Forestry England

Hardknott & Rainsbarrow Forest Plan 2026 – 2036

North Forest District

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

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Summary

Hardknott Forest and Rainsbarrow Wood are owned freehold by Forestry England and occupy an area of 630 ha and 50 ha respectively, they are located in the southwest part of the Lake District National Park with Rainsbarrow close to the hamlet of Ulpha, whilst Hardknott occupies an area at the heart of the Duddon Valley. The woods are mostly used for quiet recreation by locals and visitors to Harter Fell.

Forestry England's management objectives for the woodlands are to restore the ancient semi-natural woodland (ASNW), improve the SSSI's condition and balance the production of quality timber. This builds on the long-standing decision by Forestry England (previously Forestry Commission) to move Hardknott away from being a large scale non-native conifer plantation, to a more diverse woodland based primarily on native broadleaved species and Scots pine. Rainsbarrow forest was extensively planted with beech in the early 1960s and the objective is to manage change towards other native broadleaved species.

The proposals in this forest plan continues the process of change to enhance the woodlands' biodiversity, at the same time improving their resilience to climate change and facilitating quiet recreation in line with the Lake District National Park Character Assessment.

Key to the restoration work has been the partnership formed between Forestry England and Leeds University, and the resulting 'Restoring Hardknott Forest' project in 2003. This has been followed by the Upper Duddon Landscape Recovery Scheme in 2023 of which Hardknott Forest falls within a wider catchment area, alongside neighbouring land owners, environmental organisations and farmers to deliver a landscape wide environmental project. The forest plans for Hardknott and Rainsbarrow compliment and work alongside the aims and objectives of the Upper Duddon Landscape Recovery Scheme.

The woodlands contain many historic and cultural features associated with past land uses dating back centuries; these include Birks Bridge, a Grade II Listed Building, copper mines and multiple quarry/charcoal activities. The largest cultural significance associate with Hardknott was the original afforestation. This was highly contentious at the time, causing much debate and resulted in the 1936 Agreement between the Forestry Commission and the then, Council for the Preservation of Rural England (now known as Friends of the Lake District), for no further largescale conifer afforestation in the central area of the Lake District.

Hardknott & Rainsbarrow forests provide a wide variety of ecosystem services to the region through its timber production, the diverse range of habitats and recreational opportunities it supports, while still retaining the feeling of a 'wild landscape'.

Contents

1. What are Forest Plans?

Forest Plans are produced by us, Forestry England, as a means of communicating our management intentions to a range of stakeholders. They aim to fulfil a number of objectives:

- To provide descriptions of our woodlands to show what they are like now.
- To show what we intend the woodlands to look like in the future.
- To detail our management proposals (felling and restocking), for the next ten years so we can seek approval from the statutory regulators.
- To evidence that our proposals are economically, environmentally and socially sustainable in accordance with the UK Woodland Assurance Standard*, supporting FSC* & PEFC* certification of our forest management and timber products.

All tree felling in the UK is regulated and a licence is required before trees can be felled. The scale of tree felling in North England Forest District, which this plan forms part of, is such that the Forest Plan is the best mechanism for applying for this licence. Responsibility for checking that the plan meets all relevant standards and statutes lies with the Forestry Commission. If all criteria are met, full approval is given for management operations in the first ten years from the date the plan is approved and outline approval for the medium term vision (ten to fifty years).

Terms of Reference (page 9) set out our management objectives for the plan area, how these relate to district and national policies, and how these will be monitored. A Forest Plan is a 'felling and restocking' plan and is written at a landscape scale. It does not set out the detailed yearly management operations for each small piece of a wood, known as a coupe*. It is not possible to say in which year a particular operation will take place, but we can say in which five-year period it should happen. Before felling and restocking operations are undertaken, Operational Plans* are written by the Beat Forester. These detail the site-specific features that need considering when undertaking operations. This forest plan does not deal with the management of recreation, ecological or archaeological features. Planning for these elements follows a different management cycle and process.

The forests of the district are currently arranged in 58 management areas, and their management is covered by individual ten-year Forest Plans that identify local issues and the silvicultural management of the woods. Forest Plans are reviewed every five years.

1.1. Planning and District Context

The Strategic Plan for the Nation's Forests outlines the delivery of forest policy at a national level. At a regional level there are six Forest Districts covering the country that directly oversee the implementation of policy actions in the nation's forests. North District is an extensive area encompassing 9 county or unitary authority areas from the Scottish border to Durham and Lancashire.

Map 1: North Forest District Extent (green).

Our task is to realise the potential of each of the forests in our care for sustainable business opportunities, wildlife and nature conservation, and the enjoyment and well-being of local people and visitors. Each of our forests supports the economy through local jobs, sustainable timber production and the provision of recreation and tourism opportunities. All are funded by revenue from timber sales and recreation provision. We use some technical words and phrases in the text because they best describe what we are doing. Their meaning is shown in a glossary (Appendix 1).

2. Hardknott & Rainsbarrow Plan

Previously sitting under two separate plans, this plan combines them into a single management unit. Hardknott and Rainsbarrow sit along the river Duddon on the western border of the Forestry England Grizedale Beat.

Hardknott Forest and Rainsbarrow Wood are owned freehold by Forestry England and occupy an area of 630 ha and 50 ha respectively in the southwest part of the Lake District National Park (map 1).

Rainsbarrow is situated near the hamlet of Ulpha, it forms part of an extensive, predominantly broadleaf valley which stretches along the slopes adjacent to the River Duddon. This wood is Ancient Semi Natural Woodland (ASNW) in character and approximately half of the site is designated a Site of Special Scientific Interest. Recent management at Rainsbarrow, including a reduction in the beech presence, has contributed to restoration of the ASNW, in line with Plantation on Ancient Woodland (PAWS) guidance and the latest government's policy on ancient and native woodland and trees in England 'Keepers of Time' (May 2022). The woodland has high conservation value for dormice and upland oakwood habitats, in addition to occupying an important landscape setting, where the valley becomes narrower in profile.

