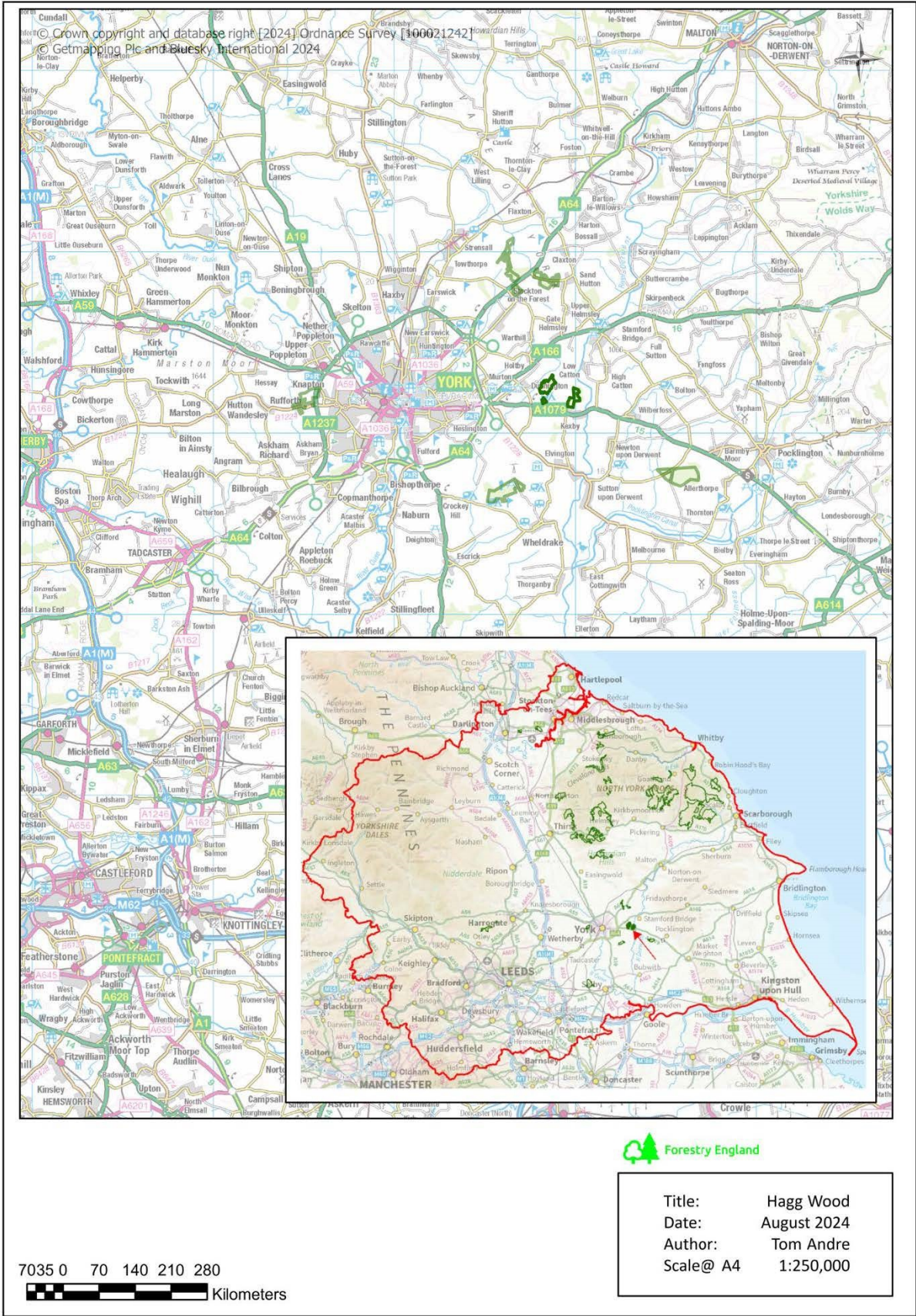
Forestry England - Property

Forest District:	Yorkshire
Woodland or property name:	Hagg Wood
Nearest town, village or locality:	Dunnington
OS Grid reference:	SE 681 528
Local Authority district/unitary Authority:	City of York Council

Areas for approval

	Conifer	Broadleaf
Felling	0	0
Lower Impact Silvicultural Systems regeneration felling	15.6	8.7
Restocking	≤4.9	≥17.0

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



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Summary

This Forest Plan sets the strategic management direction of Hagg Wood for the period until 2034. It builds upon previous plans and is informed by the forest's context and composition, including landscape, heritage, ecology, forest structure, tree species and habitats.

Opportunities and constraints are identified and these inform a selection of management objectives. These objectives will contribute to Forestry England's strategic objectives for wildlife, people, and for climate.

The plan then provides detail on implementation and associated monitoring. The plan explains how Forestry England will continue to sustainably harvest timber using a range of silvicultural systems. We are designing forest resilience into our plan for Hagg Wood by diversifying species composition and forest structure. The plan's approach to Plantation on Ancient Woodland (PAWS) is provided as well as detail on how forest management will be implemented to benefit Hagg Wood's wildlife.

A variety of maps and appendices are provided to support understanding.

General Principles

All operations within the forest will be carried out in accordance with the following standards:

- U.K. Woodland Assurance Standard
- U.K Forestry Standard 5th edition (published 2023)

All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard, as independently assessed by annual surveillance audits.

Operational Planning - Before any major forest operations are undertaken, an Operational Site Assessment (OSA) is completed. The OSA details operational proposals and outlines all known environmental, social and operational considerations. It is an important reference document during the planning phase, at operational pre-commencement meetings, and for supervisory visits during the operation. The OSA is retained along with other related documents. Forestry England staff will monitor all work through regular site visits ensuring that guidelines and contract conditions are adhered to.

We will protect and where appropriate enhance all known sites of archaeological and ecological importance including areas of ASNW and PAWS, managing designated sites, such as scheduled monuments, in accordance with statutory requirements and in line with agreed management plans.

We apply local and national policy and best practice guidance to the management of riparian corridors, improving and enhancing the habitat network and benefiting protected species. Developing species and structural diversity will benefit habitats for priority woodland bird species throughout the woodland (Appendix 1 - Priority species).

Routine maintenance operations (e.g. fencing, ride mowing, survey work etc.) follow local policy⁴.

Forest Resilience - We will continue to improve forest resilience to plant health, biosecurity and climate change threats through species and structural diversification.

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

Lower Intervention Silvicultural Systems (LISS) - All plans consider LISS based on methodologies in available guidance². LISS with associated scale felling will contribute towards a varied and intimate internal and external forest landscape, with simple and complex stand structures creating a diverse visitor experience, whilst contributing toward structural diversity. Where existing coupes are not identified for LISS management, we may consider

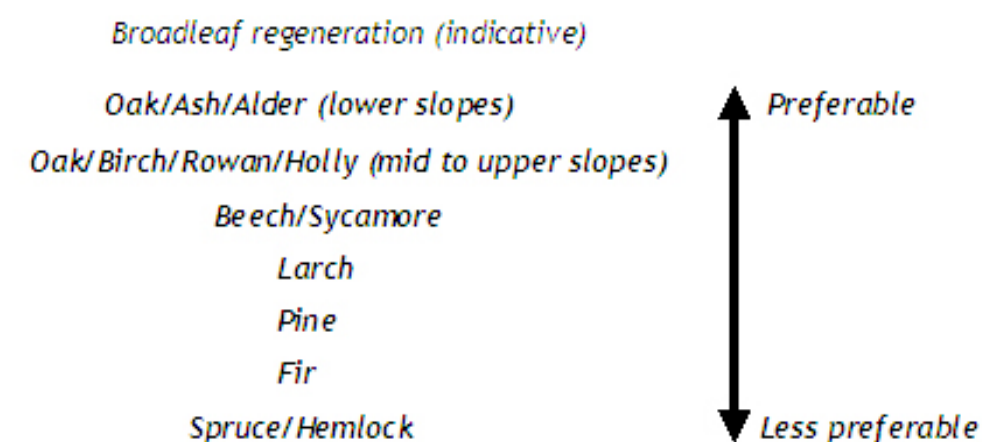
managing these on an extended rotation basis to be thinned and monitored for future consideration for conversion to LISS. See Appendix 2 - LISS Justification.

