
Harwood Dale Forest Plan FP 17 2026

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:	Harwood Dale
Nearest town, village or locality:	Scarborough
OS Grid reference:	SE 967976
Local Authority district/unitary Authority:	North York Moors National Park

Areas for approval

	Conifer	Broadleaf	Open
Lower Impact Silvicultural Systems	90.8		
Felling	54.2		
Restocking	131	10.2	3.8

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.

Signed Signed

Forest Management Director Area Field Manager

District Area

Date

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

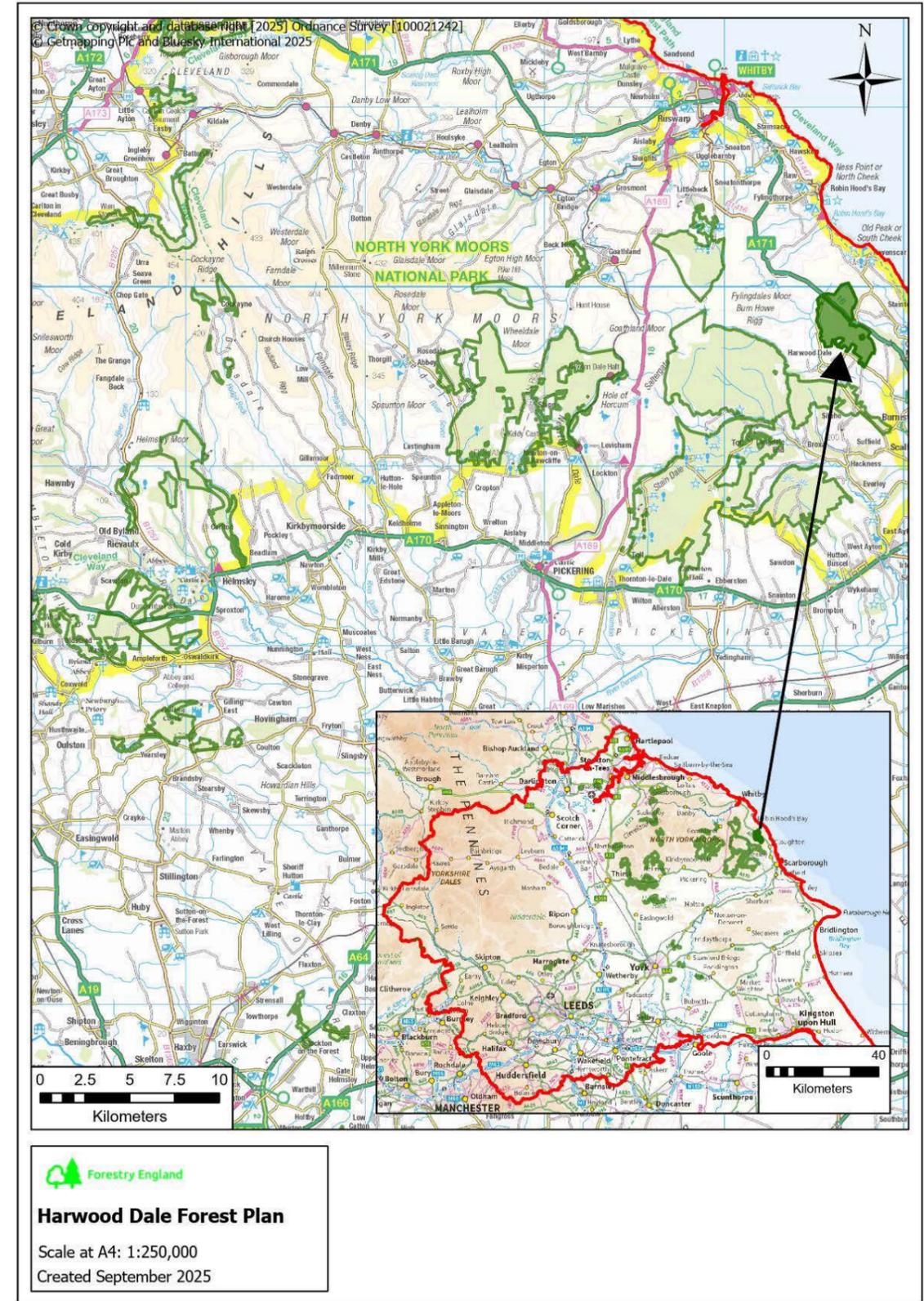


Figure 1 - Map showing the location of Harwood Dale forest

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Glossary

Acute Oak Decline Acute oak decline is a complex syndrome in which several damaging agents interact and cause a serious decline in tree condition, and can kill oak trees within four to six years of the onset of symptoms. The agents can be abiotic or biotic; the latter often include insects and fungi which are not capable of invading healthy trees but which can be very destructive to stressed oaks. Symptoms include characteristic weeping cankers/lesions in the bark.

Ancient Woodland Areas of semi-natural native woodland that have had continuous woodland cover since at least 1600. They are particularly rich in biodiversity and this is often notable in their characteristic ground flora.

Ash Dieback (*Hymenoscyphus fraxineus*) Ash dieback (also known as Chalara ash dieback) is a highly destructive fungus killing native ash trees across the UK. Young and coppiced trees will die quickly once infected, more mature ash may survive for a number of years once infected. Causes the timber to lose strength, become brittle and trees to start dropping limbs.

Aspect The direction a slope faces. This can have a strong influence on the microclimate, ground vegetation, soils and hydrology.

Canopy The mass of foliage and branches formed collectively by the crowns of trees. The shade it casts has a strong influence on the plants, trees and shrubs beneath it.

Carr Woodland A wet woodland area, usually dominated by willow, birch and alder species.

Chronic Oak Decline Chronic oak decline is a complex disorder of oak trees which several damaging agents interact either simultaneously or sequentially to bring about a serious, long term decline in tree health and condition. It differs from acute oak decline (above), which causes a much faster, and usually fatal, decline in tree health.

Clearfelling Cutting down of an area of woodland (if it is within a larger area of woodland, it is typically a felling greater than 0.25 ha). A scatter or small clumps of trees may be left standing within the felled area.

Climax Species Tree species that will eventually dominate the forest canopy, maximising their exposure to sunlight and out-competing other species.

Coppice Coppicing is silvicultural system based on regeneration by regrowth from cut stumps (coppice stools). The same stool is used through several cycles of cutting and regrowth. Coppice can also refer to an area of woodland in which the trees or shrubs are periodically cut back to ground level to stimulate growth and provide wood products. 'Coppice with standards' refers to coppice with a scatter of trees grown on a long rotation to produce larger-sized timber and to regenerate new seedlings to replace worn out stools.

Coupes Areas of forest that have been or will be managed together.

Dothistroma Needle Blight (DNB) DNB is a fungal disease affecting mainly pine species. The fungus affects the needles of the infected tree, which are eventually shed. This can continue year on year and gradually weaken the tree, significantly reducing timber yields. It can also eventually lead to mortality.

Ecological Site Classification (ESC) ESC is an online tool developed by Forest Research to help a forester choose tree species that are suited to a specific site. It models how well each species is likely to grow using information on climate and soil properties. It can also be used to forecast how climate change may impact suitability.

Ecosystem Services Ecosystem services are the goods and services that people depend on that arise from ecosystems. They are usually categorised into Provisioning (eg: timber, water, food production), Regulating (eg: regulation of climate and diseases), Cultural (eg: recreational

opportunities, aesthetic value) and Supporting services that underpin these (eg: crop pollination).

Ecosystem An ecosystem is an interconnected network formed of all the living things in a given area (plants, animals and organisms) and their interactions with each other and their non-living environments (e.g.: weather, earth, sun, soil & climate).

Forest Plan (FP) A FP is primarily a landscape-scale felling and restocking plan. It provides a holistic, long-term approach to planning and forest design, detailing felling operations over a 10 year period for the purposes of licencing felling and outlining proposals over the next 50 years. FPs are reviewed every 5 years and redrawn and approved every 10 years.

Forest Stewardship Council® (FSC®) An internationally recognised body made up of non-government organisations promoting sustainable forest management to the forest industry and consumers.

Forestry England Forestry England is the executive agency of the Forestry Commission that is responsible for managing the Nation's Forests in England.

Forests and Water Guidelines One of seven sets of guidelines that support the United Kingdom Forestry Standard (UKFS). The UKFS and guidelines outline the context for forestry in the UK; set out the UK Government's approach to sustainable forest management; define standards and requirements; and provide a basis for regulation and monitoring, including national and international reporting.

Group Selection A method of managing irregular stands in which regeneration is achieved by felling trees in small groups. Group selection involves felling groups of trees (generally <0.25 ha per group)

Historic Environment The physical remains of every period of human development starting from 450,000 years ago and including earthworks, buried remains, structures and buildings.

Ips typographus (larger eight-toothed European spruce bark beetle)

Although the beetle prefers stressed or weakened trees, under the right environmental conditions its numbers can increase enough to result in attacks on healthy trees. If left uncontrolled, the beetle could cause significant damage to the United Kingdom's spruce-based forestry and timber industries.

Landscape Character England is renowned for its rich, diverse and beautiful landscapes which have their own distinct local characters. These have been shaped over many thousands of years by natural influences such as soil and landform and by generations of human activity.

Long Term Retention Individual, stable stands and clumps of trees retained for environmental benefit significantly beyond their normal economic age or size.

Low Impact Silviculture Systems (LISS) Silvicultural systems including group selection, shelterwood or under-planting, small coupe felling, coppice or coppice with standards, minimum intervention and single tree selection systems. LISS are generally compatible with windfirm conifer woodlands and most broadleaved woodlands.

Minimum intervention Management with no systematic felling or planting of trees. Operations normally accepted are fencing, control of non-native plant species and vertebrate pests, maintenance of paths and rides and safety work

National Character Area (NCA) Broad divisions of landscape form the basic units of cohesive countryside character, on which strategies for both ecological and landscape issues can be based. There are 159 Character Areas, each of which is distinctive with a unique 'sense of place'.

National Nature Reserve (NNR) NNRs were established to protect some of our most important habitats, species and geology, and to provide 'outdoor laboratories' for research. Most NNRs offer opportunities to the public to experience wildlife first hand and learn more about nature conservation.

Native Native tree species colonised Britain without human assistance at the end of the last ice age, before the English Channel cut Britain off from mainland Europe.

Natural Regeneration The growth of new trees from seed found in the soil or cast from adjacent trees. Regeneration only occurs where suitable seed sources and conditions are present.

Natural Reserve Natural Reserves are areas which are predominantly wooded, usually mature and intended to reach biological maturity. They are permanently identified and in locations which are of particularly high wild-life interest or potential. They are managed by minimum intervention unless alternative interventions have higher conservation or biodiversity value.

Naturalised Naturalised trees have colonised Britain since the land divide with mainland Europe and are growing and reproducing successfully within their natural climatic range without human intervention.

Near Native / Honorary Native In a changing climate many tree species native to continental Europe will spread north. These species are classified as 'honorary/near-native': a species previously considered to be non-native, but whose climate envelope will expand over England as a result of climate change

Nest Planting Trees planted in small groups which are distributed across the restock site with remaining unplanted areas left to naturally regenerate. A useful way to introduce new species or provenances to a site.

Notifiable Disease Some tree pests and diseases are notifiable, which means that, in England, they must be reported to the Forestry Commission or Animal & Plant Health Agency. Notifiable tree pests and diseases are typically those with the potential to cause greatest damage to our trees, woods and forests.

Open Grown Trees Trees that have been given space to develop a large crown and natural shape. In comparison trees planted closely in a plantation managed for timber or biomass tend to have a more uniform shape.

Open Space Areas within a forest without trees, such as glades, stream sides, grass or heathland, water bodies, rocky areas, roads and rides.