Hardknott forest forms part of a transition from the river Duddon at the foot of the forest to Harter Fell at the upper part of the land holding. Parts of Hardknott form steep and craggy outcrops. Recent work in Hardknott has been in conjunction with the Hardknott Restoration group and Leeds University to restore the previously conifer afforestation with native broadleaves, creating a more natural landscape.

2.1. Current woodland composition

- Total Area: 681 ha 100%
- Woodland: 425 ha 62.5%
- Open Space: 256 ha 37.5%

The composition and age class distributions of tree cover in the two woods are shown in figures 1 and 2, and maps 2 and 3.

Rainsbarrow currently comprises of 100% broadleaves with >80% of these being native, giving Semi Natural Score of 1. The remaining <20% is comprised of 'honorary natives' such as beech and sycamore, the flowers of which are an important food source for dormice in the area.

Hardknott comprises of a mixture of broadleaf and conifer species. Whilst efforts have been made to phase the removal of conifer from the forest the emergence of the tree disease *phytophthora ramorum* in Larch, and the subsequent SPHN (Statutory Plant Health Notice) means over this next planned period there is an opportunity to speed up the restoration programme. Conifer removal in Hardknott will therefore focus on the removal of Larch over the next felling period. Tree species composition and age classes for both woods are summarised in figures 1 and 2.

The wind hazard class of the sites is 2-3 (low) in the lower parts of the woodlands raising to 4 (medium) on the upper slopes. This lends both Hardknott and Rainsbarrow to the potential for increased LISS in the future, as crops should be relatively windfirm.

Figure 1: Hardknott & Rainsbarrow Current Species Composition

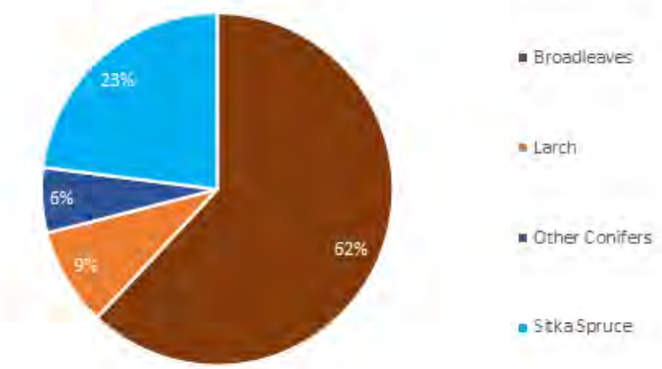
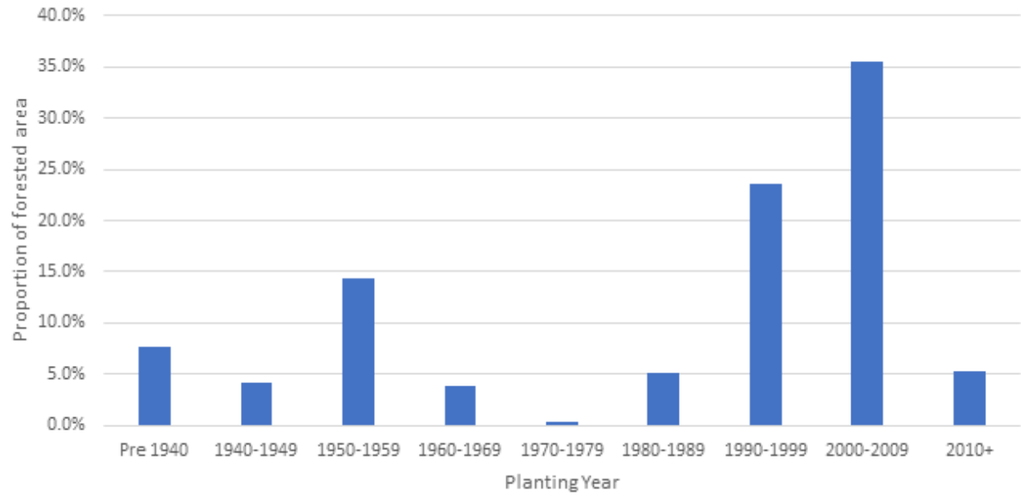


Figure 2: Age Distribution of Hardknott & Rainsbarrow



2.2 Designations

Hardknott and Rainsbarrow are situated wholly within the Lake District National Park and the English Lake District World Heritage Site, which was inscribed as a cultural landscape in 2017. The National Park and World Heritage Site provide the opportunity to demonstrate, at a practical level, how activities such as forestry, which have been prominent in shaping the landscape we see today, can create greater public benefit through sustainable land management delivering for people, the landscape, nature and the economy. For example, this can be achieved through conserving and enhancing the landscape, scenic beauty, and cultural heritage of the Lake District, whilst also providing wider ecosystem services to support communities' social and economic wellbeing in a sustainable way.

Rainsbarrow and Hardknott form part of the Duddon Valley Woodlands site of special scientific interest (SSSI). Rainsbarrow has approximately 27 ha and Hardknott 5 ha, which accounts for 8.6% of the total SSSI. The detail of the SSSI is summarised in Table 1. These units are covered by a standalone SSSI management plan but the objectives of this area reflected within the management proposals of this forest plan.