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.

Wildlife Management - Successful establishment of restocking sites through planting and/or natural regeneration requires effective control of crop damaging mammals. Although deer are present within the forest and surrounding farmland, good levels of natural regeneration indicate that browsing pressure is low. Damage levels will be monitored and managed³.

Wildfire - Regarding wildfire, we will follow guidance as set out in ‘FC Practice Guide - Building wildfire resilience into forest management planning’⁵. This will be applied proportionately dependant on a particular forest or woodland.

Natural Regeneration - Natural regeneration in PAWS will be assessed and the risks to the plan’s objectives will be considered. Where dense shade tolerant or invasive species (i.e. Western hemlock) threaten native woodland communities, natural regeneration will be removed as part of routine felling or thinning operations.



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)⁶. There are also more widespread environmental changes, such as diffuse pollution and climate change, which may threaten in the long term.

Major threats to native woodland are:

- Climate change and fragmentation
- Excessive browsing and grazing by deer, livestock and grey squirrels
- Inadequate or inappropriate management

- Invasive and non-native plant species
- Diffuse pollution
- Pests and diseases
- Inappropriate recreational use
- Development and boundary incursions

We will continue to apply local and national policy^{6,7} and best practice guidance for the management and development of our existing and new native woodlands.

Open space - Within woods we will continue the management of open space habitat, developing heathland, neutral grassland and acid mires where locally appropriate, in line with Forestry England’s Open Habitat Policy⁸. Maintaining a mixed resource of temporary and permanent open space with diverse flora will provide habitat for priority species.

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

Class 1	Semi-Natural Woodland
Includes native coppice woodland and high forest or site-native plantation with a relatively high percentage of native self-sown or coppice understorey.	
Class 2	Reasserting Semi-Natural Woodland
Plantation or ex-plantation with 50-80% site-native species. Includes coppice regeneration and/or strong natural regeneration amongst planted trees.	
Class 3	Plantation
Plantation with 20-50% site-native trees under established plantation stands	
Class 4	Plantation
Plantation with less than 20% site-native species. Includes all non-native broadleaves and beech planted outside its natural range in England.	

Table 1 - Semi- Natural Class descriptions

Haulage - 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, Fifth Edition (2020)⁹, which aims to improve the safety and environmental standards of the timber haulage industry.

Hagg Wood Forest Plan

81.0 Hectares (Ha)

Period of Plan: 2024 - 2034

1.0 Describing the site

Hagg Wood woodlands are located due east of Dunnington village (SE67025261, W3W///coping.named.decisions) and are made up of three areas of woodland: Hagg Wood (43.3 ha), Scoreby Wood (33.2 ha) and Cottage Plantation (4.2 ha). All areas of woodland are owned under leasehold. The surrounding land is primarily arable farmland.

1.1 Geology and Soils (FP Map 01)

Underlying superficial deposits of Lacustrine deposits and Devensian sand gravel overlay sandstone bedrock.

Soils are generally heavy mineral in nature with a high clay content and imperfect drainage. Areas of the north and west of Hagg Wood contain more acidic soils with sandy podzolic drifts. The resulting gley and brown earth soils provide a ‘moist’ soil moisture regime and ‘medium’ soil nutrient regime (although ranging from ‘poor’ to ‘rich’). As a result, the woods can support a wide range of broadleaf and conifer species.

1.2 Tree Species (FP Map 02)

Hagg Wood is made up of a range of broadleaf and conifer tree species. Conifer is the dominant species group (64%), comprised mainly of pine species (47%) and larch species (13%). Broadleaf areas (33%) contain mainly oak (11%) and beech (6%) with birch, alder, sycamore, ash, rowan and other species present.

Tree species diversity can be measured using the Shannon Index which combines the number of species present with their relative abundance. The Shannon Index score for Hagg Wood in 2024 is 1.95, which is less diverse than the average for Yorkshire Forest District (2.17).

Species Composition *	2012 (%)	2017 (%)	2023 (%)
Broadleaf	27	33	33
Pine	49	47	47
Larch	16	13	13
Spruce	2	2	2
Other evergreen conifers	3	2	2
Open/felled	3	3	3

Table 2 - Species composition by main species.*including as a component in mix with other species.

Semi-Natural Class	Area (Ha)
1	5.7
2	0
3	32.6
4	42.7
Total	81.0

Table 3 - Areas of Semi Natural Classifications (see General Principles) across Hagg Wood.

1.3 Wind Hazard

Wind Hazard Class ranges from 1 to 3, indicating the woods are relatively windfirm and significant windblow events are unlikely. As a result, Lower Impact Silvicultural Systems (LISS) continue to be a viable management option across Hagg Wood.

1.4 Landscape

The woods sit within the Vale of York National Character Area where the landform is generally flat or gently undulating and woodland cover is low (5%). They are located within a medium-scale arable landscape of largely geometric field patterns.

The topography is flat and lies between 10m and 20m elevation.

1.5 People and Community (FP Map 04)

Hagg Wood is very well used by local people and dog walkers, with a comprehensive network of public footpaths, internal forest rides and tracks. Hagg Wood is well supported in the local community and has benefited from the Friends of Hagg Wood (FHW) community group since 1996.

The Minster Way long-distance footpath runs through Scoreby Wood before heading towards the banks of the River Derwent.

Cottage Plantation is not as well served for pedestrian access and has less capacity to support and develop its recreational use.

Sporting rights on the leasehold are retained by the lessor.

1.6 Natural Heritage (FP Map 04)

Hagg Wood and Scoreby Wood are designated as ancient woodland sites, principally consisting of Plantation on Ancient Woodland Site (PAWS). The central and southern parts of Hagg Wood are designated as a Site of Importance for Nature Conservation under criteria Wd3 (Acid Woodland) and Wd5 (Bluebell Wood). Ancient woodland indicator species are present across the woodlands, notably the bluebell in the south of Hagg Wood.

Cottage Plantation is a secondary plantation mixed conifer and broadleaf wood. The creation of wetland areas and ponds has provided the opportunity to develop favourable habitat conditions for associated flora and fauna (i.e. bat species).

The forest supports a wide range of nationally and regionally important bird species across different habitat types (see Appendix 1). In particular birds associated with developed woodland edge and shrub layer and woodland rides and glades.

1.7 Cultural Heritage (FP Map 04)

Hagg Wood

In the Domesday Book of 1086 Hagg Wood was recorded as woodland pasture. It supported livestock and the woodland floor was covered in grassland. The wood has been managed for a variety of products, according to the needs of the time, including timber for building, forage for animals, and shelter for game. After being heavily felled for timber during the Second World War it was replanted by Forestry England in the 1950s.

Scoreby Wood

The undesignated ancient monument at Mill Hill mound in the south of Scoreby Wood is evidence of the medieval and post-medieval agricultural activity in the landscape in and around Hagg Wood. Earthwork surveys described in “Hagg Wood, Past, Present and Future” indicate a network of medieval ditches and rectangular and circular platforms circa prehistoric/Romano-British exist in the south-west corner of compartment 5604. There is evidence of extensive ridge and furrow in and around Scoreby Wood, which may have become arable land in the Middle Ages, and reverted to woodland, possibly due to a decrease in population dependent on the land.

Cottage Plantation

There is little recorded heritage within Cottage Plantation, but extensive Roman and Iron age activity is recorded adjacent.

In addition, a survey carried out in 2000 by English Heritage Field Survey team noted slight earth banks which were interpreted as late medieval boundary features in the agricultural fields between Hagg Wood and Cottage Plantation. These have mostly been levelled by agricultural practices.

2.0 Describing the Project

2.1 Project Brief

Forestry England’s purpose is to secure and grow the social, economic and natural capital value of the nation’s forests. Different forests will deliver against our purpose in different ways depending on site conditions, constraints, and opportunities.