Operational Plans Detailed site plans prepared in advance of all major forest operations providing guidance to Forestry England staff and contractors. They identify site constraints, opportunities and areas requiring special treatment or protection.

Phytophthora ramorum P.ramorum is a very destructive pathogen affecting over 150 plant species, particularly larch trees. Some broadleaved plants (such as sweet chestnut and rhododendron) can also host P.ramorum.

Phytophthora pluvialis P.pluvialis was first recorded in the UK in 2021 and affects a range of species including Douglas fir and western hemlock.

Plantation on Ancient Woodland Site (PAWS) Ancient Woodland areas where semi-natural woodland has been cleared and replaced by plantation, often including non-native species. PAWS sites can include both broadleaved and conifer woods and often retain remnant ancient woodland features like species-rich ground flora or undisturbed soils. Also known as Ancient Replanted Woodland.

Pollarding A form of pruning where the upper branches of a tree are removed, promoting a dense head of foliage and branches. Cutting is usually around 2.4 metres above ground - the height that wild animals or domesticated stock could reach. Traditionally, trees were

pollarded for fodder or for wood. Fodder pollards are generally pruned every two to six years, wood pollards at longer intervals, usually of eight to 15 years, to produce upright poles for e.g.: fence rails and posts.

Production Forecast The projected volume of biomass that the forest will produce each year. Calculations are based on species, age, net area and yield class.

Public Rights of Way (PROW) Access routes open to the public through legal designation. These include footpaths, by-ways and bridleways.

Respacing Thinning of dense natural regeneration at a young age (generally when trees are 2-5m tall) to produce a more consistent crop, focus available resources on the remaining trees and promote good development.

Restocking The establishment of trees where felling has taken place. Restocking may be achieved through natural regeneration, but it is more usually associated with replanting.

Ride Forestry term for unsurfaced roads, paths and tracks within a woodland which provide access for management and other activities.

Scheduled Monument A scheduled monument is a site that is legally protected because of its historical importance.

Secondary Woodland Woodland that has been established on land formerly used for another purpose (eg: as pasture, arable fields, quarries, etc.). Unlike ancient woodland it has not been continuously wooded in the past.

Seed Trees Trees with good shape and growth rates chosen to produce seed for restocking. Seed trees need to be of an age and size where they produce fertile seeds in large quantities.

Selective Felling (Regeneration Felling) Where individual trees of varying sizes are selected and removed from a stand. The whole stand is worked and the aim is to maintain full stocking of all tree sizes and ages, from seedlings to mature trees, in any one area.

Semi-natural woodland Those woodlands which are comprised mainly of locally native trees and shrubs, and have some structural characteristics of natural woodland.

Shade tolerant species Trees that have adapted to lower light levels and will regenerate and establish freely under the shade of the surrounding tree canopy, as opposed to light demanding species which require full sun/high light levels to establish and grow.

Shelterwood The shelterwood system involves the felling of a proportion of the mature trees within an area whilst leaving some trees as a seed source and shelter for natural regeneration. The seed trees are subsequently removed. Note that the term 'seed tree system' is often used to describe 'shelterwoods' with densities of <50 retained mature trees per hectare.

The spatial arrangement of the retained trees can be uniform, in groups, or in strips, so giving rise to the name of different shelterwood systems. The removal of the seed trees can involve several felling operations

Silvicultural Systems Silviculture is the process of tending, harvesting and regenerating a forest. Different patterns of felling and regeneration form distinct 'silvicultural systems'. Different systems may be suitable for different management objectives (eg: conservation in an ancient woodland vs timber production in a conifer plantation).

Site of Special Scientific Interest (SSSI) A SSSI is a formal conservation designation. Usually, it describes an area that is of particular interest to science due to the rare species of fauna or flora it contains - or even important geological or physiographical features that may lie in its boundaries.

Small Coupe Felling A small-scale clearfelling system. The system is imprecisely defined but coupes are typically up to 2 ha in extent, with the larger coupes elongated in shape so the edge effect is still high.

Special Area of Conservation (SAC) SACs are protected areas in the UK designated under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales. These areas form an internationally important network of high-quality conservation sites that make a significant contribution to conserving Annex I and Annex II habitats and species.

Special Protection Area (SPA) SPAs are protected areas selected to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, or specific regularly occurring migratory species. They form an internationally important network of high-quality conservation sites that make a significant contribution to conserving important habitats and species.

Strategic Plan Forestry England's guide to the management of woodland across an extensive landscape, District or nationally which then informs vision and objectives of the Forest Plan at a more local scale.

Strip Felling Strip felling involves removal of some trees in rows, leaving strips of mature trees in place rather than clearfelling a crop in one operation. This creates space between remaining trees suitable for planting new trees (especially species that require sheltered growing conditions) and maintains woodland cover while new trees are established. The width of strips may vary and multiple strips are removed from one stand at a time.

Sub-compartments Areas of forest that form a homogeneous crop in terms of age, species composition and condition. They may be split across several locations and their boundaries may change as the forest develops after felling and restocking.

The nation's forests The woodlands managed by Forestry England. These include both freehold and leasehold land. (Previously referred to as the Public Forest Estate.)

Thinning The removal of a proportion of trees in a forest after canopy closure, usually to promote growth and greater value in the remaining trees.

Trees of Special Interest (TSI) Trees that are of interest biologically, aesthetically or culturally because of their age, or trees that are in the ancient stage of their life, or trees that are old relative to others of the same species. Also referred to as Veteran or Ancient trees.

UK Forestry Standard (UKFS) Outlines the Government's criteria and standards for the sustainable management of forests in the UK.

UK Woodland Assurance Standard (UKWAS) A voluntary scheme for the independent assessment of sustainable forest management in the UK. The Scheme has been developed by a partnership of forestry and environmental organisations in response to growing consumer demand for timber products from sustainably managed forests.

Understorey Woodland Species Minor tree species that live under top canopy trees or are 'pioneer' species that arrive in clearings before climax species become established. Once the overstorey is established understorey species are more common on woodland edges and clearings where light levels are higher.

Wood Pasture Areas of historical, cultural and ecological interest, where grazing may be/have been used in combination with a proportion of open tree canopy cover

Yield Class Yield class is a measure of the growth rate of a tree crop on a given site. It describes the maximum average volume increase that a particular crop can achieve on 1 ha of land each year. For example, a crop capable of a maximum annual growth of 14 m³ per hectare has a yield class of 14. Yield Class varies depending on factors including the species, how it is managed and local site conditions.

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 independent surveillance audits. All forest plans are formally reviewed at the mid term, 5-year point, for this plan, that will be during 2031.

Operational Planning - Before any major forest operations are undertaken, an Operational Site Assessment (OSA) is completed. The OSA details the proposed work outlining all known environmental, social and operational considerations, becoming an important reference document during the planning phase, at the pre commencement meeting before works begin 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, as per 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).

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)⁸. *"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"*.

Lower Impact Silvicultural Systems (LISS) - All plans consider LISS in windfirm conifer plantations, based on methodologies in available guidance¹¹. 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.

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 managed⁹.

Routine maintenance operations (e.g. fencing, ride mowing, survey work etc.) follow local policy¹⁰.

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

Natural Regeneration - Natural regeneration in PAWS is assessed and the risks to the plan considered. Where dense shade or invasive species (i.e. Western hemlock) threatens the native woodland community, it 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). 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 and best practice guidance for the management and development of our existing and new native woodlands.

Maintaining a mixed resource of temporary and permanent open space with diverse flora will provide habitat for priority species.

Woodland Habitat condition - Over the lifetime of the plan where maintaining semi-naturalness is important, such as Ancient Woodland Sites, we will monitor and record levels of change through the Sub-Compartment Database and the resulting Semi Natural Class scores (Table 1; See also Section 1.2, Table 3). Across these sites we will maintain stands at

SN Class 1 and gradually manage other sites towards this target composition. Across Plantations on Ancient Woodland sites, it is Forestry England policy to improve SNC scores by one class by 2044⁵.

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

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.

Open space - During the intended lifespan of this plan, there are no plans to create additional areas of permanent open heathland, however this plan will continue the management and development of existing permanent open space and heathland. Additionally this plan identifies areas of potential future creation of successional open areas, improving structural diversity and connectivity, directly associated with sensitive areas, such as the historic environment, existing successional open areas, the adjacent SSSI and areas of peat restoration, approximating 9.7ha between 2036-2050.

Within woods we will continue the development and management of open space habitat such as roadside verges, neutral grassland and acid mires where appropriate and in line with Forestry England’s Open Habitat Policy. Maintaining a mixed resource of temporary and permanent open space with diverse flora will provide habitat for priority species.

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), which aims to improve the safety and environmental standards of the timber haulage industry.

Harwood Dale Forest Plan

748.5 Hectares (Ha)

Period of Plan: 2025 - 2035

1.0 Describing the site

Sitting within the North York Moors National Park and at the eastern edge of Yorkshire Forest District (YFD), Harwood Dale forest is part of a network of forests managed by Forestry England. It is within 3 kilometres of the North Sea coastline and is bounded by heather moorland to the north and west, and farmland to the south and east and is bisected by the A171 Scarborough to Whitby road.

This freehold property was initially acquired by the Forestry Commission in the 1920's, who established the forest on land previously managed as rough pasture and moorland.

1.1 Geology and Soils (FP Map 01)

The underlying bedrock geology is predominantly sedimentary sandstone, siltstone, mudstone of the Long Nab Member, formed in the Jurassic Period. Across parts of the forest such as at Standing stones Rigg, underlying geology is sedimentary sandstone of the Moor Grit Member, again formed in the Jurassic period.

The principal concentration of peat deposits is at Pye Rigg, although other locations are indicated on the soils map.

The soils at Harwood Dale are heavily influenced by Middle Jurassic Estuarine clays resulting in podzolic peaty surface water gleys dominating the forest and typical ironpan soils associated with the Moor Grit geology. Based on Forest Research Ecological Site Classification (ESC), soils have a typically wet moisture regime and poor nutrient status, limiting the range of 'suitable' species that can be considered for planting/restocking.

1.2 Tree Species (FP Map 02)

Sitka spruce and Scots pine are the predominant productive conifer species, representing 37.9% and 29.8% respectively of all species present.

Broadleaves (predominantly birch) account for 8.65% of woodland cover. However, as these figures do not account for all trees present in the forest, such as naturally regenerated road and ride side trees, the overall presence of broadleaves is higher.

Species (including as a component)	Area (ha)	% Area (tree Species)
Beech	0.5	0.08%
Birch (downy/silver)	48.5	7.71%
Corsican pine	6.9	1.10%
European larch	0.2	0.03%
Goat willow	1.3	0.21%

Grand Fir	1.8	0.29%
Grey willow	2.3	0.37%
Hybrid larch	31.3	4.98%
Japanese larch	22.6	3.59%
Lodgepole pine	49.1	7.81%
Macedonian pine	1.6	0.25%
Mixed conifers	23.2	3.69%
Noble fir	0.6	0.10%
Norway spruce	6.5	1.03%
Oriental spruce	3.8	0.60%
Other Alders	0.4	0.06%
Scots pine	187.4	29.80%
Silver birch	1.4	0.22%
Sitka spruce	238.5	37.92%
Western hemlock	1	0.16%

Table 2 - Species Composition

*based on the sub compartment database

Semi-Natural Class	Area (Ha)
1	37.72
2	24.15
3	30.2
4	623.97
No Trees	32.46
Total	748.5

Table 3 - Areas of Semi Natural Classifications (see General Principles) across Harwood Dale.