Table 1: Forestry England & Duddon Valley SSSI

SSSI	Duddon Valley Woodlands		
County	Cumbria, Copeland		
Forest	Hardknott & Rainsbarrow		
Unit ID	1006835		
Unit Name	Wallowbarrow (north) (Hardknott SD227972)	Rainsbarrow Wood (SD192933)	Stonegarth Wood Rainsbarrow (SD185925)
Feature	Broadleaved, mixed & yew woodland – upland.		
Unit No	1	17	19
SSSI Area (ha)	360.52		
Unit Area (ha)	4.24	26.28	6.99
Area FE (ha)	4.24	26.28	0.57
Proportion of SSSI in FE Management	8.6 %		
SSSI Condition	Unfavourable/recovering	Unfavourable/recovering	Favourable
Threat	High. Overgrazing & suppressed tree regeneration and ground layer. Tree disease (ash)	High. Overgrazing & suppressed tree regeneration and ground layer. Tree disease (ash)	High Tree disease (ash)
Date last NE Survey	01/06/20015	01/06/2015	01/06/2015

All of Rainsbarrow (c50 ha) is identified as either Ancient Semi-Natural Woodland (ASNW) or Plantations on Ancient Woodland Sites (PAWS), with an additional 11.25 ha in Hardknott (Map 4 ASNW & PAWS). Ancient Woodland sites are measured using Semi-Natural Woodland scores. SN1 refers to Ancient or fully restored woodland with 80% of species native, either planted or natural regeneration, SN2 50-80% native species, SN3 20-50% native species, and SN4 less than 20% native species. The Ancient Woodland areas of Rainsbarrow are scored as 100% SN1, whilst at Hardknott the score is and 77% SN1 and 23% SN2 as of 2024.

2.3 Historic Environment

Traditionally Rainsbarrow was managed as a coppice wood for the blast furnace located near Duddon Bridge. This is evidenced by the many pit steads and charcoal burners' huts located throughout the wood. Additionally there is a disused mine which was part of the Ulpha Copper Mine, known to have been worked in the 1860's through to the 1880's.

Hardknott is also steeped in history with medieval enclosures, boundaries, cairns, quarries and a Grade II listed building known as Birks Bridge, an 18th century stone rubble arch over a small ravine (Plate 1). This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest (National Heritage List for England entry number 1086826). This is the only designated heritage asset within the plan area.

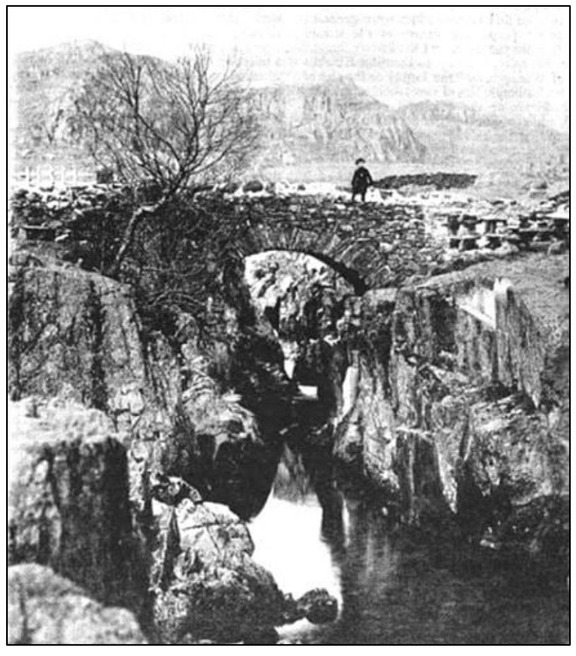


Plate 1: Birks Bridge, from an early 1890s photograph by Mr Dawson of Broughton-in-Furness.

2.4 Natural Environment

The Landscape Character Assessment describes the area of Hardknott as “surrounded by dramatic, craggy High Fells, this Upper Dunnerdale has a very strong sense of remoteness, isolation, wildness and tranquillity”.[1]

The Landscape Character Assessment describes the area of Rainsbarrow as “an intricate patchwork of habitats with extensive woodlands (the broadleaved, ancient semi-natural woods locally carpeted with wild daffodils in spring).”

The forest and surrounding landscape is a part of the UNESCO World Heritage Site that is the English Lake District, which was designated for its extraordinary landscape value. The objective to transition Hardknott away from a singularly conifer based plantation to a more mixed native woodland forest contributes towards the spirit of this designation.

Forestry England and Leeds University have been in a long term partnership focused on restoring Hardknott forest from plantation conifer to a more diverse native woodland structure. This partnership has combined practical action through volunteering, and academic research and learning activities. In 2023, the success of this vision inspired and enabled the creation of the Upper Duddon Landscape Recovery Scheme which takes in a wider catchment of neighbouring land owners, environmental organisations and farmers to deliver a landscape wide environmental project. The forest plans for Hardknott and Rainsbarrow compliment and work alongside the aims and objectives of this project. A range of species of interest in this plan area are summarised in table 1.

The habitats of Rainsbarrow and Hardknott are sites of very high biological value, and the Duddon Valley Woodlands, of which they are a part, are one of the largest series of woodlands in the Lake District. They are also an important UK priority habitat for their Upland Oakwood habitats. Other priority habitats include, upland heath, upland flushes, fens and swamps as well as 17 ha of blanket bog.

Red squirrels have been recorded in both woodlands and monitoring is in place. It is notable that the removal of conifers from Rainsbarrow saw a significant reduction in the numbers of reds observed in the wood, which is presumed to be linked to the loss of the small seed food resource. Control of grey squirrels is in place through a combination of activities of the South Lakes red squirrel groups and contractors. Pine marten (Martes martes) was recorded in Hardknott for the first time in 2025, and monitoring is in place.

The Hazel Dormouse (Muscardinus avellanarius) has previously been recorded in Rainsbarrow and a monitoring programme is in place to confirm its presence or absence. Although no animals have been seen for some time, there is sufficient evidence to indicate there is a high probability of their presence so operational planning will take this in to account.

Over 200 species of flowering plants and ferns have been recorded, alongside nationally scarce bryophytes in Rainsbarrow (SSSI management plan). A summary of known species that are specific to this plan is given in table 2. A depiction of the key conservation and heritage interests are shown in map 4.

Otters are known to infrequently occur at Hardknott, and 3 different species of dragonfly are known to the area, Four Spotted Chaser, Gold-ringed Dragonfly and Large Red Damselfly.