Forest Plans provide a holistic and long-term approach to planning and forest design. Forest plans will refer to other documentation, such as SSSI management plans, where appropriate.

Throughout the period of this plan, we will balance objectives for wildlife, people, climate and economy by considering the opportunities and constraints present at Hagg Wood.

2.2 Opportunities & Constraints

Opportunities

- High levels of public access and engagement, especially through the Friends of Hagg Wood, present significant opportunities for social benefit.
- An enhanced thinning programme over the last plan period (2012-2023) has prepared much of the site for the implementation of Lower Impact Silvicultural systems (LISS) and associated improvements to forest resilience through tree species and structural diversity.
- The ecological value of Hagg Wood within the wider agricultural landscape mean that ecological recovery, including continued PAWs restoration, is a high priority.

Constraints

- Projected climate change scenarios and forest pest and diseases are likely to challenge current tree species suitability into the future.
- Phytophthora ramorum (P. ramorum) has been identified on larch and rhododendron in woodlands across the area and wider district (though none locally to date). Larch components (13%) and significant rhododendron across the Hagg Wood block increase the risk of plant health issues on-site. Dothistroma septosporum (DNB) could have a significant impact owing to a high proportion of pine (47%). Dendroctonus micans (D.micans) represents a notable but less significant risk due to low proportion of spruce (2%).
- Areas of invasive rhododendron and associated impact on ground flora and tree regeneration.
- Grey squirrel populations currently impact the timber quality of broadleaf trees. This will have an increased impact as broadleaf regeneration is encouraged through successive LISS interventions. Deer management is also challenging across Hagg Wood due to high levels of public use and limited deer glades/sight lines.

2.3 Objectives and Implementation

	Objectives	Implementation
Wildlife	- Protect and enhance the ecological value of Hagg Wood. - Continue the restoration of PAWS to native dominant woodland. - Continue rhododendron control with the development of a long-term and justified programme.	- All work sites are surveyed prior to any operations being carried out to audit information records and to identify opportunities to further improve the ecological value of the woodlands. - Increase and improve the deadwood resource¹⁰ by retaining different types of deadwood (especially deadwood from native tree species) where safe to do so. - Restore Plantation on Ancient Woodland Sites (PAWS) in line with guidance^{5,6,11}. - Increase the diversity of tree species and age structure to maintain and improve favourable conditions for target species and identified habitats. <i>Rhododendron ponticum</i> is recorded across Hagg Wood. A programme of vegetation management will be developed over the duration of this plan where this is likely to impact on high value conservation sites or present a high-risk to tree health.
People	- Continue to provide an open and accessible woodland area at Hagg Wood for a variety of suitable recreational pursuits. - Protect and enhance the cultural and heritage value of Hagg Wood.	- The scale and shape of LISS shelterwoods will be designed in-keeping with the scale of the forest and the surrounding landscape. The resulting diversity in structure will enhance external and internal views of Hagg Wood. - All heritage features will receive the same level of care during the planning and execution of forest operations. Operational planning will identify appropriate measures for the protection of heritage features before work begins, and, where possible, opportunities to enhance the condition of heritage features will be taken.
Climate	Improve forest resilience to climate change and plant health risks by increasing tree species and structural diversity.	- Appropriate scale LISS felling will continue the process of restructuring the woodland to improve structural diversity. - A wide range of appropriate tree species will be considered for restocking using Forest Research's Ecological Site Classification tool and other climate planning tools to increase species diversity and resilience to future climate change. We will follow guidance and research to implement adaptation including the acceptance of naturalised species and assisted migration^{12,13}. - Consideration and further development of the use of Forest Development Types (FDTs) will continue throughout the lifetime of this plan. A long list of site appropriate FDTs is available in Appendix 5.
Economy	Maintain a sustainable supply of timber from LISS and a diverse range of site-appropriate species.	- Timber will be sustainably harvested through LISS and thinning interventions. - Species selection for restocking will prioritise PAWS restoration using site suitable and productive tree species.

Table 4 - Hagg Wood Forest Plan objectives and implementation table. Note: A monitoring plan is provided in Appendix 3 showing how each plan objective will be measured.

3.0 Methodology - Forest Operations

The design concept map (FP Map 07) highlights some of the key factors to be addressed through this Forest Plan. Other Forest Plan maps show the operational plan, including proposed Management Types (FP Map 05) and Future Habitat and Restock (FP Map 06).

3.1 Felling

Felling	Area - hectares	% of total area (excl. SSSI)	Projected volume (m ³)
Clearfell 2024 - 2028	0	0	0
Clearfell 2028 - 2034	0	0	0
Net Area to be managed under LISS	24.3	30%	6970

Table 5 - Breakdown of felling areas within the plan period (FP Map 05).

3.2 Lower Impact Silvicultural Systems (LISS)

All areas of Hagg Wood (81.0 ha) will be managed using LISS, including group shelterwood and irregular shelterwood systems. Appendix 2 - LISS justification - provides a rationale for the choice of silvicultural system. There are no planned clearfells at Hagg Wood.

Table 5 provides a breakdown of felling areas over the period of the Forest Plan and FP Map 05 shows the distribution of different types of LISS over the extent of Hagg Wood.

During the plan period, areas of LISS with trees over 25 years old will be assessed for a silvicultural intervention (thinning/regeneration felling). No more than 30% of stems within any single compartment will be removed at one time over the plan period; as a result, the associated area will be regenerated through a combination of restocking and natural regeneration.

3.3 Restocking

All restocking at Hagg Wood, including natural regeneration and planting, will use predominantly broadleaf species (≥80%) at the scale of a restocking coupe. Broadleaf species will be at least 80% native species. Site-native species will be favoured. These may be supplemented with ‘honorary native’ or ‘naturalised species’ such as sycamore. These are species whose climate envelope will move from their current range to encompass some or all of the UK, including Hagg Wood.

Natural regeneration will be favoured but planting may be used when:

- Past experience, evidence or specific site factors suggest a low chance of successful regeneration.

- The mix of species needs to be diversified or enriched to meet wood production, biodiversity or resilience to climate change objectives.
- Natural regeneration is likely to be of mainly non-native species.
- Genetic diversity or quality needs to be increased or improved by introducing new provenances.

Natural regeneration of conifer species in PAWS woodland will be assessed against the risk posed to the objectives of the plan. Where dense shade-tolerant or invasive species (i.e. Western hemlock or Sitka spruce) threaten the native woodland community, it will be removed during routine forest operations.

The Future Habitat and Restock map (FP Map 06) shows the distribution of restocking. Table 6 shows the expected distribution change of habitat types at year 10 (2034) and year 30 (2054). Habitat classifications are presented according to the UK Biodiversity Action Plan definitions for broad habitats and priority habitats^{14,15}.

Habitat type (based on principle species planted)	Area - hectares			% of total area		
	2024	2034	2054	2024	2034	2054
Broadleaved; mixed/yew woodlands	51.5	56.0	65.0	63.6%	69.1%	80.2%
Lowland Mixed Deciduous Woodland*	5.9	10.8	32.8	7.3%	13.3%	40.5%
Coniferous woodlands	29.5	25.0	16.0	36.4%	30.9%	19.8%

Table 6 - Expected changes to the distribution of habitat type 2024-2054. *‘Lowland Mixed Deciduous Woodland’ is a priority habitat and is a subset of the broad habitat type ‘Broadleaved; mixed/yew woodlands’.

4.0 Monitoring

A detailed monitoring plan is provided in Appendix 3. This plan outlines how we will monitor delivery against the forest plan objectives, operational implementation, and forest certification.

4.1 Forest Plan Monitoring

All forest plans are formally reviewed at year 5 (‘mid-term review’) and year 10. At each review, the plan is assessed against its objectives. This plan will be formally reviewed in 2029 with the opportunity to share information where requested. This period may be shortened if circumstances change significantly or if parts of the plan prove detrimental to the overall aims and objectives.

Where an amendment to the Forest Plan is required, the Forestry Commission Practice Delivery Note 01 - Tolerance Table will be applied as set out in Appendix 4.