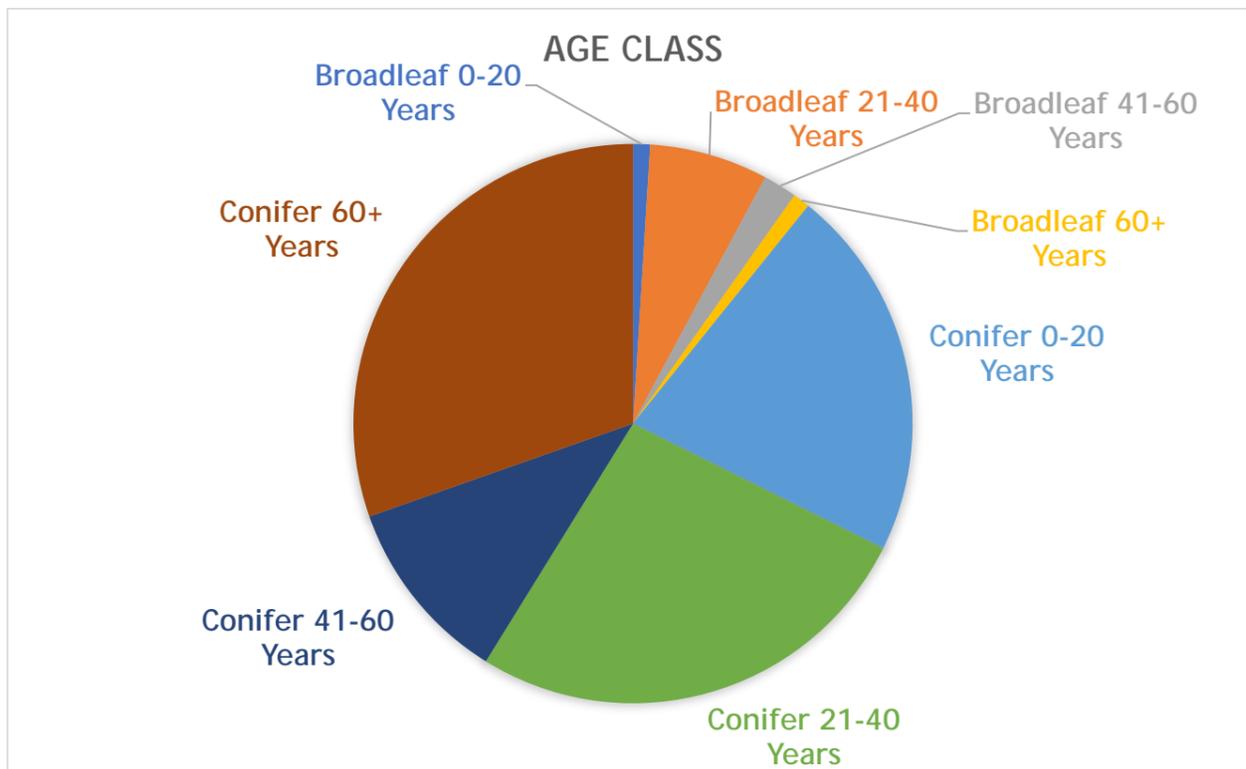


Figure 2 - Age Class. Showing the distribution of 'planted year' across Broadleaf and Conifer. See also FP Map 03

1.3 Wind Hazard

Wind Damage Risk Status (a measure of the risk of damage by overturning or stem breakage) suggests a forest of two parts. North of the A171 scores predominantly Status of 1-3, indicating some limited issues and higher levels that could limit silvicultural management options. To the south, a predominant Status of 1-2 indicates conditions of improved tree stability where thinning of stands and longer rotations can be considered. However, local knowledge and experience of shallow rooting spruce on heavy gley soils has shown localised windblow can occur across this area of the forest.

1.4 Landscape (Photographic montage)

The forest is situated in the Langdale/Harwood Dale/Newton House Forest landscape character area in the south-east of the North York Moors National Park and is planted on gradually rising former upland moor and rough pasture land. Elevation ranges from 120 metres at Moor End Road at the southern entrance to the block, rising to 240 metres at its most northerly point at Pye Rigg Howe.

The forest is a prominent feature in the landscape when looking north from various viewpoints along the Broxa escarpment, and approaching either from the east or west when travelling along the A171 Scarborough to Whitby road.

Although predominantly coniferous, there have been increases in broadleaf cover from 6% >8.5% since the 2015 forest plan, there is also >9% permanent open space in addition to

temporary open space across the block associated with felling operations and ride management. The increase in broadleaf cover can be attributed in part to reclassification of areas previously designated as open or conifer restock, which have since become dominated by broadleaf succession (mainly birch). Consequently, the increase in species and structural diversification is having a positive impact on the forests contribution across the landscape.

1.5 People and Community (FP Map 04)

There is no formal provision for recreation across the block although it is dedicated as Open Access land under the Countryside Rights of Way Act (2000). This is a popular forest for residents of nearby towns and villages for recreational walking with visitors seen on most days. The forest is bisected by several public rights of way, with horse riders making regular use of the network of bridleways.

The forest continues to suffer from a level of illegal off-road activity which can impact on the condition of several forest rides, disrupting wildlife and damaging habitat networks. YFD staff will look to work with a range of stakeholders to reduce the level of activity for this type of unsociable behaviour across the forest.

Although Harwood Dale forest is freehold, there is limited potential to develop recreational use for people and businesses where these do not conflict with the plans aims and objectives.

1.6 Natural Heritage (FP Map 04)

Harwood Dale Forest is important for a wide range of flora, fauna and biodiverse habitats. Statutory sites within the forest include Harwood Dale Moor Site of Special Scientific Interest (SSSI), an important Quaternary site. Adjacent to the forest at Pye Rigg is the North York Moors SSSI, SAC and SPA.

The forest is home to a wide range of international, national and regionally important species: Schedule 1 birds of prey, several species of declining woodland birds including Nightjar and Woodcock (see Appendix 1), herb rich verges including Yellow-wort, butterfly species including small pearl bordered fritillary, and a range of bat species. The forest is also known to support a large population of adders.

A network of streams, water courses and drains pass through the forest, supporting an increasing area of riparian habitat; the forest also boasts a range of ponds which are important for a range of species including Great Crested Newt. These sites typically support a more diverse woodland structure where native broadleaf tree species and ground flora can naturally regenerate. Additionally, over recent years, in partnership with the North York Moors National Parks Moors to Restore project, >17ha of peat restoration has taken place at Harwood Dale.

1.7 Cultural Heritage (FP Map 04)

The forest contains a diverse range of historic environment features, including late Neolithic and early Bronze Age cairn fields and burial mounds, post medieval trackways and 18th century Enclosure boundary marker stones, named features such as Penny Howe and Three Howes on Hallow Rigg as well as a number of other burial mounds, cairn fields and other historic features. There are 13 Scheduled Ancient Monuments (SAM) all of which have agreed management plans with Historic England and are currently in target condition, additionally there is an extensive range of other heritage features.

YFD maintains an extensive Historic Environment Record (HER) in conjunction with the North York Moors National Park. Of particular note are the two extensive areas of prehistoric cairn and burial mound activity identified in the HER but not scheduled. Both sites are large enough to impact on forest design and are given due consideration within the plan.

2.0 Describing the Plan

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. This plan sets out the long terms vision for Harwood Dale forest.

Throughout this plan period we will continue to sustainably harvest timber using appropriate silvicultural systems such as thinning and LISS, maintaining or increasing timber productivity and forest resilience through diversification of species and forest structure, whilst improving the forests contribution to the local landscape.

2.1 Opportunities & Constraints

Opportunities

- Explore opportunities for the inclusion of site improving species, such as alder as part of developing productive mixed conifer stands across nutrient poor and very wet lacustrine gley sites.
- Harwood Dale forest (HWD) consists of predominantly conifer species. We will continue managing existing productive mixed conifer, increasingly utilising LISS.
- Consideration and further development of use of FDTs for future management.
- Partnership working opportunities for further peat restoration.

Constraints

- *Dothistroma septosporum* (DNB) and *Dendroctonus micans* (*D.micans*) could have a significant impact should significant infection rates occur. DNB could impact across pine stands, which account for 245ha or 38.9% of all planted species and 42.6% of planted conifer. Regarding *D.micans*, *Rhizophagus Grandis* (*R.grandis*) has been released over recent years across neighbouring blocks. The impact of *D.micans* will continue to be monitored and working with Forest Research, with further *R.grandis* releases as necessary.
- Projected climate change scenarios and forest pest and diseases are likely to challenge future tree species choice, particularly on the plateau where the nutrient and water regimes are challenging.
- Site limiting factors -
 - Areas of nutrient poor and very wet lacustrine gley sites present challenges for productive forestry.
 - Exposed moorland edges along with a windthrow hazard class of predominantly 4, north of the A171 limit silvicultural opportunities for thinning and LISS.

2.2 Objectives and Implementation

	Objectives	Implementation
Wildlife	<p>Protect and, where appropriate, enhance all known sites of ecological importance:</p> <ul style="list-style-type: none"> • Improve the resilience of the forest and natural environment to pests, diseases and wildfires, and realise the potential of these woods for nature and wildlife, with a particular focus on diversification of species and structure. • Increase the proportion of native broadleaf cover and connectivity, particularly across riparian zones and adjacent to SSSI/SPA/SAC. • Continue (and work towards an increase of) management of stands through LISS regeneration felling and enrichment planting. • Improve the ecological value of the woods. 	<ul style="list-style-type: none"> • Increase and improve the deadwood resource¹ <ul style="list-style-type: none"> ○ Areas of high ecological value across which deadwood resources could be encouraged include riparian zones, Long Term Retention sites and areas of broadleaf woodland. • Follow guidance to implement adaptation actions including the acceptance of naturalised species and assisted migration⁶ • Increase the diversity of tree species and age structure to maintain and improve favourable conditions for target species and identified habitats. • Utilise natural regeneration and enrichment planting, targeting the evolution of high value mixed woodland. • 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. • Through the utilisation of volunteers, we will monitor priority species. • In partnership with the North York Moors National Park Authority, we will monitor and maintain peat restoration areas. • We will continue to explore future opportunities for further restoration.
People	<ul style="list-style-type: none"> • Maintain and enhance the contribution of Harwood Dale forest to the Langdale/Harwood Dale/Newton House Forest Landscape Character Area through the design and delivery of felling coupes and LISS associated forest operations. • Improve landscape impact through the use of appropriate silvicultural systems. • Maintain the cultural and heritage value of these woods. Protect and, where appropriate, enhance as appropriate all known sites of archaeological importance. • Encourage communities to become involved across these woods, its management and direction through consultation in planning and participation in volunteering. 	<ul style="list-style-type: none"> • Design all coupes, including clearfell and LISS areas to ensure that their scale and shape are in proportion with the scale of the forest and surrounding landscape. The resulting diversity in structure enhances both external and internal views of the forests. • Appropriate scale felling will continue the process of restructuring, continuing away from even-aged, single species stands to a more mixed conifer/broadleaf woodland, linking with other associated habitats. • All heritage features will receive the level of care appropriate to their relative importance¹² during the planning and execution of forest operations. Operational planning will identify appropriate measures for protection of heritage features before work begins, and, where possible, opportunities to enhance the condition of heritage features will be taken during routine forest operations, and where necessary through liaison with Historic England. • We will remain open to opportunities for communities to become involved in these woods, including Forestry England volunteers.
Climate	<ul style="list-style-type: none"> • Continue the reduction of single species stands, consider LISS strip, irregular and group felling to facilitate diversification and resilience. 	<ul style="list-style-type: none"> • Appropriate scale felling including LISS will continue the process of restructuring, continuing away from even-aged, single species stands to a more mixed conifer/broadleaf woodland, creating increased species and structural diversity

	<ul style="list-style-type: none"> Increase species and structural diversity. 	<ul style="list-style-type: none"> Consider the selection of ESC supported alternative tree species contributing towards greater species diversity. Consideration and further development of use of Forest Development Types (FDT) will continue throughout the lifetime of this plan. A long list of site appropriate FDTs is available in Appendix 6.
Economy	<ul style="list-style-type: none"> Maximise and maintain a sustainable supply of timber from a forest that has both structural and species diversity, utilising a range of site-appropriate conifer and broadleaf species. 	<ul style="list-style-type: none"> Timber will be sustainably harvested through LISS and thinning interventions. Manage relative proportions of productive mixed conifer and broadleaf. Looking for opportunities to retain areas of existing conifer and extending rotations where appropriate. Where appropriate we will develop broadleaf stands to increase their contribution to timber production. Operations will be planned and controlled to ensure due regard for all other management objectives. For restocking, a diverse range of ESC supported tree species will aim to maintain or increase timber productivity while increasing diversification to enhance forest resilience.