Table 2: Important Species and Actions Supported by this Forest Plan

Species	Objective	Actions supported by this Forest Plan
Hazel dormouse, Schedule 5 WACA 1981 & European protected Species.	Development of suitable habitat to support population.	Development of a more diverse native woodland in Rainsbarrow.
Red Squirrel, Schedule 5 & 6 WACA 1981	Protection of Dreys, and provision of suitable habitat	Provision of small-seeded conifers, for habitat and feed source. Habitat connectivity.
Badger, Badger Act 1992	Protection of the setts during Operations, and management of woodland to allow for a suitable woodland habitat	Ops will follow Forest Practice Note 9, Badgers and Forest Operations
Buzzard, Schedule 1 WACA 1981	Protect existing nests, maintain suitable habitats.	Mature forest structure provides nesting opportunities. Coupe checks prior to operations & apply appropriate mitigation.
Bat (All species) (WACA 1981, Conservation of Habitats and Species Regs, 2017)	Protection of potential roost trees.	Potential roost trees will be identified, and works planned in proximity to be undertaken with ecologist input
Adder, Schedule 5 WACA 1981	Record any sightings and maintain suitable habitat.	Provision of areas of open ground including grass, woodland clearings and glades provide habitat for this species.
Common Lizard, UK Priority Species	Maintain suitable habitat.	Provision of areas of open ground including grass, woodland clearings and glades provide habitat for this species.
Small pearl-bordered fritillary, UK Priority Species	Maintain suitable habitat.	Provision of areas of open ground including grass, woodland clearings and glades provide habitat for this species.
Woodland bird assemblage, particularly Wood warbler, Redstart, Tree pipit, Spotted flycatcher and Pied flycatcher. Classified in the UK as Red under the Birds of Conservation Concern 4: the Red List for Birds (2021). Protected in the UK under the Wildlife and Countryside Act, 1981. UK Priority Species	Protect existing nests, maintain suitable habitats.	Provision of mature forest structure with old feature tress, to provide nesting opportunities for this species.

[1] Lake District National Park Landscape Character Assessment and Guidelines, April 2021.

2.5 Pests and Diseases

There are both roe and red deer in the valley and forests of the Duddon and their impact is visible on tree growth in Rainsbarrow. Stalking does take place on Forestry England's holdings through our internal Wildlife Ranger Team. Culling is essential to successful establishment of naturally regenerated native broadleaves that we are trying to achieve, at both Rainsbarrow and Hardknott.

Sheep also gain access to the forests and contribute to browsing damage, therefore boundary fences and walls need to be maintained to keep this to a minimum.

Hardknott is currently subject to a statutory plant health notice (SPHN) because of the identification of a plant health threat, *Phytophthora ramorum* on larch (Larix spp.). The mechanism to control this pathogen is a targeted removal of all larch within the site. This will be delivered though the felling plans.

Rainsbarrow was been surveyed for the tree disease Ash dieback (*Hymenoscyphus fraxineus)*, and has been confirmed in the woodland. It is now widely accepted that this disease is present throughout the region. There are no proposals for any form of hygiene felling, rather sites will be monitored and ash trees that pose a risk to public and private property will be removed as required. The presence of this disease does mean that ash will not be planted within the restocking proposals, which does reduce the choices for diversifying woodland tree species and structure.

Grey squirrels are well established in the area, and control this species is undertaken through a combination of activities of the South Lakes red squirrel groups and contractors.

2.6 Access and Roading

The majority of Hardknott and Rainsbarrow is dedicated under the Countryside and Rights of Way Act 2000 (CRoW) as open access, which enables extensive use of the forest by walkers. The forest is very visible from the road and surrounding area with numerous public rights of way.

Access to Hardknott for heavy machinery is along the C4028 public road from Duddon Bridge, via Ulpha and Seathwaite and this is an agreed timber transport route (split between Cumberland and Westmoorland/Furness councils). A narrow bridge with a difficult angle of approach together with narrow roads, few passing points and buildings close to the road make access for heavy machinery particularly challenging. Previous operations in Hardknott have caused damage to the bridge, which took a long time to rectify. Harvesting operations therefore can cause problems to the local community and general public.

There was a proposal to re-align the bridge at Seathwaite to avoid future damage, however, no agreement was ever reached and the bridge was repaired to previous specifications. The current restrictions issues with the Ulpha bridge restricts timber haulage to two standard 44 tonne lorries per working day, which greatly restricts the progress of any harvesting work in either forest.

2.7 Communities and Recreation

The Duddon Valley is designated as a quieter area by the Lake District National Park Authority, under their Landscape Character Assessment. As such few formal recreation facilities are provided other than a small car park at Wegbarrow Head which provides an entry point to the forest. From here visitors can access the network of footpaths, bridleways and forest roads which link the forest to Seathwaite in the south, Eskdale towards the east and Hardknott Pass in the north.

Parts of the forest estate are dedicated under the Countryside & Rights of Way Act 2000, and the Forestry England permissive access policy applies across the undedicated portion. The forest is a well-used by locals and visitors for informal recreation, it is overlooked by Harter Fell and there are several walking routes to the summit. Several buttresses and bouldering areas attract climbers to the forest, and mountain bikers regularly use the bridleways and forest roads.

Regular volunteer days are organised with the Restoring Hardknott partnership and their dedicated Project Officer, to carry out practical tasks, assist in the creation of native broadleaf woodland, monitoring activities and contributing to the conservation and improvement of the habitats at Hardknott Forest.

Hardknott Forest is an outstanding resource for schools, colleges and universities. Local schools regularly visit the site, including several local primary schools, a local high school and college. University groups attend from the University of Leeds, Lancaster University and the University of Cumbria.

Rainsbarrow wood is well used informally by local people for walking on the public rights of way. The main paths are clearly way marked and in good condition, allowing people enjoy the spirit of the wood, the exercise, and some have an interest in the biodiversity. A system is in place to ensure that vegetation is regularly cut adjacent to paths to stop them becoming overgrown.