4.2 UKWAS Compliance Table

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

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	81	100	21045	100
Total Wooded area	81	100	18585	88
Natural Reserves - Plantation (1%)	0	0	294	1.8
Natural Reserves - Semi-natural (5%)	0	0	102	5
Long-term Retentions and Low Impact Silvicultural Systems (>1%)	81	100	10636	50.5
Area of conservation Value (15%) including designations; SSSI, PAWS, ASNW, NR, LTR, LISS	81	100	10636	50.5
Planned Open/Other	0	0	3114	15

Table 7 - UKWAS Compliance Table.

Bibliography

1. Haufe et al. (2024). Forest Research Forest Development Types: A guide to the design and management of site-adapted resilient mixed forest stands in Britain.
2. FC Information Note 40 - ‘Transforming Even-aged Conifer Stands to Continuous Cover Management’
3. Yorkshire Forest District Deer Management Strategy.
4. Yorkshire District policy - Timing of operations to minimise wildlife disturbance.
5. Forestry Comission (2014). Building wildfire resilience into forest management planning. Forestry Commission Practice Guide.
6. Keepers of Time: ancient and native woodland trees policy in England (May 2022)
7. Ancient Woodland on the Forestry Commission Estate in England (March 2002)
8. Forestry England’s Open Habitat Policy.
9. Road Haulage of Round Timber Code of Practice, Fifth Edition (2020)
10. Deadwood - Policy, Procedures, Guidance (PPG) 51 (March 2022)
11. Plantations on Ancient Woodland Sites (PAWS) Restoration - PPG 70 Policy Document
12. FC - Managing England’s woodlands in a climate emergency
13. Wessely et al. (2024). A climate-induced tree species bottleneck for forest management in Europe. Nature Ecology & Evolution. 8. 1-9. 10.1038/s41559-024-02406-8.
14. Jackson, D.L. (2000). Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other classifications, JNCC Report No. 307, JNCC, Peterborough, ISSN 0963-8091.
15. BRIG (2011). UK Biodiversity Action Plan: Priority Habitat Descriptions. JNCC, Peterborough.

Appendices

Appendix 1 - Priority species

Bird Species ¹	Forest location	Habitat enhancement
Dunnock Willow warbler Willow tit Marsh tit Lesser redpoll Song Thrush Black Cap Bullfinch Chiff Chaff Garden warbler Goldcrest Green finch Nuthatch Yellow Hammer Spotted Flycatcher	Developed shrub layer	Continue selective thinning and regeneration felling as part of LISS management, this will allow the development of shrub layer structure and increased structural and species diversity. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
	Woodland edge, ride, glade	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity. Expand road and ride margins to extend herb and invertebrate rich roadside verges, increase habitat connectivity and woodland edge habitat with surrounding arable fields. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Invertebrates ²	Forest location	Habitat enhancement
Water beetles - nationally scarce <i>Agabus Liginosus</i> , <i>Agabus chalconatus</i>	Ponds and ditch systems	Maintain ponds/ ditch systems in favourable condition and increase wet habitat where possible through planned operations.
Woodland flora	Forest location	Habitat enhancement
Ancient woodland indicator species e.g. bluebells, wood anemone and primrose	Woodland edge, ride, glade	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity whilst maintaining shade conditions woodland species require. Expand road and ride margins to extend herb and invertebrate rich roadside verges, increase habitat connectivity and woodland edge habitat.

¹ BirdTrack - BirdTrack is organised by the BTO for the BTO, RSPB, BirdWatch Ireland, SOC and WOS.

² Martin Hammond Ecology report.

Appendix 2 - LISS justification - Hagg Wood

Most of Hagg Wood has been managed using LISS during the previous Forest Plan. LISS - irregular shelterwood and group shelterwood systems - are prescribed in this Forest Plan because Hagg Wood are suited to this management approach and this approach will help to deliver the plan’s objectives.

Stand Appraisal

Stand form - overall stand form across most conifer species is good and developing but more variable across broadleaf species.

Thinning history - Regular thinning has been carried out across the majority of broadleaf and conifer stands where justified. Most stands are suitably thinned for LISS to be applied. There is generally good evidence that a range of broadleaf species are capable of developing through natural regeneration across sites, although light levels, ground cover and deer damage will need to be monitored.

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

Access -There is good internal forest access for forest operations across the site which will facilitate ongoing thinning and LISS management.

Site Factor	Suitability Score	Comment
Wind Hazard Classification: Majority of the forest is WHC range 1 - 3	1	Well-thinned stands with typically deep rooting soils.
Soil fertility: Medium	2	ESC modelled soil nutrient regime ranging from ‘poor’ to ‘rich’. Previous on-site appraisal of ‘medium’ used in analysis.
Current species suitability: Very suitable (SP, POK, SBI, SY)	1	Using modelled soil moisture regime (moist) and ‘medium’ soil nutrient regime. Advanced natural regeneration occurs across a range broadleaf and species. Understory developing where light levels are suitable. Regeneration limited by rhododendron and bramble ground cover.

On the basis of the above information, we will continue to implement LISS for the across Hagg Wood with the aim of increasing species diversity using a range of species depending on site objectives.

Irregular shelterwood and group shelterwood systems (up to 0.6 ha in size) will be applied to a range of stand types where the felling of small coupes will contribute toward the development of more resilient, diverse woodland stands.

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

Ecological Site Classification Report

Eastings(m)	Northings(m)	Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser/Nurse
468418	452661	SE684526	Medium-High 2080 (A1b/3q0)	Very warm - Sheltered - Slightly dry	Native species only	No brash present	No drainage installed	No fertiliser

Site Description and Variables

The site has a very warm, sheltered and slightly dry climate. The soils are moist moisture status and medium nutrient status. Tree species recommendations in ESC do not take account of each countries regulatory approval process, so prior to including species in a forest plan advice should be sought from relevant forestry authorities.

Modifications	<i>AT</i>	<i>CT</i>	<i>DAMS</i>	<i>MD</i>	<i>SMR</i>	<i>SNR</i>
Default	2746.0	8.0	12.0	250.0	4.0(Moist)	3.0(Medium)
Final	2746.0	8.0	12.0	250.0	4.0(Moist)	3.0(Medium)

[illegible]

Appendix 3 - Monitoring Plan

Appendix 3 - Hagg Wood Monitoring Plan			
Objective	Method	Frequency/Timings	Actions
Wildlife			
Protect and enhance the ecological value of Hagg Woods.	Ecological records are maintained and utilised in operational planning.	At plan renewal, mid-term review and 10-year review, and when significant data from other monitoring becomes available.	Update Forester Web GIS sub-compartment database and conservation module.
	Review sample of Operational Site Assessments.	In line with District Operational Site Assessment Policy.	Provide feedback where management is not compliant with recommendations.
Conserve ancient and veteran trees and continue the restoration of PAWS to native dominant woodland.	Use semi-natural scores to measure progress of PAWS restoration as per PAWS policy.	At plan renewal, mid-term review and 10-year review, and when data from other monitoring becomes available.	Update Forester Web GIS sub-compartment database. If required, modify LISS prescriptions (including felling and restocking) to achieve objective for PAWS restoration.
	Review sample of Operational Site Assessments.	In line with District Operational Site Assessment Policy.	Provide feedback and take corrective action if management is not compliant with recommendations.
	Ancient Woodland Condition Assessment to survey ground flora, NVC and tree inventory (including canopy cover).	Decadal, where funding is available. Previous assessment in 2014.	Utilise the next ancient woodland condition assessment and incorporate into mid-term review.
Continue rhododendron control with the development of a long-term and justified programme.	Assessment of delivery against the plan for rhododendron control.	At mid-term review.	An evidenced and justified plan for rhododendron control has been developed by mid-term review and assessed thereafter.
People			
Continue to provide an open and accessible woodland area at Hagg Wood for a variety of recreational pursuits.	Qualitative assessment of access and ad-hoc feedback from community groups and the public.	Year 0 baseline, mid-term review, 10-year review. Ad-hoc when feedback is received.	Review at mid-term review.
Protect and enhance the cultural and heritage value of Hagg Woods.	Historic environment records are maintained and utilised in operational planning.	Annually or as data becomes available. At time of Year 0 baseline, mid-term review, 10-year review.	Update Forester Web GIS Heritage module. Provide feedback and take corrective action if management is not compliant with recommendations.