Table 4 - Harwood Dale Forest Plan objectives and implementation table. Note: A monitoring plan is provided in Appendix 4 showing how each plan objective will be measure

3.0 Methodology - Forest Operations

The design concept map (FP Map 08) details the key factors to be addressed through this Forest Plan. Other Forest Plan maps show the operational plan - Proposed Felling (FP Map 05), Proposed Management Coupes (FP Map 06), and Future Habitat and Restock (FP Map 07) that shows the distribution of restocking.

3.1 Felling

Felling	Area - hectares	% of total area (excl. SSSI)	Projected volume (m ³)
Gross Area to be managed under LISS regeneration felling intervention	90.8	12.1	14100
Clearfell 2026 - 2030	25.14	3.4	14367
Clearfell 2031 - 2036	29.09	3.9	15147

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

3.2 Lower Impact Silvicultural Systems (LISS)

Through this plan a large proportion of Harwood Dale will be managed utilising LISS Shelterwood systems. During the plan period, it is proposed that areas of LISS where crops are over 25 years old will receive a silvicultural intervention (thinning will remove no more than 30% of the stems within any single compartment at one time, Irregular Shelterwood systems will remove no more than 50% of the total number of trees or of the canopy per

operation) as a result, the associated area will be regenerated through a combination of restocking and natural regeneration.

3.3 Restocking

Conifer

Areas of regeneration felling carried out through management by LISS will be established through a combination of restocking, using a diverse range of productive conifer species, diversifying species and age structure to provide a sustainable timber resource, whilst being mindful of the projected climate change impacts on species selection. A range of ESC informed timber producing conifer species as set out in Appendix 2 and Appendix 3 'Species by soil type' will help inform restocking options.

Additionally, areas of LISS will be managed to encourage natural regeneration of conifer and broadleaf species, although it is accepted that replanting will be required to maintain and further diversify species.

Reference to Predominantly Mixed Conifer on the Future Habitat and Species Map (FP Map 07) describes where a range of species will be planted/regenerated, where conifer species have a target composition of at least 80% of the component mix. Appropriate levels of suitable broadleaf species via natural regeneration may be accepted. All sites will achieve at least 2500 stems per hectare through planting, natural regeneration or a combination of both. The OSA provides specific data on soils and other factors, informing the correct choice of species, on a site specific basis.

Broadleaf

We will accept 'naturalised' species such as beech and sycamore and the principles of assisted migration where these can enhance resilience to the impacts of climate change.

Reference to Predominantly Mixed Broadleaf on the Future Habitat & Species Map will be used to describe those areas where a range of species will be planted and/or regenerated, where broadleaf species have a target composition of at least 60% of the component mix. Appropriate levels of suitable conifer natural regeneration may be accepted and up to 20% conifer planting may be undertaken to increase woodland resilience.

Targeted enrichment planting will be considered across sites that fail to develop sufficient natural regeneration of broadleaf species. Most sites will achieve at least 1100 broadleaf stems per hectare through natural regeneration, planting or a combination of both. Where quality timber production is an appropriate objective, higher stocking densities may be utilised.

Habitat type (based on principle species planted)	Area - hectares			% of total area		
	2026	2036	2056	2026	2036	2056
Broadleaved; mixed/yew woodlands	49.7	62	79.3	6.6	8.3	10.6
Coniferous woodlands	649.2	568.6	521	86.7	76	69.6

Table 6 - Point in time snapshots of forecasted changes to the distribution of habitat type 2025-2055.

4.0 Monitoring

A detailed monitoring plan is provided in Appendix 4. 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, where the plan is assessed against its objectives. This plan will be formally reviewed in 2030 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 5. 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.

UKWAS indicator	Area (ha)	% of report area
Total Area of Land Management Plan	748.5	100
Area of Felling (within Plan period)	54.2	7.24
Area of Open Space	68.7	9.2
Area of Primary Species	238.5	31.9
Total Area of Certified Estate	744.2	99.4
Area of Natural Reserve	22.6	3
Areas of Long Term Retention and/or areas managed under LISS and/or Minimum Intervention	632.5	85
Area of land managed for conservation as a priority	53	7.1
Area of Semi-Natural Habitat	37.3	5

Table 7 - UKWAS Compliance Table

Bibliography

1. Deadwood - Policy, Procedures, Guidance (PPG) 51 (March 2022)
2. Keepers of Time: ancient and native woodland trees policy in England (May 2022)
3. Ancient Woodland on the Forestry Commission Estate in England (March 2002)
4. FEE Operations Instructions No. 3 (rev.2012), Ancient Woodlands
5. Plantations on Ancient Woodland Sites (PAWS) Restoration - PPG 70 Policy Document
6. FC - Managing England's woodlands in a climate emergency
7. G. Peterken - Native Woodland Development in the North York Moors and Howardian Hills
8. Forest Research Forest Development Types: A guide to the design and management of site-adapted resilient mixed forest stands in Britain
9. Yorkshire Forest District Deer Management Strategy
10. Yorkshire District policy - Timing of operations to minimise wildlife disturbance
11. FC Information Note 40 - 'Transforming Even-aged Conifer Stands to Continuous Cover Management'
12. The UK Forest Standard - 2023

Appendices

Appendix 1 - Priority species

Bird Species ^{1/4}	Forest location	Habitat enhancement
Lesser redpoll, Redstart, Song Thrush, Yellow hammer, siskin, bullfinch, dunnock, woodcock, turtle dove, willow tit	Woodland edge, ride, glades and well developed shrub layer	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity. Maintain wide rides to increase habitat connectivity and food resource and enable the development of woodland 'edge habitat' as planted trees mature. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood through forest operations and selective thinning as part of LISS management.
Owl and raptor sp. (inc. Sch1)	Forest wide	Maintain diversity of habitats with a mosaic of open and wooded and wetland habitats to ensure diversity of prey species available. In consultation with species specialists, maintain continuity of mature conifer woodland habitat suitable for nest sites.
Night Jar	Clearfell	Maintain continuity of clearfell sites and young woodland habitat suitable for nest sites and food resource.
Cross bill (Sch1)	Mature conifer	Maintain continuity of mature conifer woodland habitat suitable for nest sites and food resource.
Mammals	Forest location	Habitat enhancement
Otter		Create and maintain open/ broadleaf riparian habitat along riparian corridors with scrub areas to provide cover and structure.
Amphibians	Forest location	Habitat enhancement
Great crested newt	Pond and surrounding terrestrial habitat	Maintain the known sites in favourable condition through vegetation management around and within the ponds as necessary. Manage adjacent conifer plantations through LISS management to increase structural diversity and improve terrestrial habitat surrounding the ponds. Plan operations to work within the guidelines, ensuring less than 25% key habitat within the 250m buffer is worked in any year.
Odonata ²	Forest location	Habitat enhancement
Keeled Skimmer Willow Emerald Black Darter Common Hawker	Pond and ditch habitat in wet heathland sites	Maintain current habitat in favourable condition through vegetation management as necessary. Work through OSA process to ensure minimal disturbance to existing habitat during operations and highlight opportunities to extend and connect habitats where appropriate. Create and maintain open/ broadleaf riparian habitat along riparian corridors and around pond and ditch habitat through forest operations and selective thinning as part of LISS management.
Lepidoptera ²	Forest location	Habitat enhancement
Small pearl bordered fritillary, dingy skipper, and local notable moth sp. inc. The Blackneck, Grass Rivulet, <i>Coleophora discordella</i> , <i>Eucosma obumbratana</i> , <i>Anania fuscalis</i> , Large Twin-spot Carpet, Chimney Sweeper, Latticed Heath	Road verges and rides, clearings with damp grassy habitats.	Maintain current management of meadow and rides. Create and maintain glades and wide rides throughout the block through thinning interventions to increase habitat availability and connectivity where appropriate through forest operations and selective thinning as part of LISS management.
Woodland specialist moths inc. Angle-striped	Mosaic of woodland species and structure	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity. Maintain wide rides to increase habitat connectivity and food resource and enable the development of woodland 'edge

sallow, Birch Mocha, Large Red-belted Clearwing, Scarce Prominent(Birch), Blue-bordered Carpet, Small Yellow Wave (Alder), Welsh Wave(Rowan), Oak Hook-tip(Oak), Blomer's Rivulet(Elms), <i>Dioryctria sylvestrella</i> , <i>Cedestis subfasciella</i> , <i>Exoteleia dodecella</i> (Scots pine) and <i>Acleris abietana</i> , <i>Epinotia tedella</i> , Satin Beauty(Norway Spruce).		habitat' as planted trees mature. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood through forest operations and selective thinning as part of LISS management.
Light Knot-grass, Northern Eggar, Heath Rustic, Neglected Rustic, Scarce Silver Y Beautiful Snout, Golden-rod Brindle, Small Argent & Sable	Heathland habitat	Maintain current habitat in favourable condition through vegetation management as necessary. Work through OSA process to ensure minimal disturbance to existing habitat during operations and highlight opportunities to extend and connect habitats where appropriate.
Plants³	Forest location	Habitat enhancement
Sphagnum sp. Round leaved Sundew. Marsh Lousewort	Wet heathland sites, ditches. Peat restoration sites	Maintain current habitat in favourable condition through vegetation management as necessary. Work through OSA process to ensure minimal disturbance to existing habitat during operations and highlight opportunities to extend and connect habitats through forest operations where appropriate.
Orchid sp. Yellow-wort	Road verges and rides	Create and maintain wide rides throughout the block through thinning interventions to increase habitat availability and connectivity where appropriate through forest operations and selective thinning as part of LISS management.

¹ Forest bird study group ²Forest Volunteers (species specialists) ³North East Yorkshire botany group ⁴ North and East Yorkshire ecological Data centre

Appendix 2 - LISS

Site Appraisal

Site Factor	Suitability Score	Comment
WHC: range 2 to 4	1 - Main block 3 - Pye Rigg	Tree stability may be a site-limiting factor across parts of the main block with heavy gley/impeded soils. Tree stability is a site-limiting factor at Pye Rigg with WHC 4.
Soil fertility: Very Poor (ironpan) to medium (Peaty SWG)	2 - Areas not '1' 1 - Cowgate Slack, Standingstones Rigg	Predominantly Medium supporting a wider range of competing vegetation with isolated areas of Very poor fertility with reduced competition.
Species suitability: Nil SP, LP SS, SP	1 - Optimal 2 - Suitable 3 - Marginal	The current range of species offers limited scope for natural regeneration. However there are examples of advanced SS and LP regeneration across the forest.

With a combined score ranging from 5 to 8, initial analysis indicates significant areas of Harwood Dale achieve a Moderate (5) site ranking for transformation to CCF, although Pye Rigg is expectedly ranked as Low (8). Further analysis of stand structure is considered to help inform whether transformation should be considered.

Stand Appraisal

Stand form - overall stand form across most conifer species is average, of reasonable quality.