The autumn colours are spectacular and add to both local people and visitors enjoyment of the Duddon Valley.

There is an agricultural tenancy in Hardknot for grazing which includes three areas of open land around Castle How, Hinning House meadows and the Birks totalling 34.3 ha.

Parts of the hill ground around Hardknott are registered common land (Foundation for Common Land) which are managed to maintain historical common rights particularly for agricultural grazing. This simply emphasises the need to maintain boundary fences to keep stock out of the forest area to reduce browsing impacts on the forest environment.

3. Review of Previous Plan Objectives

An analysis of the progress against the objectives of the previous plan is given in table 3.

The leading objective to move forest structures from conifer plantation to native woodland types is now well established and underpins the design concept. This plan seeks to continue this progression.

Table 3: Assessment of previous objectives

Objective	Has objective been met?	Comments
Encourage a predominantly native woodland	Yes and ongoing	In Hardknott the programmed clearance of conifer has been followed by birch and willow naturally regenerating successfully in many places. This has been enriched with planting of aspen, oak, small leaved lime and willow by Hardknott Restoration volunteers. Surveys of sub-compartments are needed to update the forest database. Rainsbarrow. Planting from 2005 is now fully established having been protected by deer fencing. The beech stands need thinning/group felling interventions to remove shade to allow further diversification.
Continue the programme of phased felling of conifers	Yes and ongoing	Approximately 70 ha of conifer has been felled and removed from Hardknott in addition to a heavy thin of beech in Rainsbarrow. The issuing of an SPHN for Larch in Hardknott will mean another 60 ha of larch removal over the course of this plan in addition to 35 ha of Sitka spruce. Priority will be given to the removal of larch due to the SPHN.
Increase the seed source for future natural regeneration	Yes and Ongoing	The regeneration in Hardknott is dominated by birch, which over time should provide a nursery for other species such as oak to take hold. Studies from Spracklen et al, 2013 typically recorded regeneration densities of native trees greater than 1,000 sems/ha. This exceeds the minimum planting densities associated with new native woodland creation. The obvious risk and barrier to this will be the conifer regeneration.
Conclude the wall alignment at Seathwaite Bridge	No	A resolution with the council over the bridge re-alignment on the county road was never reached and thus the bridge was repaired to previous specifications, and the access situation at Hardknott continues to be a challenge and hampers the conifer removal programme.
Increase involvement with the local community	Yes	Through the Hardknott Restoration group volunteers are regularly contributing to habitat restoration, in addition to local schools and colleges visiting the forests. The Landscape Recovery Scheme also draws in local farmers and neighbouring land owners into collaborating to achieve landscape wide objectives.
In conjunction with the SSSI plan to maintain and improve the condition of ancient woodland	Ongoing	The abundance of flora and fauna that both Hardknott and Rainsbarrow support is testament to how special these woodlands are. Improvements in the ASNW scores show the great steps forward that have been made to restore these places back to naturalness. However, the status of the SSSI is still unfavourable recovering as last published in 2008/9 and a refreshed survey is required to establish a new base point from which we can further maintain/improve the woodlands.

4. Analysis and Concept

A summary of the factors affecting management choices in the forests is summarised in table 4. A summary of hazards constraints which also advise decisions are shown in map 5.

Table 4: Analysis of opportunities and issues

Factor	Opportunities	Issues
Management type	Hardknott; Statutory plant health notices provide firm direction for operations, dramatically speeding up pace of conifer removal. Once larch and Sitka have been clear-felled, opportunities will arise for low impact, continuous cover management systems to be implemented. Rainsbarrow; Access permits thinning/group felling to further reduce the beech overstorey.	Plant health changes the approach to a forceful intervention creating a dramatic change. Approximately 34,000 tonnes to fell over the period of the new plan. The constraint to achieving this is the continued restriction at Ulpha/ Seathwaite bridge which limits timber movement to end users and will affect the planned timescales.
Biodiversity and heritage	Continued conversion of Hardknott to native woodland will provide a large extent of native woodland, contributing to the wooded corridor along the river Duddon. Management in both forests will contribute to improving the SSSI favourable condition.	Management of the conifer regeneration will be an ongoing issue at Hardknott, and will need a continued and sustain effort to fully restore its nativeness. At the same time, a presence of conifers could benefit red squirrels as a food source.
Access & Roading	Rainsbarrow has good access, suitable for 6 wheeled wagon, together with internal tracks and rides suitable for small machinery. Hardknott is well served by internal forest roads.	The most significant issue is the use of the public road from Hardknott with the weight limit on the bridge at Seathwaite and narrow roads, few passing points and building very close to the road.
Pests and diseases	Increasing diversity in tree species should present a greater opportunity to withstand future pests and disease, helping provide a more resilient woodland. Grey squirrel control will help ensure that native red squirrel populations can stabilise and be resilient. Deer management remains an important management action, as does keeping boundaries secure from sheep incursion.	The tree disease, *Hymenoscyphus* fraxineus, ash dieback, does present a problem to diversification in both woodshe trees are regularly monitored and if found to be dangerous will have to be removed from paths and tracks. Hardknott has been served with a SPHN for the tree disease *Phytophthora ramorum* in larch and subsequently all larch is programmed to be removed during the next felling period.
Future Species	Restocking by natural regeneration of birch and willow is being successful, aided by effective deer management. This needs to continue to be enriched by planting of aspen, willows, oak and small leaved lime to increase species diversity.	Planting choice should use local provenances where possible, but climate changes should also encourage managers to test other provenances to increase resilience. Likewise, if disease resistant strains of ash are developed, these should be considered for use.
Landscape	The Upper Duddon Landscape Recovery Scheme ties together the forests and the surrounding landscape of upland farms and water catchment to deliver landscape wide restoration. This DEFRA-funded Landscape Recovery scheme is designed to encourage changes in land management that improve soil and water quality and reverse the decline in nature.	Collaboration is essential to management of herbivorous grazers identified as a major threat to native broadleaved establishment in the UK.
Public access	The forests are largely designated CRoW access and public rights of way are signposted throughout. The involvement of local schools and colleges has been encouraging in recent years, thanks to the Hardknott Restoration volunteers. Local enjoyment of quiet recreational activities is encouraged.	Informal, quiet recreation will continue to be encouraged. Timber harvesting operations, can cause significant disturbance to the local community. The phasing of operations, provision of information and management of safe working zones will be used to minimise disruption to public access.