Climate			
Improve forest resilience to climate change and plant health risks by increasing tree species and structural diversity.	Tree species diversity will be measured using the Shannon Index which accounts for the number and relative abundance of species. Structural diversity will be measured using age class distribution.	Year 0 plan renewal, mid-term review, 10-year review.	Update sub-compartment database following operations. At 5-year review, take action to understand and correct delivery if increased diversity is not occurring.
Economy			
Maintain a sustainable supply of timber from LISS and a diverse range of site-appropriate species.	Update Forester Web GIS; sub-compartment database, Operational Thinning Layer, Management Coupe Layer.	Following forest operations and at End Of Year updates. Year 0 plan renewal, mid-term review, 10-year review.	Review long-term changes in productive capacity through the Production Forecast at the point of plan renewal and across the wider District.
Operational			
Restock & Future Habitat Coupes - Mixed broadleaf habitat. Establish at least 1100 broadleaf stems per ha through natural regeneration by year 10 since date of felling.	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance PPG4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Wildlife management - Identify problem sites where mammal damage is affecting crop establishment or degrading woodland flora.	On-site stocking density plot surveys. Damage, Impact and Activity Assessments as set out in YFD Deer Management Strategy.	To be informed from results of beat-up surveys between years 1 to 4 and year 5 stocking assessment, internal guidance PPG4.	Target deer control in line with District strategy.
Forest Plan			
Ensure the plan's objectives are being met and implementation is being delivered.	Utilise this monitoring plan and conduct a mid-term and 10-year review.	At mid-term review in 2029.	Take corrective action or modify the plans aims and/or objectives where these are no longer compatible with National or District Policy. Significant plan changes will require consultation and formal amendment from the Forestry Commission.
Certification			
All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard.	Independent surveillance audit across the organisation.	Annually	Implement corrective actions as required.
	Independent surveillance audit across the District.	As per audit sample.	Implement corrective actions as required.

Appendix 4 Agreed Tolerance table for Forestry England Yorkshire Forest District, England

	Adjustment to felling coupe boundaries	Swapping of felling coupes	Adjustment to felling operation	Clearance of standing trees associated with wind-blown areas ⁷	Delayed restocking - including natural regeneration	Species choice	Tree health
Formal assessment and approval by FC area team required	>25% of the coupe area	Where changes to the felling sequence is likely to result in a significant breach ¹ of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling such as: - regeneration felling - strip felling² - clear felling and where ≥50% of standing tree volume is to be removed	Individual work area that is either: >5ha of standing trees associated with wind-blow areas or Proposals result in cumulative additional felling ⁸ affecting >20% of the Forest Plan area ⁹	N/A – dealt with via FC Area team approval (below)	From mixed, predominantly broadleaves to predominantly conifer	Where no SPHN is issued but felling of ≥65% standing tree volume is required in response to a plant health issue
Written approval only required from FC area team ³	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach ⁴ of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling where between 30%-50% of standing tree volume is to be removed such as: - regeneration felling - strip felling or From lower intensity regeneration felling to higher intensity regeneration felling, (as defined by the felling operation hierarchy ⁵) where <50% of standing tree volume is to be removed	Individual work area that meets both the criteria: 1-5ha of standing trees associated with wind-blow areas, (Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of ≥5ha of standing trees associated with wind-blow areas) and Proposals result in cumulative additional felling ⁸ affecting <20% of the Forest Plan area ⁹	<u>Planting</u> : Where this is ≥ 4 planting seasons from the date of felling. <u>Natural regeneration</u> : where necessary intervention to secure natural regen is not implemented within 4 full planting seasons from date of felling	Deciduous conifers to predominantly evergreen conifers	Where no SPHN is issued but felling between ≥50% and < 65% of standing tree volume is required in response to a plant health issue
No formal or written approval by FC area team required ⁶	< 10% of the coupe area	Where changes to the felling sequence does not result in a breach of the UKFS adjacency rules	Clear felling to strip felling, shelterwood or regenerative felling systems, or thinning or From more severe regeneration felling to less severe regeneration felling as defined by the regeneration felling hierarchy ⁵	<1ha of standing trees associated with wind-blow areas (Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of 1ha-5ha of standing trees associated with wind-blow areas) and Proposals result in cumulative additional felling ⁸ affecting <10% of the Forest Plan area ⁹	For any changes to the timing of restocking where this occurs <4 full planting seasons from the date of felling	Any other changes	Where an SPHN is issued Or Thinning / regenerative felling <50% of standing tree volume is required in response to a plant health issue

¹ Greater than 20% of the coupe boundary

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

³ Approval letter retained for compliance inspection purposes.

⁴ 20% or less of the coupe boundary

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

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

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

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

⁹ For Yorkshire Forest District the “Forest Plan Area” will be utilized rather than “Forest Management Unit” when considering cumulative impact.

Appendix 5 - Forest Development Types - Long List

“A Forest Development Type is a long-term vision of how the species composition and structure of a forest stand is intended to develop. The concept encourages the greater use of mixed-species stands and a wider variety of stand structure than previously deployed in British forests”.

As can be seen from the table below, there are a range of FDT’s suitable to Hagg Wood and the objectives of this Forest Plan.

Code	Description	Future Climate		Future Climate (AWC)		Primary Species	Primary Proportion	Secondary Species	Secondary Proportion	Even aged		Uneven aged		Flashcard
		2050	2080	2050	2080					Unthinned	Thinned	Simple	Complex	
2.1.5	Scots pine with sessile oak	Suitable	Suitable	Suitable	Suitable	SP	50-70	SOK	20-40				x*	FDT_2_1_5_SP_and_SOK_V1.pdf
2.1.6	Scots pine with beech	Suitable	Suitable	Suitable	Suitable	SP	60-80	BE	20-40		x	x*	x	FDT_2_1_6_SP_and_BE_V1.pdf
5.1.1	pedunculate oak with hornbeam	Suitable	Suitable	Suitable	Suitable	POK	70-90	HBM	10-30			x*	x	FDT_5_1_1_POK_and_HBM_V1.pdf
5.2.1	sessile oak with birch	Suitable	Suitable	Suitable	Suitable	SOK	50-80	BI	20-50		x	x	x*	FDT_5_2_1_SOK_and_BI_V1.pdf
5.2.2	sessile oak with Scots pine	Suitable	Suitable	Suitable	Suitable	SOK	50-70	SP	20-40		x	x	x*	FDT_5_2_2_SOK_and_SP_V1.pdf
5.3.1	oak with beech	Suitable	Suitable	Suitable	Suitable	OK	60-80	BE	20-40			x*	x	FDT_5_3_1_OK_and_BE_V1.pdf
5.3.2	oak with long lived broadleaves	Suitable	Suitable	Suitable	Suitable	OK	50-70	XBLL	30-50			x	x*	FDT_5_3_2_OK_and_XBLL_V1.pdf
5.3.3	oak with hazel	Suitable	Suitable	Suitable	Suitable	OK	80-100	HAZ	abundant coppice			x*		FDT_5_3_3_OK (XBLL) and_HAZ_V1.pdf