Thinning history - Thinning operations have been variable. Some crops have been managed over a regular cycle, developing crowns that can act as potential seed bearing trees, whereas other sites have been delayed. Only sites that have been regularly thinned will be identified for LISS on the felling map (FP Map - 05). Delayed thin sites will be managed on an extended rotation basis.

Currently there is evidence that LP and SS are capable of developing as a natural regeneration resource across restock sites.

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.

On the basis of the above information, we will consider the implementation of LISS with the aim of increasing species diversity through enrichment planting using a range of ESC suitable species, depending on site objectives.

Strip (with a width $\leq 1.5 \times$ treelengths, with a length appropriate to site constraints), Irregular and Group shelterwood (up to 0.6 ha in size) systems will be applied to a range of stand types where the felling of small coupes, will contribute toward the development of a diverse woodland.

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

The Forest Research ESC table below supports the range of target species considered for natural regeneration and those identified as very suitable (dark green) and suitable (light green) where enrichment planting will increase species diversity.

Ecological Site Classification Report												
Eastings(m)	Northings(m)	Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser/Nurse				
496338	498540	SE963985	Medium-High 2080 (A1b/3q0) AWC method	Very warm - Moderately exposed - Slightly dry	Suitable conifers only	No brash present	No drainage installed	No fertiliser				
Site Description and Variables												
The site has a very warm, moderately exposed and slightly dry climate. The soils are wet moisture status and poor nutrient status. Wet soils may cause flotation problems for heavy machinery on establishment, and on harvesting, if only lightly crowned species are present (e.g. birch). The analysis assumes that site management (e.g. CCF), the use of deep rooting species and/or soil properties will help mitigate climatic moisture deficits. 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	AT	CT	DAMS	MD	SMR	SNR						
Default	2423.0	8.0	14.0	226.0	2.0(Wet)	2.0(Poor)						
Final	2423.0	8.0	14.0	226.0	2.0(Wet)	2.0(Poor)						
Species	Abbr.	Suit(Ecol)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Corsican pine	CP	●	●	10	SMR	●	●	●	●	●	●	3.3(A)
Lodgepole pine	LP	●	●	11	SNR	●	●	●	●	●	●	3.1(A)
Macedonian pine	MCP	●	●	8	SMR	●	●	●	●	●	●	3.1(C)
Norway spruce	NS	●	▲	9	SMR	●	●	●	●	●	●	3.3(A)
Sitka spruce	SS	●	▲	13	MD	●	●	●	●	●	●	3.4(A)
Sitka spruce (Imp.)	Imp.SS	●	▲	15	MD	●	●	●	●	●	●	3.4(A)
Western red cedar	RC	●	●	16	DAMS	●	●	●	●	●	●	3.1(A)
Coast redwood	RSQ	●	●	17	SNR	●	●	●	●	●	●	3(B)
Lawson's cypress	LC	●	●	14	SMR	●	●	●	●	●	●	3(B)

Ecological Site Classification Report												
Eastings(m)	Northings(m)	Grid Reference	Climate Scenario	Site Class	Filter	Brash	Drainage	Fertiliser/Nurse				
496338	498540	SE963985	Medium-High 2080 (A1b/3q0) AWC method	Very warm - Moderately exposed - Slightly dry	Suitable broadleaves only	No brash present	No drainage installed	No fertiliser				
Site Description and Variables												
The site has a very warm, moderately exposed and slightly dry climate. The soils are wet moisture status and poor nutrient status. Wet soils may cause flotation problems for heavy machinery on establishment, and on harvesting, if only lightly crowned species are present (e.g. birch). The analysis assumes that site management (e.g. CCF), the use of deep rooting species and/or soil properties will help mitigate climatic moisture deficits. 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	AT	CT	DAMS	MD	SMR	SNR						
Default	2423.0	8.0	14.0	226.0	2.0(Wet)	2.0(Poor)						
Final	2423.0	8.0	14.0	226.0	2.0(Wet)	2.0(Poor)						
Species	Abbr.	Suit(Ecol)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Downy birch	PBI	●	▲	3	AT5	●	●	●	●	●	●	3.2(A)
Aspen	ASP	●	▲	5	SNR	●	●	●	●	●	●	3.2(A)
Common alder	CAR	●	●	7	SNR	●	●	●	●	●	●	3.2(A)
Red alder	RAR	●	●	8	AT5	●	●	●	●	●	●	3(B)
Grey alder	GAR	●	●	7	AT5	●	●	●	●	●	●	3.1(B)
Italian alder	IAR	●	●	8	SMR	●	●	●	●	●	●	3.2(B)
Cider gum	EGU	●	▲	11	SMR	●	●	●	●	●	●	3(C)

Appendix 3 - Restock Species

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

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

Refer to cell comments for specific species notes

No planting where >0.5m peat depth

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

Appendix 4 - Monitoring Plan

Objective	Method	Frequency/Timings	Actions
Wildlife			
Improve the resilience of the forest and natural environment to pests, diseases and wildfires and realise the potential of these woods for nature and wildlife, with a particular focus on diversification of species and structure.	Update Forester Web GIS; sub-compartment database, Conservation module.	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species, age structure, conservation siting's/records and broad habitat types; conifer, broadleaf, open. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
	Review sample of Operational Site Assessments.	Annually	Provide feedback where management is not compliant with recommendations.
Increase the proportion of native broadleaf cover, particularly across riparian zones.	Update Forester Web GIS; sub-compartment database; analyse semi-natural class scores; Fixed - point photography.	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species, age structure, conservation siting's/records and broad habitat types; conifer, broadleaf, open. E.g. Tables 2,3, and figure 2. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Continue (and work towards an increase of) management of stands through LISS regeneration felling and enrichment planting.	Update Forester Web GIS; sub-compartment database: analyse semi-natural class scores.	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in stand structure. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Increase the ecological value of these woods.	Update Forester Web sub compartment database and conservation module. Monitoring of priority species by volunteers.	Annually or as data becomes available. At time of Year 0 baseline, 5-year review, 10-year review.	Provide feedback where management is not compliant with recommendations.
People			
Maintain and enhance the contribution of Harwood Dale forest to the Langdale/Harwood Dale/Newton House Forest Landscape Character Area through the design and delivery of felling coupes and LISS associated forest operations and Improve landscape impact through the use of appropriate silvicultural systems.	Fixed-point photography.	Year 0 baseline, 5-year review, 10-year review.	Review visual impact of coupes within the landscape and adjust future coupe shapes if necessary.
Maintain the cultural and heritage value of these woods. Protect and, where appropriate, enhance as appropriate all known sites of archaeological importance.	Liaise with and review Historic England - At risk Register, update Forester Web GIS Heritage module.	Annually or as data becomes available. At time of Year 0 baseline, 5-year review, 10-year review.	Provide feedback where management is not compliant with recommendations.

Encourage communities to become involved across these woods, its management and direction through consultation in planning and participation in volunteering.	Review responses to public consultation on Forest Plan.	At 5 and 10-year review	Review public engagement in consultation and volunteer contributions.
Climate			
Increase species and structural diversity.	Update Forester Web GIS; sub-compartment database	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species e.g. utilising the combined Shannon Diversity Index score and Species composition as per Tables 2,3 and Figure 2. Ensure positive change through increasing diversity occurs over the lifetime of the plan. Measure changes in stand structure. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Continue the reduction of single species stands, consider strip, irregular and group felling to facilitate diversification.	Update Forester Web GIS; sub-compartment database	As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Economy			
All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard.	Independent surveillance audit across the organisation.	Annually	Implement corrective actions as required.
	Independent surveillance audit across the District.	As per audit sample.	Implement corrective actions as required.
Maximise and maintain a sustainable supply of timber from a diverse range of site-appropriate conifer and broadleaf species	Update Forester Web GIS; sub-compartment database, Operational Thinning Layer, Management Coupe Layer.	As recordable changes occur within the forest environment and End Of Year updates. Year 0 plan renewal, 5-year review, 10-year review.	Review long-term changes in productive capacity through the Production Forecast at the point of plan renewal and across the wider District.
Site-specific - Operational			
Restock & Future Habitat Coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by planting and natural regeneration by year 5 since date of initial planting (allowing 2 years fallow for <i>hylobius</i>).	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance PPG4.	Carry out beating up where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Restock & Future Habitat Coupes - Mixed broadleaf habitat. Establish at least 1100 broadleaf stems per ha through natural regeneration by year 10 since date of felling.	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance PPG4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.

LISS coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by year 10 after final removal overstorey.	On-site stocking density plot surveys.	Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance 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 and minimise.	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 specific			
Forest Plan mid-term review. Review the plan's aims and objectives and the progress of their implementation.	Apply a variety of measures as described throughout this monitoring plan.	2031	Modify the plans aims and/or objectives where these are no longer compatible with National or District Policy. Significant plan changes will require consultation and formal amendment from the Forestry Commission.

Appendix 5 - Tolerance Table

	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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 immediate and significant 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	Planting: Where this is ≥ 4 planting seasons from the date of felling. Natural regeneration: 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 immediate and significant 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

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

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.

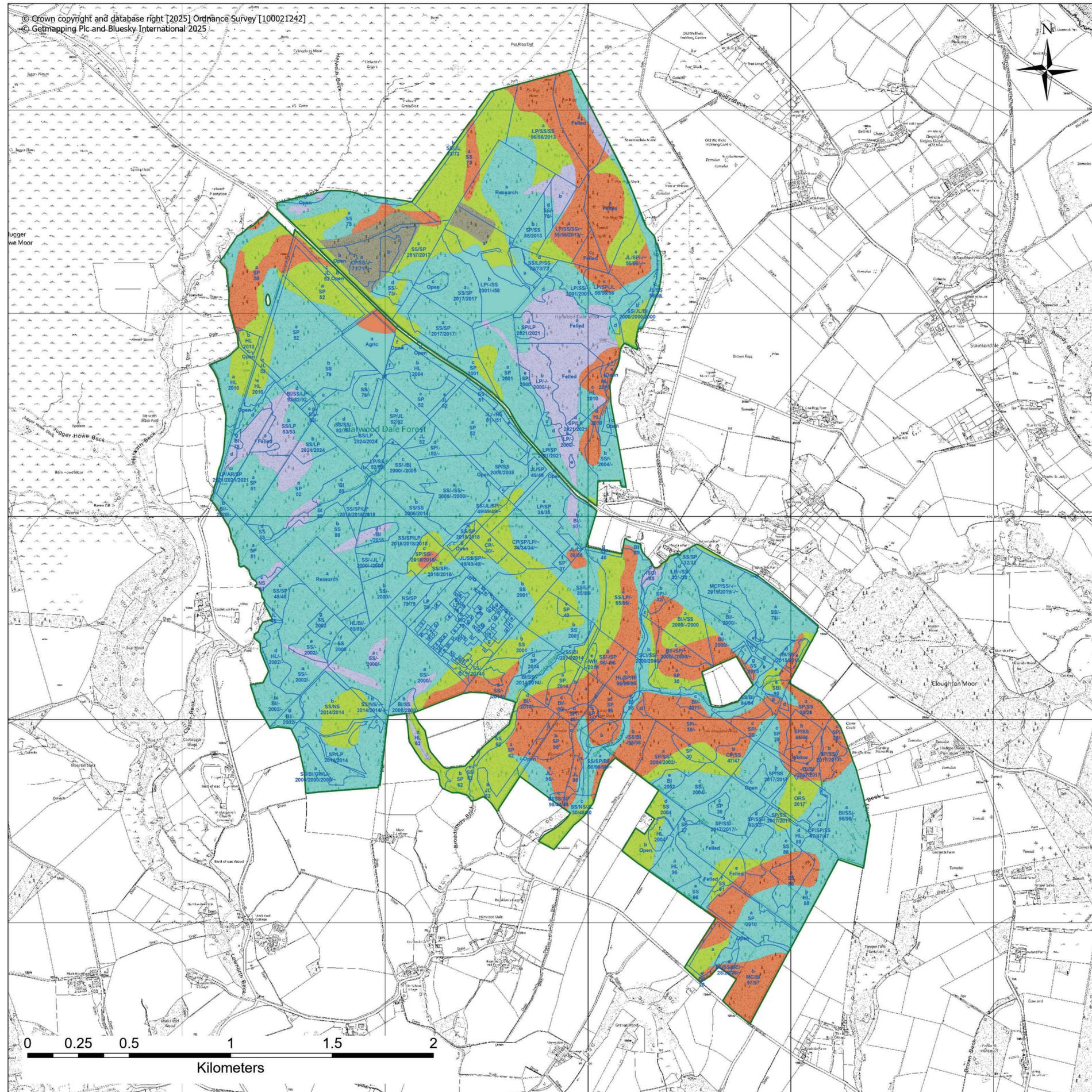
⁸ Cumulative additional felling = 5 year rolling total area of growing trees felled (excludes dead and completely windblown trees) that were not approved for felling within the relevant felling period, in the initial approved Forest Plan. This includes both FS approved amendments and felling below thresholds.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

Appendix 6 - 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". 1

As can be seen from the table below, there are a range of FDT's suitable for Harwood Dale.