5. Objectives and Proposals

The following objectives (table 5) have been identified based on Forestry England National Policy, 'Growing the future: 2021-2026'.

Table 5: Forestry England goals supported by this Forest Plan

Growing the future vision	How Forest Plan delivers
For Wildlife 'Continuing action to protect, improve and build the resilience of our most special habitats, including ancient woodlands and Sites of Special Scientific Interest.' 'The rich, diverse and connected habitats in the nation's forests will continue to be improved and enhanced by our sustainable forest and land management.'	Phytophthora felling has resulted in many crops being felled early. Continue to retain stands of older crop where physically possible to help maintain structural diversity in the forest during the initial period of transformation to reduce possible environmental impacts. Expansion of the low impact silviculture (LISS) areas which will be enhanced through thinning will increase light to the forest floor, resulting in improvements in forest habitats and biodiversity. Continued restoration of ancient woodland sites in Hardknott to improve SSSI favourable condition. Improved riparian zones from natural regeneration and supplemented with broadleaf planting. Maintain and improve habitats for species, including Red Squirrel and Dormice.
For Climate 'We will offer over one million cubic metres of sustainable timber to market each year, maintain world-class forest management practices, externally accredited to international standards.' 'Greater structural and tree species diversity in the nation's forests to support adaptation to climate change and securing a sustainable timber supply for future generations.'	While production will be skewed over the next few years by plant health derived clear-fells, this forest plan sets out opportunities for future low impact silviculture management (LISS). Thereafter, the use of thinning interventions will continue to provide a sustainable yield of broadleaved timber into the future for local wood markets. The natural regeneration of much of Hardknott will be supplemented by enrichment planting of other species to build a more resilient forest. The continued use of thinning interventions will create a structurally diverse and resilient forest over time.
For People 'we will utilise the land and resources at our disposal to assist communities close to our forests to enhance their environments and hence their quality of life' 'we will provide public access to all our forests and woodlands where there are no legal or safety restrictions…' 'we will provide public access to all our forests and woodlands where there are no legal or safety restrictions…'	Increased landscape diversity through native species planting will improve the visual appeal of the forest for visitors. Continue to work with the Hardknott partnership to encourage use of the forest for public engagement and educational activities. Continue to develop a desirable forest landscape for visitors, complementing the objectives of regional landscape designations. Historic features will be routinely identified and protected during our planning and implementation of forest operations.

6. Forest Plan Maps

- Map 1: Location – 1:50,000 scale showing location in context of local area.
- Map 2: Current Species Distribution – tree species composition in 2025.
- Map 3: Age Class Distribution – indicates forest structure by age.
- Map 4: Conservation and Heritage.
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- Map 6: Design Concept – indicates the main objectives for management.
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- Map 8: Future Habitats – the vision for future forest structure & composition.

7. Forest Plan Outcomes

7.1. Felling Proposals

The harvesting of marketable timber remains a significant feature of Hardknott and Rainsbarrow over the life of this forest plan, generating in the region of 34,000 tonnes in the removal of non-native conifers. The realisation of this will be dependent on working within the timber transport restrictions for two 44 t timber lorries each working day. These felling interventions will utilise conventional clearfell systems for the larger sale removal of conifer. Selective thinning and group felling systems will be applied in the management of the second rotations in Hardknott and the interventions in Rainsbarrow.

Following completion of the initial conifer removal stage in Hardknott there will a natural lull in production as the forests transition towards the intended broadleaved species structure. As the future forest structure grows in to a production size classes (post 25 years old & assuming yield class 6) a strategy of low impact silvicultural system (LISS) approaches using continual thinning and group felling will have the potential to yielding approximately 21m^3/ha on a 5 year cycle. Depending on how the forest is set up as a working circle, if a fifth of the forested area was worked every year, this could generate c1785 m3/year. There will be secondary regeneration of conifers in the forest area for a time to come and these thinning interventions will seek to remove non-native conifers from the new forest structure to lock-in the transition.

For Rainsbarrow, a strategy of low impact silvicultural system (LISS) approaches using continual thinning and group felling will be used to continue to break up the dominance of the beech canopy. This will increase natural light levels which in turn will stimulate natural regeneration. Planting of nursery stock can be used to introduce a greater species diversity as appropriate.

7.2. Restructuring and Restocking

The sites felled over the last 15 years are demonstrating widespread, effective recolonisation by natural regeneration of birch, rowan and willow. Regeneration by a total of 13 native species has been recorded by the Leeds University project team. This is being aided by effective control of browsing mammals (deer & sheep). This indicates a strong seed bank for these species which provides considerable confidence that this will occur on the felling sites proposed over the next 10 years.

Choices to restock by manual planting should look to introduce tree species that are less well represented, and will find it harder to regenerate over any timescale without help; these include aspen, common alder, small-leaved lime, hazel, oak, bird and wild cherry, other willow species and juniper. Planting will help establish a broader species base over a greatly reduced timeframe, compared to relying on natural processes the achieve the same goal.

Although deer management is allowing birch to regenerate, this species is at the lower end of palatability preferences for browsing deer. It is harder to find any evidence of oak and hazel in Hardknott which are at the upper end of palatability. Likewise, aspen will be difficult to establish without protection. Therefore deer culling and fencing will be part of the management toolbox during the restocking phase.

7.3. Natural Capital

Natural Capital refers to the stock of all natural assets upon which the economy and society is built. Natural capital produces value for people in the form of 'goods' such as timber or minerals and 'services' such as climate regulation and air purification.