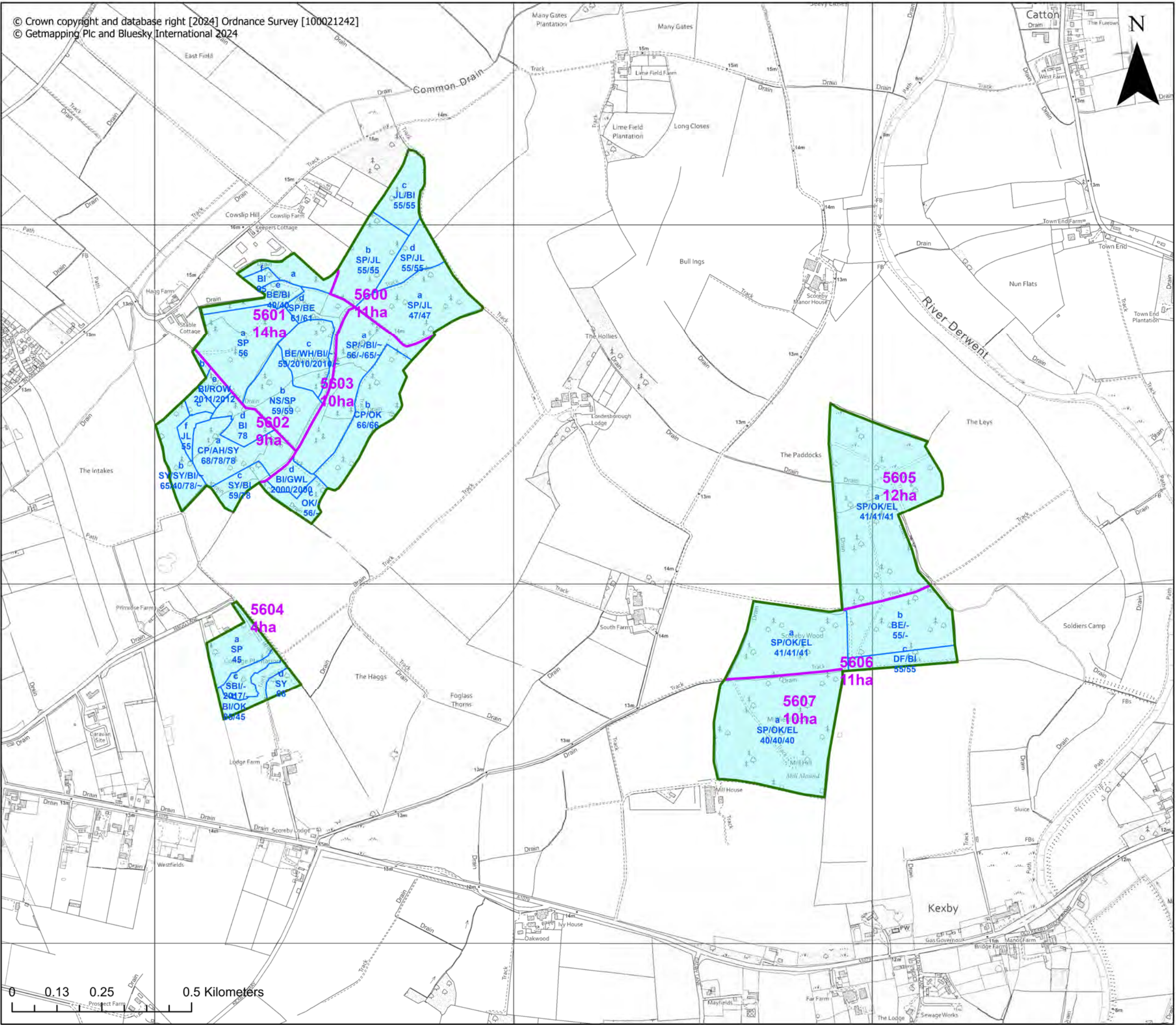
Code	Description	Future Climate		Future Climate (AWC)		Primary Species	Primary Proportion	Secondary Species	Secondary Proportion	Even aged		Uneven aged		Flashcard
		2050	2080	2050	2080					Unthinned	Thinned	Simple	Complex	
6.1.1	beech even aged	Suitable	Suitable	Suitable	Suitable	BE	90-100			x	x*			FDT_6_1_1_BE_V1.pdf
6.1.2	beech uneven aged	Suitable	Suitable	Suitable	Suitable	BE	80-90					x	x*	FDT_6_1_2_BE_V1.pdf
6.1.3	beech with shade tolerant conifers	Suitable	Suitable	Suitable	Suitable	BE	50-70	XCST	30-50			x	x*	FDT_6_1_3_BE_and_XCST_V1.pdf
6.1.4	beech with long lived broadleaves	Suitable	Suitable	Suitable	Suitable	BE	50-70	XBLL	30-50			x	x*	FDT_6_1_4_BE_and_XBLL_V1.pdf
7.1.1	birch even aged	Suitable	Suitable	Suitable	Suitable	BI	70-100			x	x*			FDT_7_1_1_BI_V1.pdf
7.1.2	birch and short lived broadleaves	Suitable	Suitable	Suitable	Suitable	BI	50-70	XBSL	30-50	x	x*			FDT_7_1_2_BI_and_XBSL_V1.pdf
7.2.2	silver birch and sessile oak	Suitable	Suitable	Suitable	Suitable	SBI	50-80	SOK	20-50			x	x*	FDT_7_2_2_SBI_and_SOK_V1.pdf
8.1.1	sweet chestnut	Suitable	Suitable	Suitable	Suitable	SC	80-100					x	x*	FDT_8_1_1_SC_coppice_V1.pdf
8.1.2	sweet chestnut with long lived broadleaves	Suitable	Suitable	Suitable	Suitable	SC	50-80	XBLL	20-50		x	x*	x	FDT_8_1_2_SC_and_XBLL_V1.pdf

Code	Description	Future Climate		Future Climate (AWC)		Primary Species	Primary Proportion	Secondary Species	Secondary Proportion	Even aged		Uneven aged		Flashcard
		2050	2080	2050	2080					Unthinned	Thinned	Simple	Complex	
8.3.1	sycamore	Suitable	Suitable	Suitable	Suitable	SY	80-100				x	x*	x	FDT_8_3_1_SY_V1.pdf
8.3.2	sycamore with long lived broadleaves	Suitable	Unsuitable	Suitable	Unsuitable	SY	50-70	XBLL	30-50			x	x*	FDT_8_3_2_SY_and_XBLL_V1.pdf
9.1.1	common alder	Suitable	Suitable	Suitable	Suitable	CAR	80-100				x*			FDT_9_1_1_CAR_V1.pdf