FDT Type	Description	Future Climate (AWC)		Primary Species	Primary Proportion	Secondary Species	Secondary Proportion
		2050	2080				
1.1.1	Sitka spruce even aged	Suitable	Suitable	SS	90-100		
1.1.4	Sitka spruce with light demanding conifers	Suitable	Suitable	SS	60-80	XCLD	20-40
1.1.7	Sitka spruce with long lived broadleaves	Suitable	Suitable	SS	50-90	XBLL	30-50
1.1.8	Sitka spruce with short lived broadleaves	Suitable	Suitable	SS	50-90	XBSL	30-50
1.2.6	Norway spruce with long lived broadleaves	Suitable	Suitable	NS	60-80	XBLL	20-40
2.3.1	Lodgepole pine even aged	Suitable	Suitable	LP	90-100		
2.3.2	Lodgepole pine with downy birch	Suitable	Suitable	LP	50-70	DBI	30-50
7.1.1	birch even aged	Suitable	Suitable	BI	70-100		
7.1.2	birch and short lived broadleaves	Suitable	Suitable	BI	50-70	XBSL	30-50
9.4.1	willow	Suitable	Suitable	WIL	50-100		



Harwood Dale Forest Plan

Map 01 - Soils

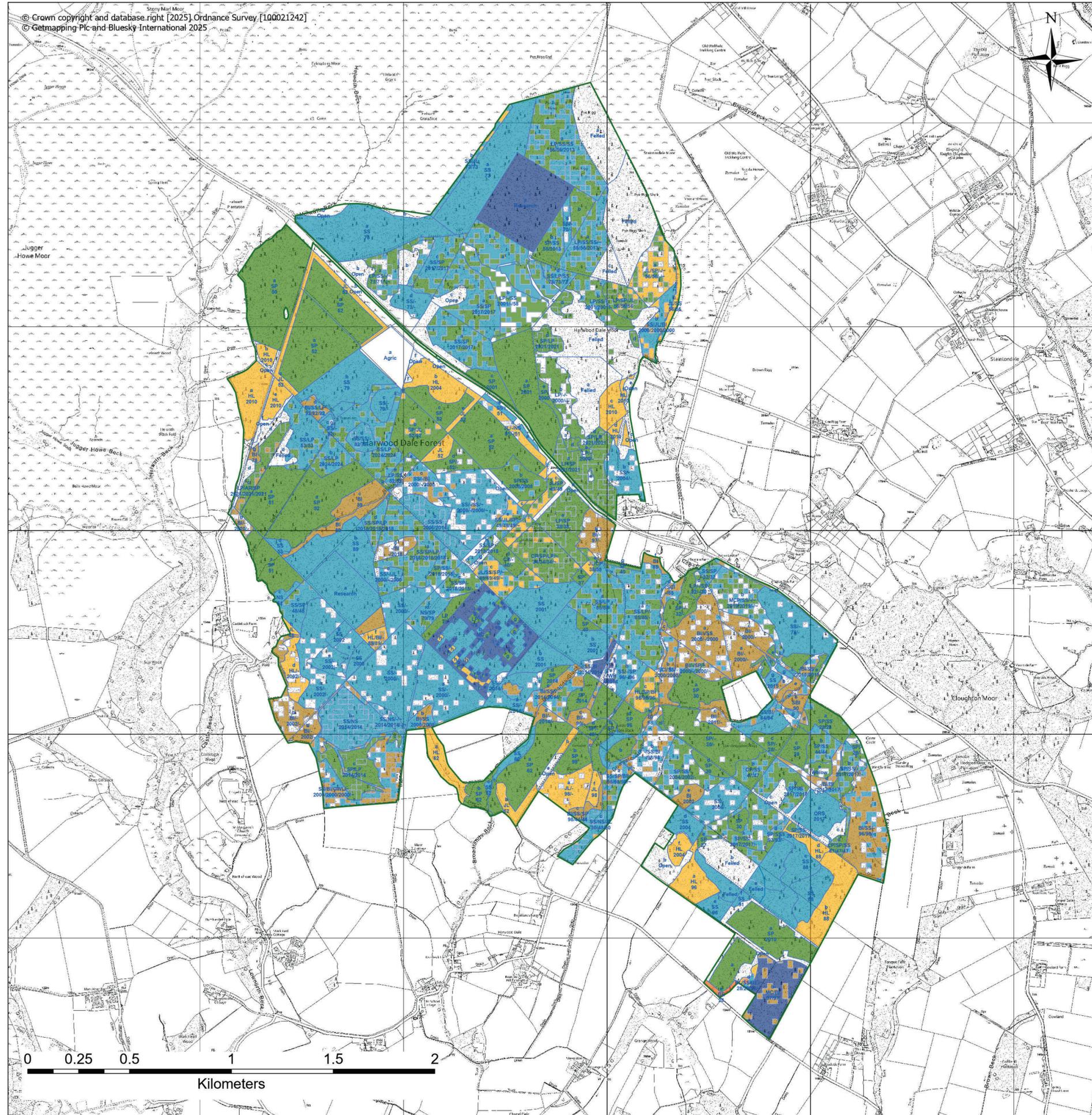
Created: December 2025

Scale: 1:10,000

Scale at A1

-  Mining Spoil, Shaly or Fine Textured
-  Typical Ironpan Soil
-  Podzolic Ironpan Soil
-  Typical Peaty Surface-Water Gley
-  Podzolic Peaty Surface-Water Gley
-  Typical Surface-Water Gley
-  Podzolic Surface-Water Gley
-  Calluna, Eriophorum vaginatum Blanket Bog





Harwood Dale Forest Plan

Map 02 - Current Species

Created: December 2025

Scale: 1:10,000

Scale at A1

-  Beeches
-  Larches
-  Other Broadleaves
-  Other Conifers
-  Pines
-  Spruces
-  No Species