In addition to timber, the Hardknott and Rainsbarrow forest plan will deliver ecosystem services and other non-market benefits in biodiversity, climate change mitigation, water quality, continued carbon sequestration, landscape enhancement.

8.0 Monitoring Plan

The objectives set out in section 5, table 4 will be largely be monitored using established business reporting practices (table 6). Because of the time gaps between SSSI condition monitoring rounds, local staff will need to devise a methodology to make an independent assessment of progress towards favourable condition.

Independent monitoring by the Leeds University through the Restoring Hardknott Forest project team will also contribute to the knowledge and future decisions in this forest plan.

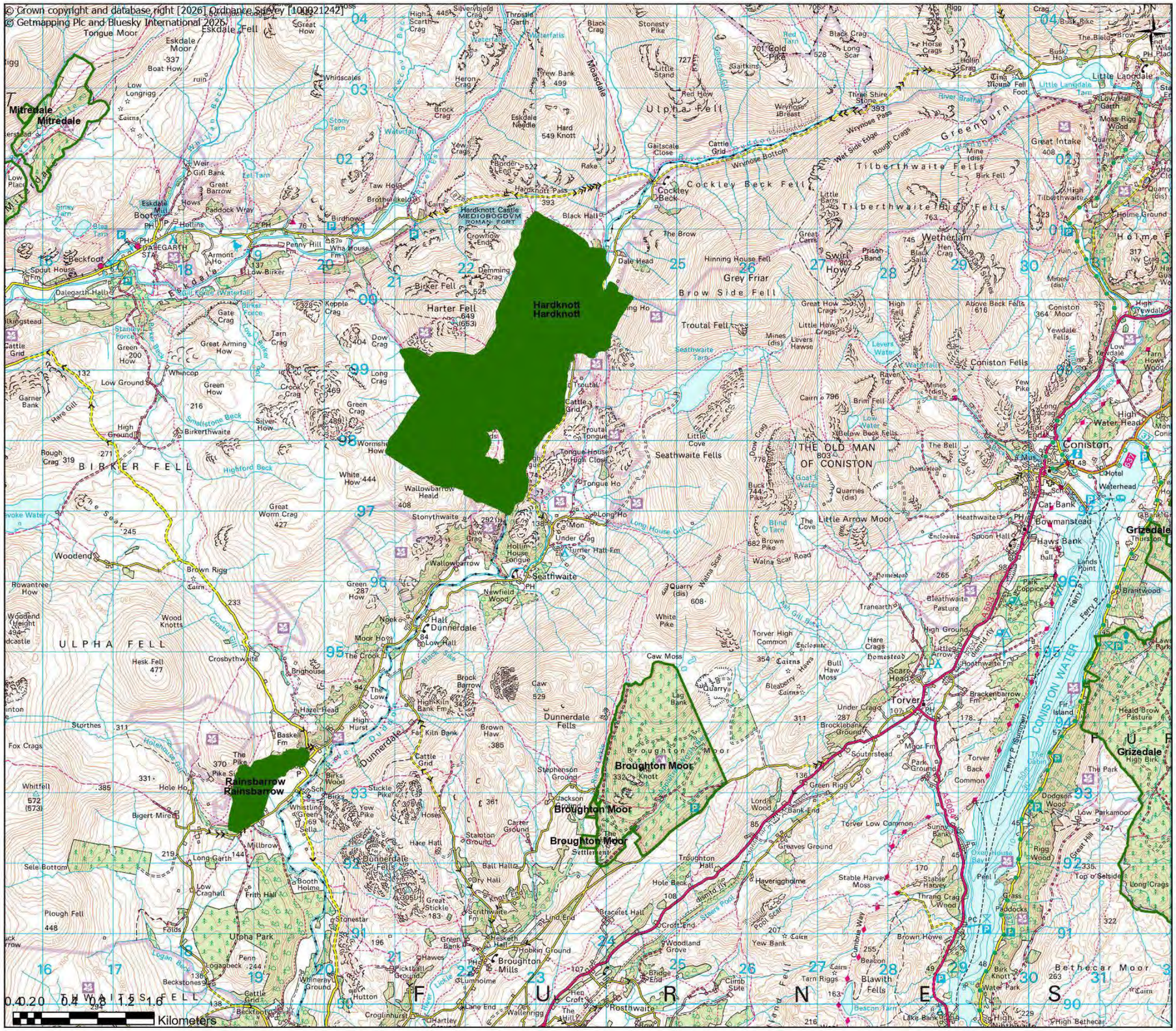
8.1 UKWAS Compliance Table

Table 5 – UKWAS Compliance	Forest Plan Area (ha)	Forest Plan %	Forest District Area (ha)	Forest District %
Total area	681.5	100	85888	100%
Total wooded area	453.2	66.5	58069	67.61%
Area of conservation value*	399.6	58.6	11322	13.18%
Long-term Retentions and Low Impact Silvicultural Systems	378.7	55.6	10449	12.17%
Open space	149.2	221.9	27819	32.39%
Natural Reserves	0	0	873	1.02%

*Area of conservation value is the sum of designated areas including any Ancient Woodland, Long-Term Retentions, Low Impact Silvicultural Systems, and areas of Natural Reserve

Table 6: Monitoring plan

Objective	**Criteria for success**	**Assessment**
For Climate		
Wood production	Marketable parcels of timber offered to the market. Progress against the forecast felling programme.	Contract and sales records. Year 5 mid-term forest plan review assessment of progress against programme.
Maintenance of a viable woodland structure.	Restocking/regeneration of felled forest. Increasing species diversity & forest resilience.	PPG 4 stocking density assessments, & browsing damage assessments. Sub-compartment database records changes in woodland composition. Growing stock attributes survey (yr 21).
For Wildlife		
SSSI Favourable Condition	Favourable condition.	Review of SSSI management plan and assessment of favourable condition.
PAWs restoration	Delivery of forest plan felling & thinning proposals. Improved semi-natural scores from Ancient Woodland survey.	Year 5 mid-term forest plan review & analysis of the sub-compartment database. Re-survey of PAWs.
Improved biodiversity	Healthy habitats & species populations.	Species monitoring & records.
For People		
Achievement of the Hardknott partnership objectives.	Achieving forest plan objectives.	Year 5 mid-term forest plan review. Progress against the Defra LNRS.
Historic features; enhancement/protection.	Protect and enhance historic features.	Operational planning records.