Hagg Wood Forest Plan

FP Map 01 - Soils
Scale : 1:10,000
when Printed @ A3
Created: April 2024

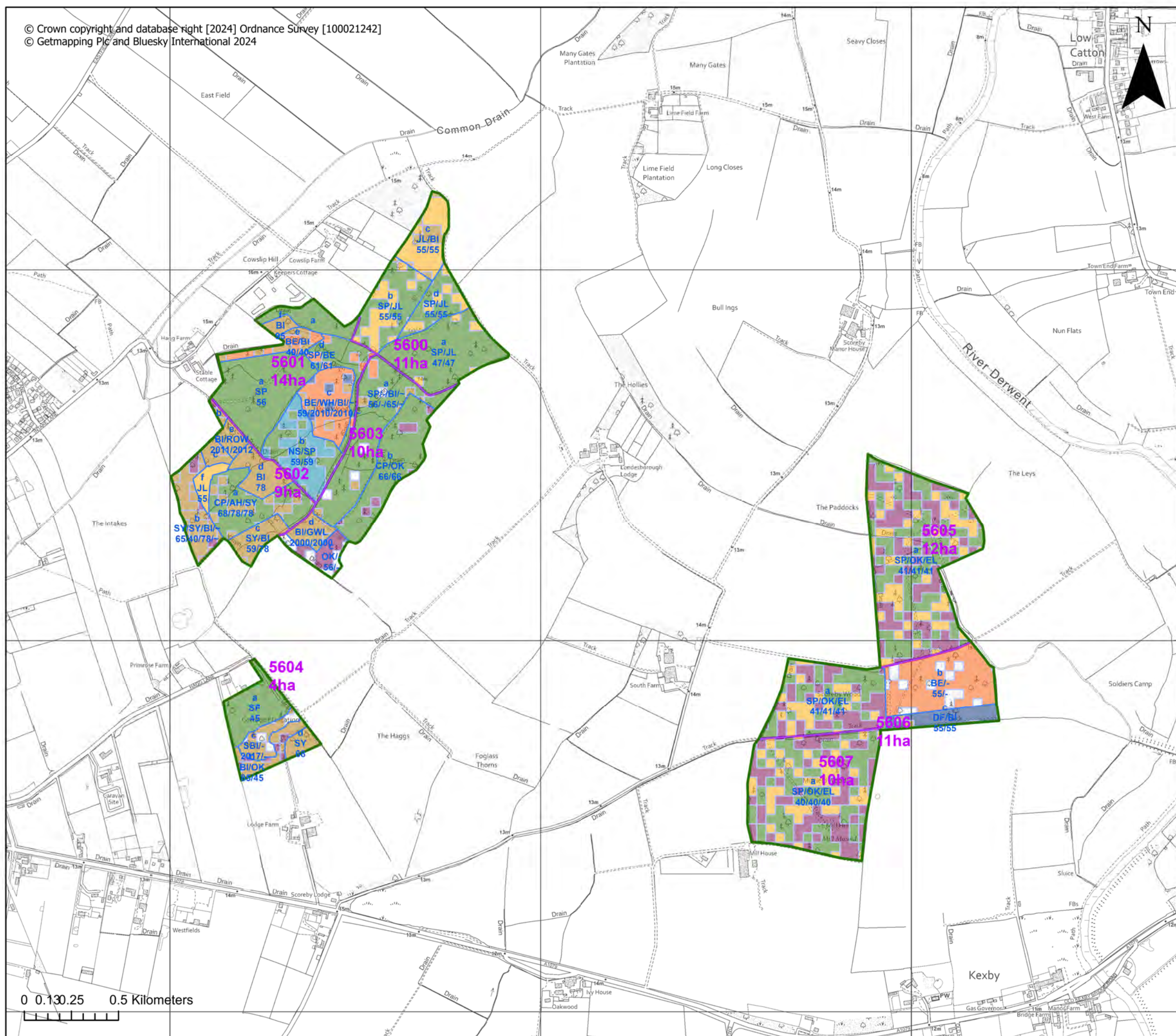
 Ground Water Gley

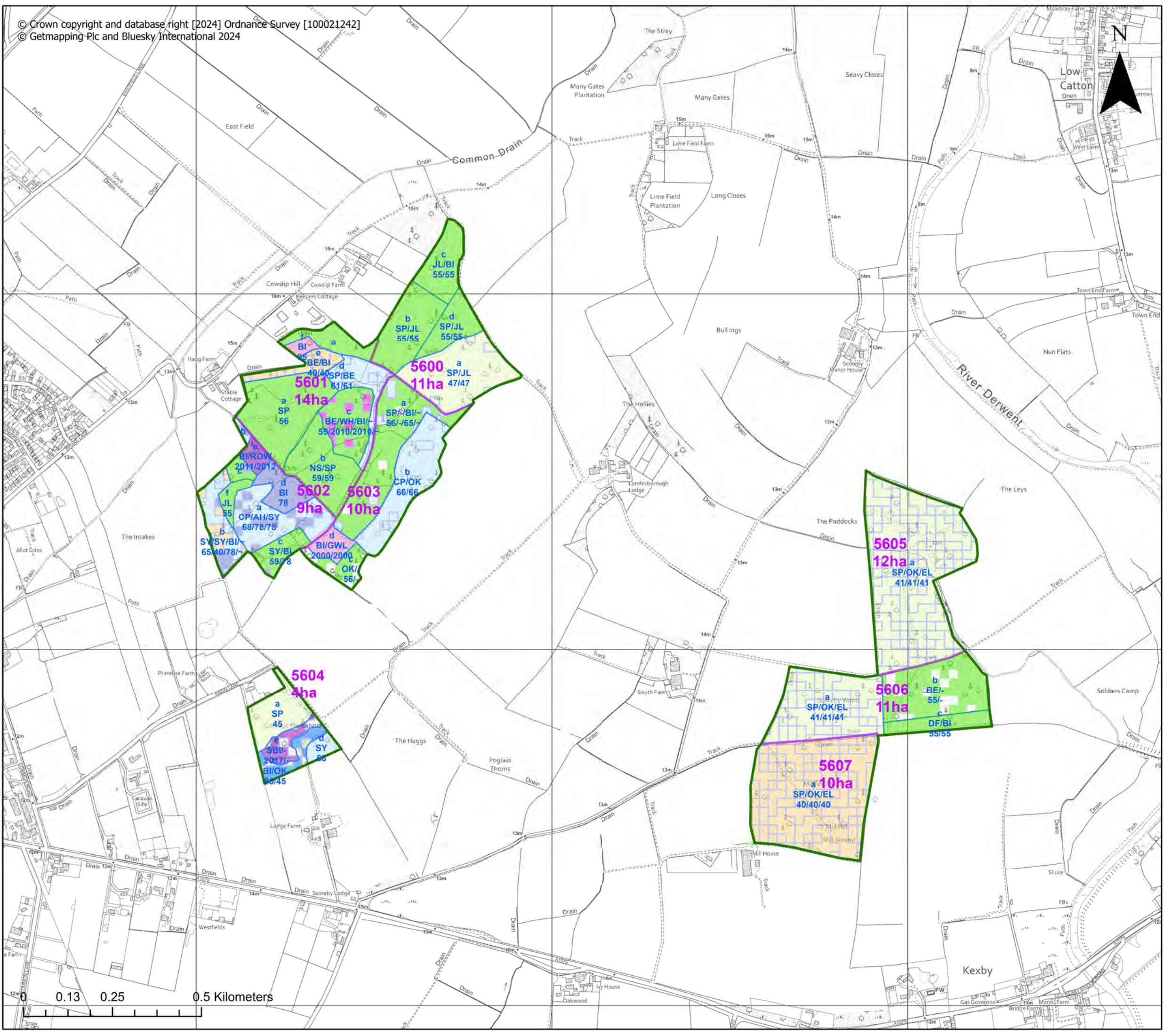


Hagg Wood Forest Plan

FP Map 02 - Current Species
Scale : 1:10,000
when Printed @ A3
Created: April 2024

-  Beech
-  Larch
-  Oak
-  Other Broadleaves
-  Other Conifers
-  Pine
-  Spruce
-  No Species





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FP Map 03 - Age Class
Scale : 1:10,000
when Printed @ A3
Created: April 2024

- 1931 - 1940
- 1941 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2011 - 2020