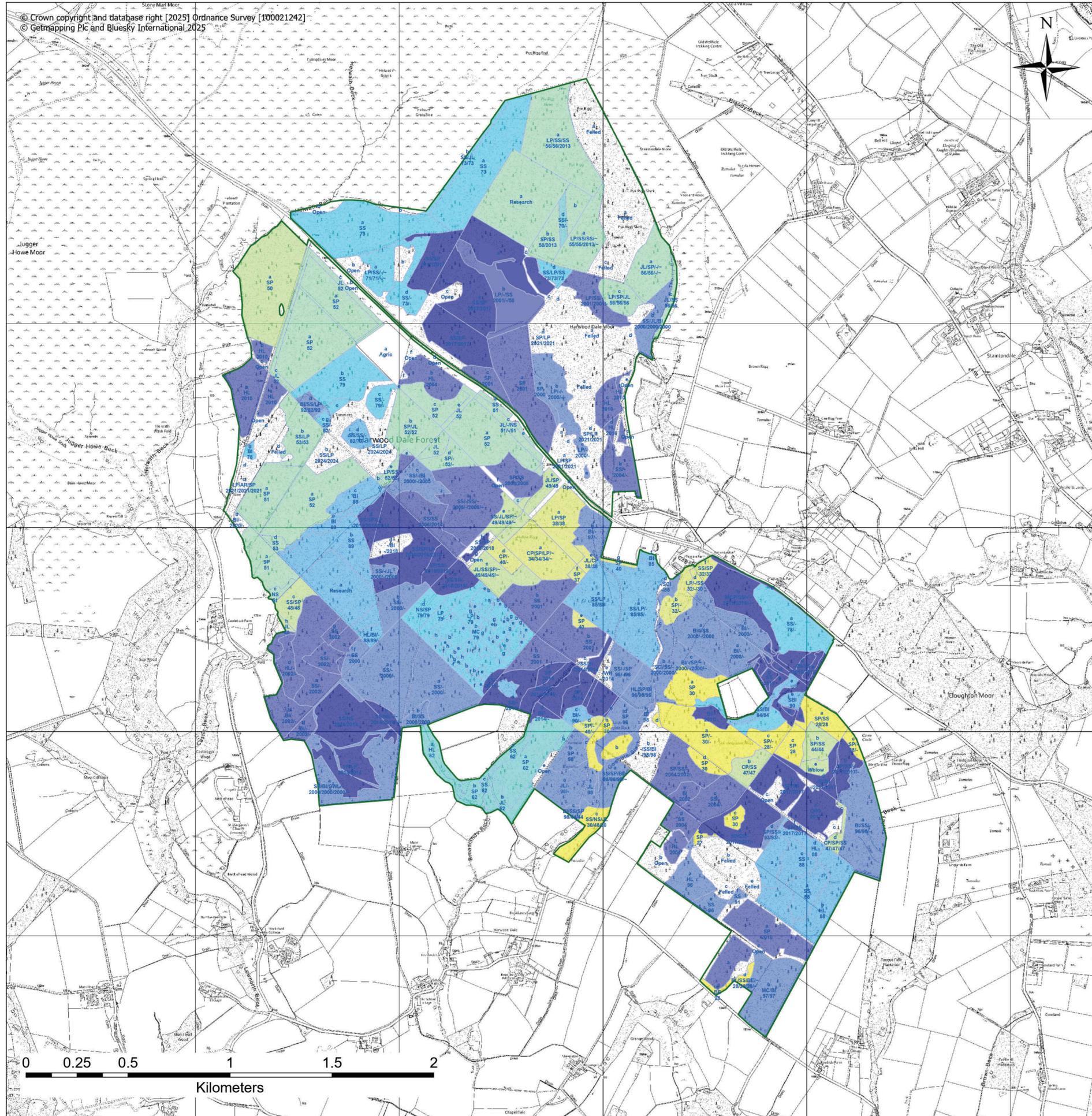
Harwood Dale Forest Plan

Map 03 - Age Class

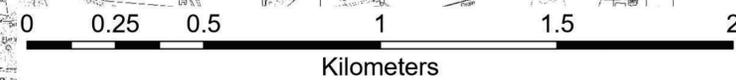
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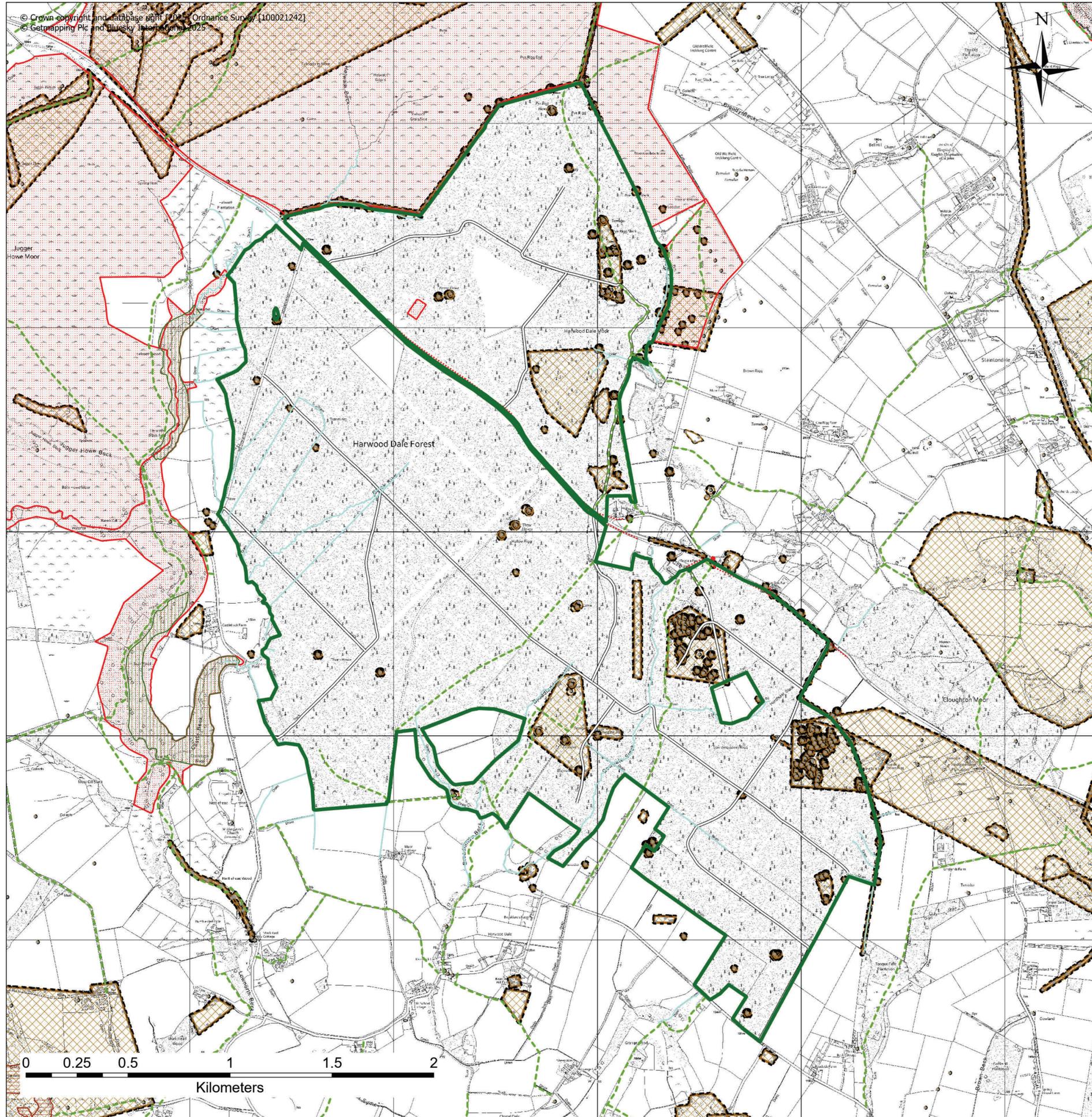
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- 1921 - 1930
- 1931 - 1940
- 1941 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2011 - 2020





Harwood Dale Forest Plan

Map 04 - Management Information

Created: December 2025
Scale: 1:10,000
Scale at A1

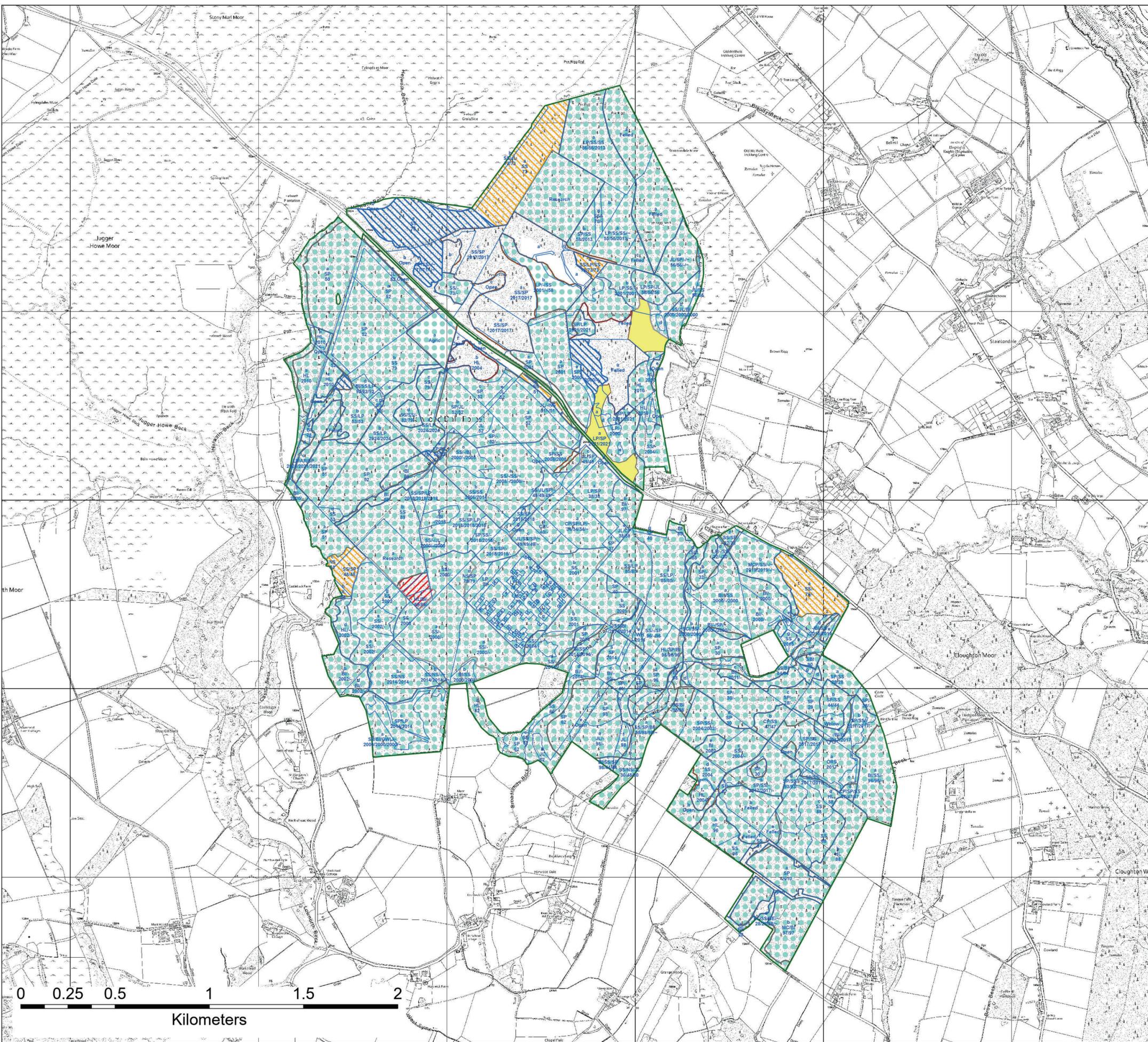
- - - Public Rights of Way
- Forest Roads
- Overhead telephone or fibreoptic
- ... Underground telephone or fibreoptic
- Watercourses
- Sites of Special Scientific Interest
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Heritage
- Heritage Impact Zones

Harwood Dale Forest Plan

Map 05 - Proposed Felling year

Created: February 2026
Scale: 1:10,000
Scale at A1

-  2027-2031
-  2032-2036
-  2037-2041
-  2042-2046
-  Beyond 2046 or LISS
-  Other/Open land





Harwood Dale Forest Plan

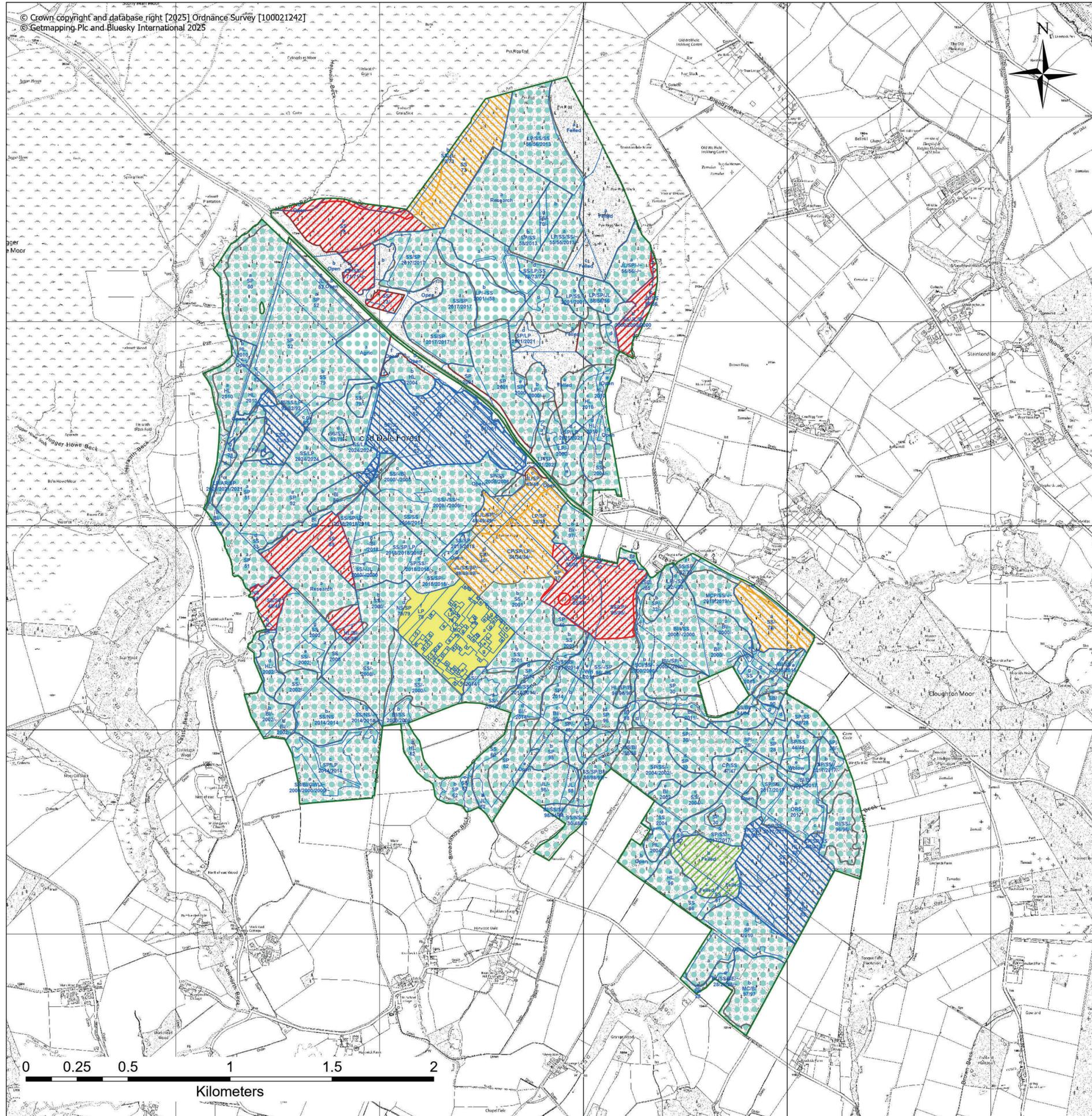
Map 05 - Proposed Felling Year

Created: December 2025

Scale: 1:10,000

Scale at A1

-  2022-2026
-  2027-2031
-  2032-2036
-  2037-2041
-  2042-2046
-  Beyond 2046 or LISS
-  Other/Open land