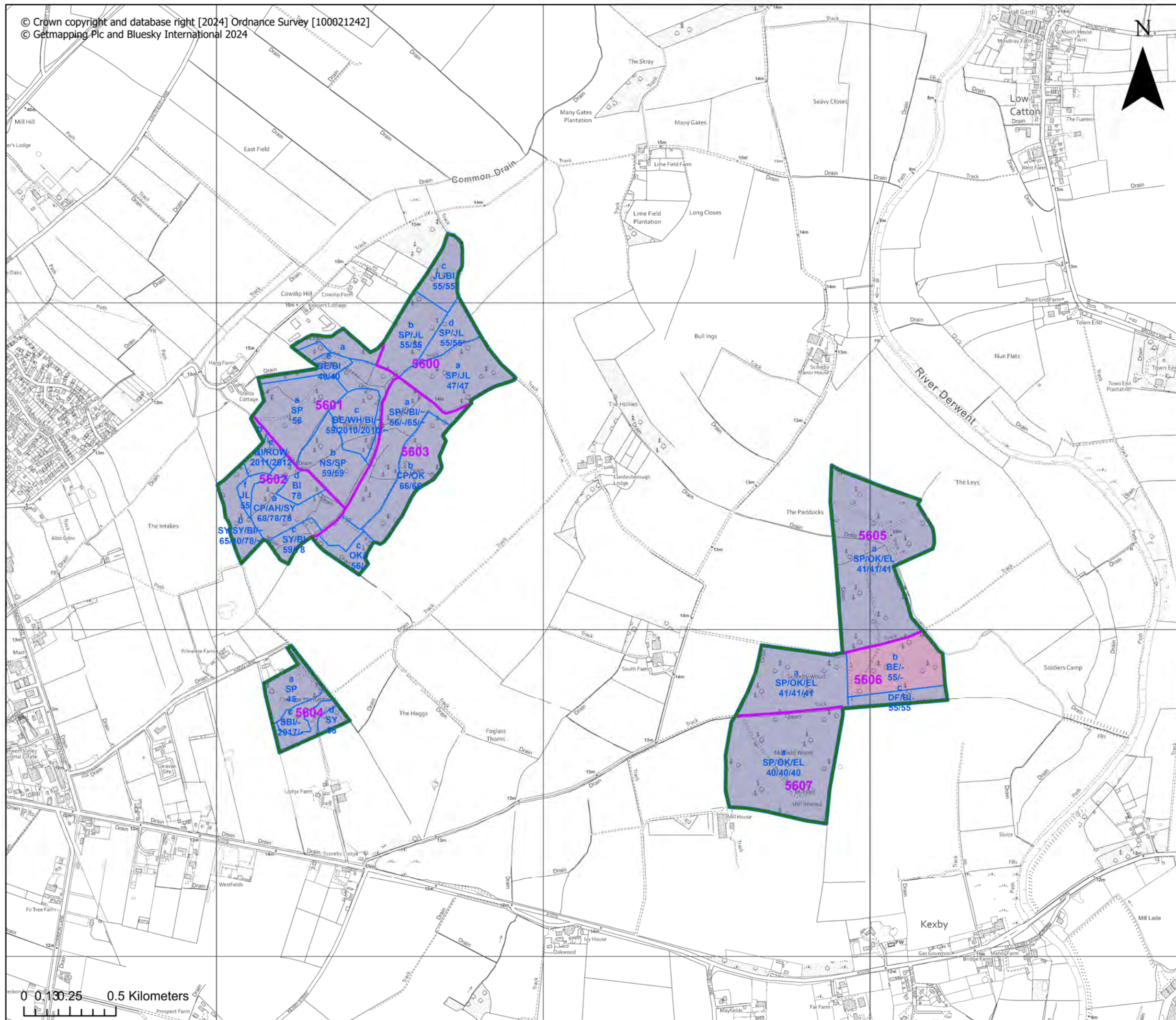
Hagg Wood Forest Plan

FP Map 04 - Management Information
Scale : 1:10,000
when Printed @ A3
Created: April 2024

-  Forest Block
-  Watercourses
-  Public Rights of Way
-  Open Water
-  Overhead powerline
-  Sites of Special Scientific Interest
-  Ancient & Semi-Natural Woodland
-  Ancient Replanted Woodland
-  Heritage & Conservation

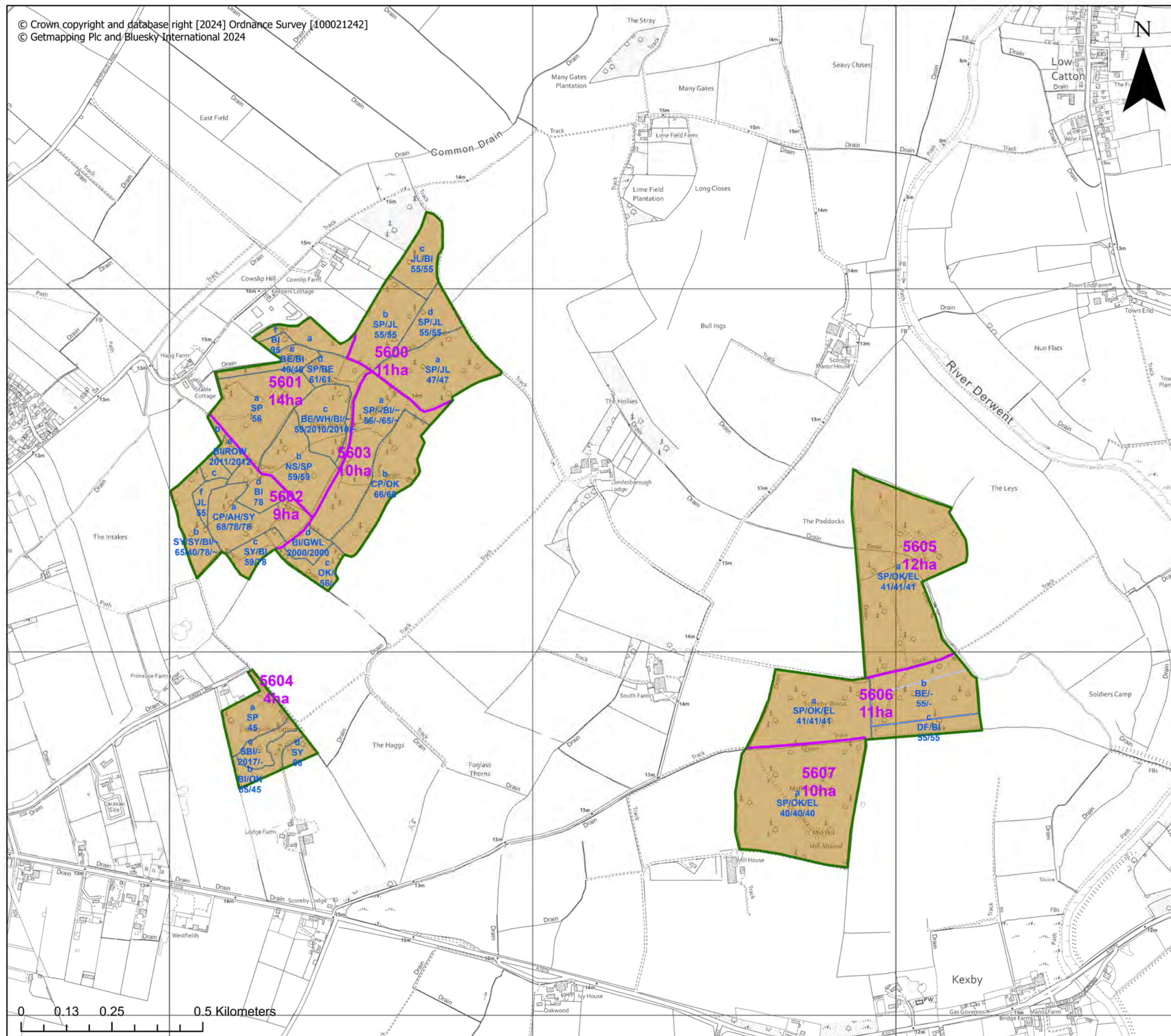
FP Map 05 - Management Type
Scale : 1:10,000
when Printed @ A3
Created: April 2024

- Group shelterwood
Irregular shelterwood (general)



FP Map 06 - Future Habitat
& Restock

Scale : 1:10,000
when Printed @ A3
Created: April 2024

 Predominantly Mixed Broadleaves

Analysis: Maintain the provision of open and accessible woodland at Hagg Wood.

Concept:

- Continue to liaise with stakeholders to ensure appropriate levels of access are maintained which increase their value to the visitor experience.

Analysis: Light conditions and vegetation cover currently restrict natural regeneration across even age conifer blocks.

Concept:

- Implement irregular and group shelterwood systems with appropriate felling to improve structural diversity, increase light levels, and improve ground conditions for natural regeneration.
- Monitor natural regeneration and enrichment plant felled areas with appropriate, diverse native broadleaf species.

Analysis: Paths, rides and verges are ecologically valuable and species-rich.

Concept:

- Continue to protect and enhance open space along paths and rides using site appropriate techniques during forest operations.

Analysis: Restoration of plantations on ancient woodland sits is a high priority and will improve the ecological value and integrity of Hagg Wood.

Concept:

- Conifer stands will be restored to native species by a combination of felling, thinning, natural regeneration and reducing the negative impacts of invasive species through controlled management.
- Enrichment planting will be carried out where target species are unlikely to become established through natural regeneration.
- Maintain existing and develop additional deadwood resource through management interventions and allowing natural mortality of large dimension trees.

Hagg Wood Forest Plan

FP Map 07 - Analysis & Concept

Scale : 1:10,000

when Printed @ A3

Created: August 2024



Predominantly Mixed Broadleaves