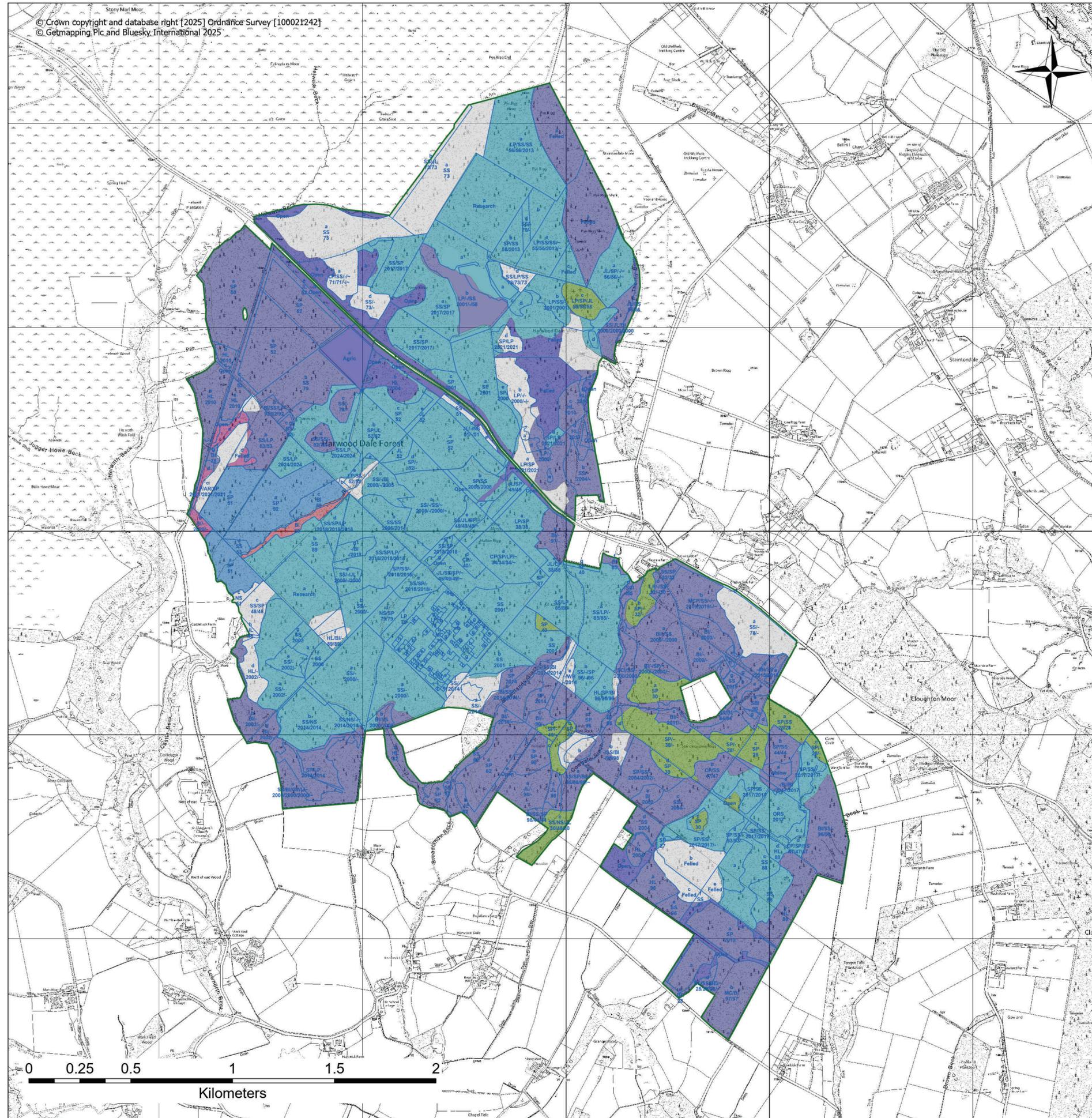




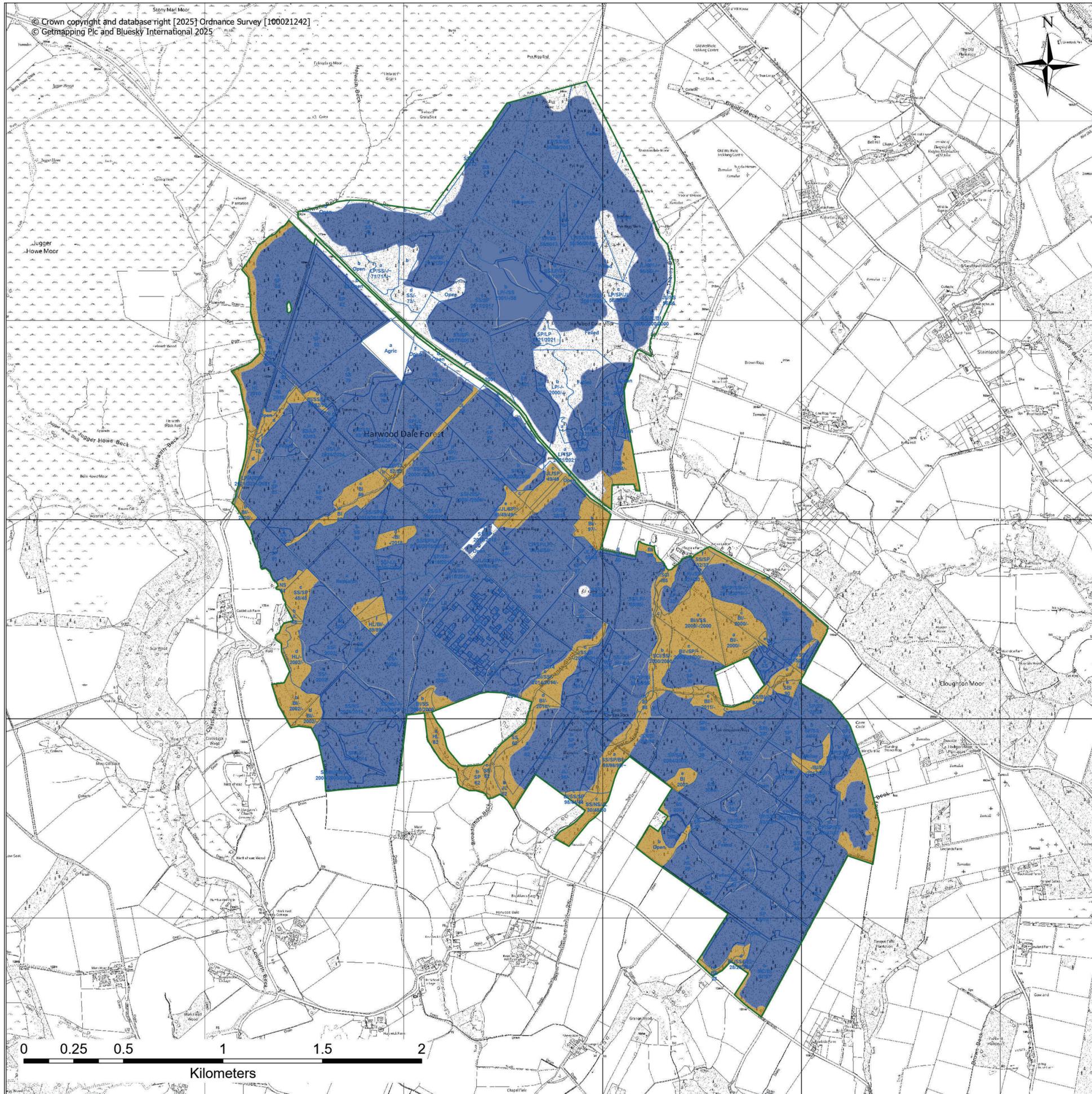
Harwood Dale Forest Plan

Map 06 - Proposed Management Coupes

Created: December 2025
Scale: 1:10,000
Scale at A1



- Clearfell
- Long Term Retention
- Strip shelterwood
- Group shelterwood
- Irregular shelterwood (general)
- Minimum Intervention
- Natural Reserve
- Other/Open Land



Harwood Dale Forest Plan

Map 07 - Future Habitat
and Restock

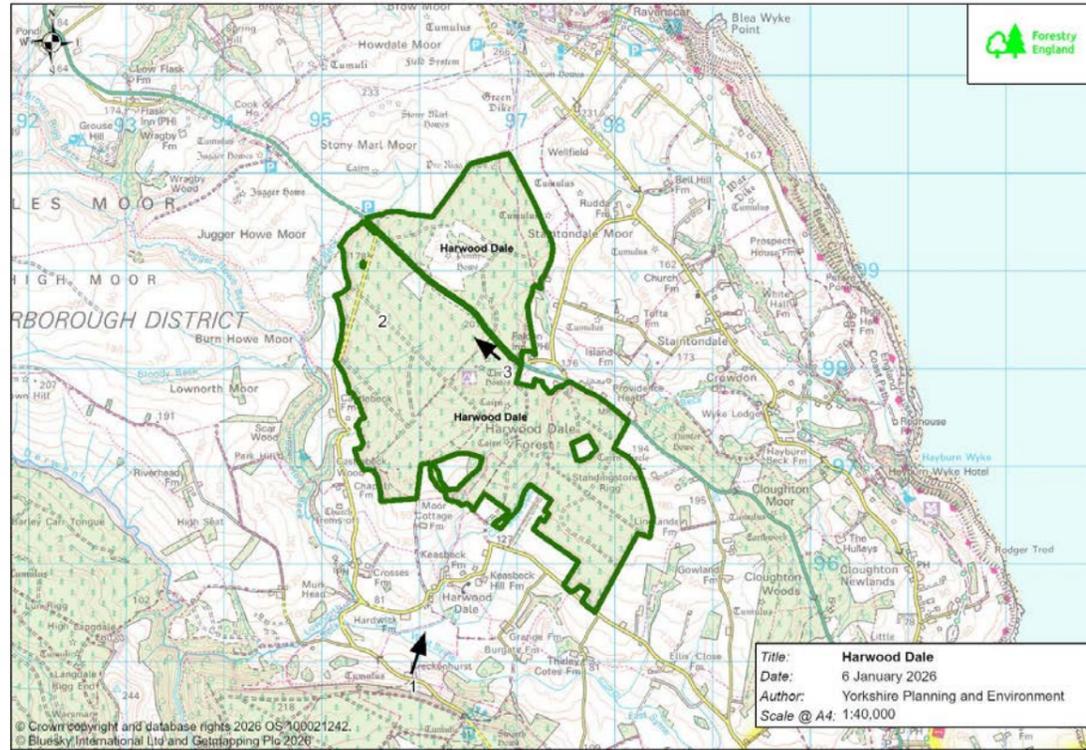
Created: December 2025

Scale: 1:10,000

Scale at A1

-  Other Broadleaves
-  Other Conifers
-  No Species

Forest Design Plan Harwood Dale



1 (SE 9607 9477)

View from Broxa, near Reasty car park. This distant view takes in around 2 thirds of the forest area with a range of forest ages, from first rotation (Image 2) Scots pine to more recent, circa 5 year old restocked sites. This image also demonstrates how the forest sits well within the wider landscape context



2 (SE 9544 9874)

An example of a first rotation pine crop (with a small Japanese larch component) managed as irregular shelterwood, demonstrating LISS as a successful approach for establishing future resilient and productive cops in Harwood Dale.



3 (SE 9694 9810) - A view along the busy and fast moving A171, showing predominantly diverse, soft edges.