Forestry England

Title: Map 1 Location

Print Date: 11/12/2025

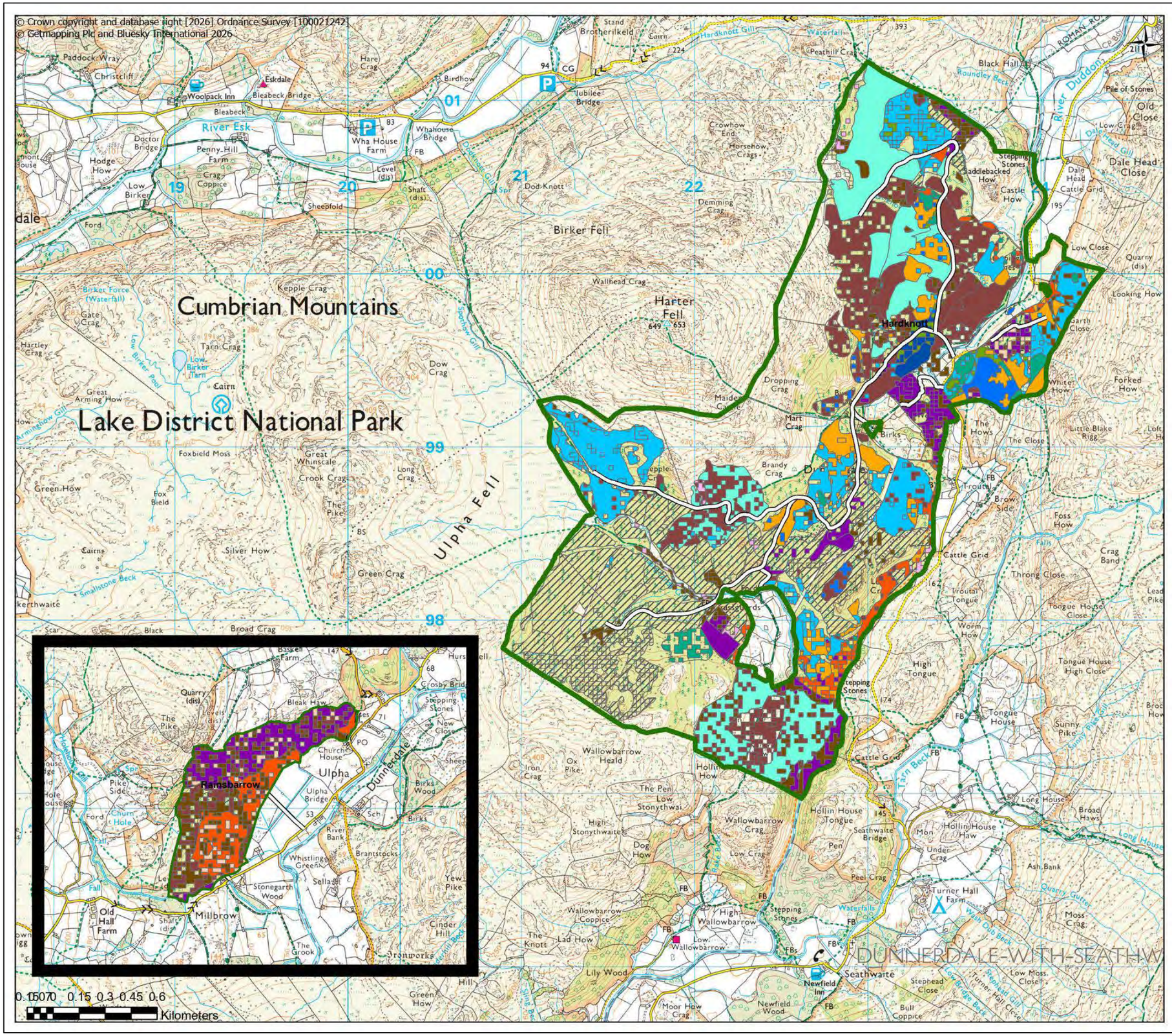
Author: Giles Brockman

Scale: 1:50,000
Scale at A3

Hardknott & Rainsbarrow

Other FE Forests

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



Forestry England

Title: Map 2 Current Species Distribution
Print Date: 12/12/2025
Author: Giles Brockman
Scale: 1:20,000
Scale at A3

Hardknott & Rainsbarrow

Forest Data

Tree_Species

- Ash
- Aspen
- Beech
- Birch
- Oak
- Mixed Blvd
- Larch
- Sitka spruce
- Norway spruce
- Scots pine
- Pine
- Mixed conifer
- Regenerating conifer
- Felled
- Open
- Forest Roads

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Map 3

Forestry England

Title: Map 3 Age Class Distribution
Date: 11/12/2025
Author: Giles Brockman
Scale: 1:20,000
Scale at A3

Legend

Hardknott & Rainsbarrow

Planting Year

- 1880
- 1900
- 1930-1939
- 1940-1949
- 1950-1959
- 1960-1969
- 1970
- 1980-1989
- 1990-1999
- 2000-2009
- 2010-2019
- 2020-2022

0 0.075 0.15 0.3 0.45 0.6 Kilometers

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Forestry England

Title: Map 4 Heritage & Conservation

Print Date: 18/12/2025

Author: Giles Brockman

Scale: 1:20,000

Scale at A3

Legend

- Hardknott & Rainsbarrow
- Heritage
- County Sites

Ancient Woodlands

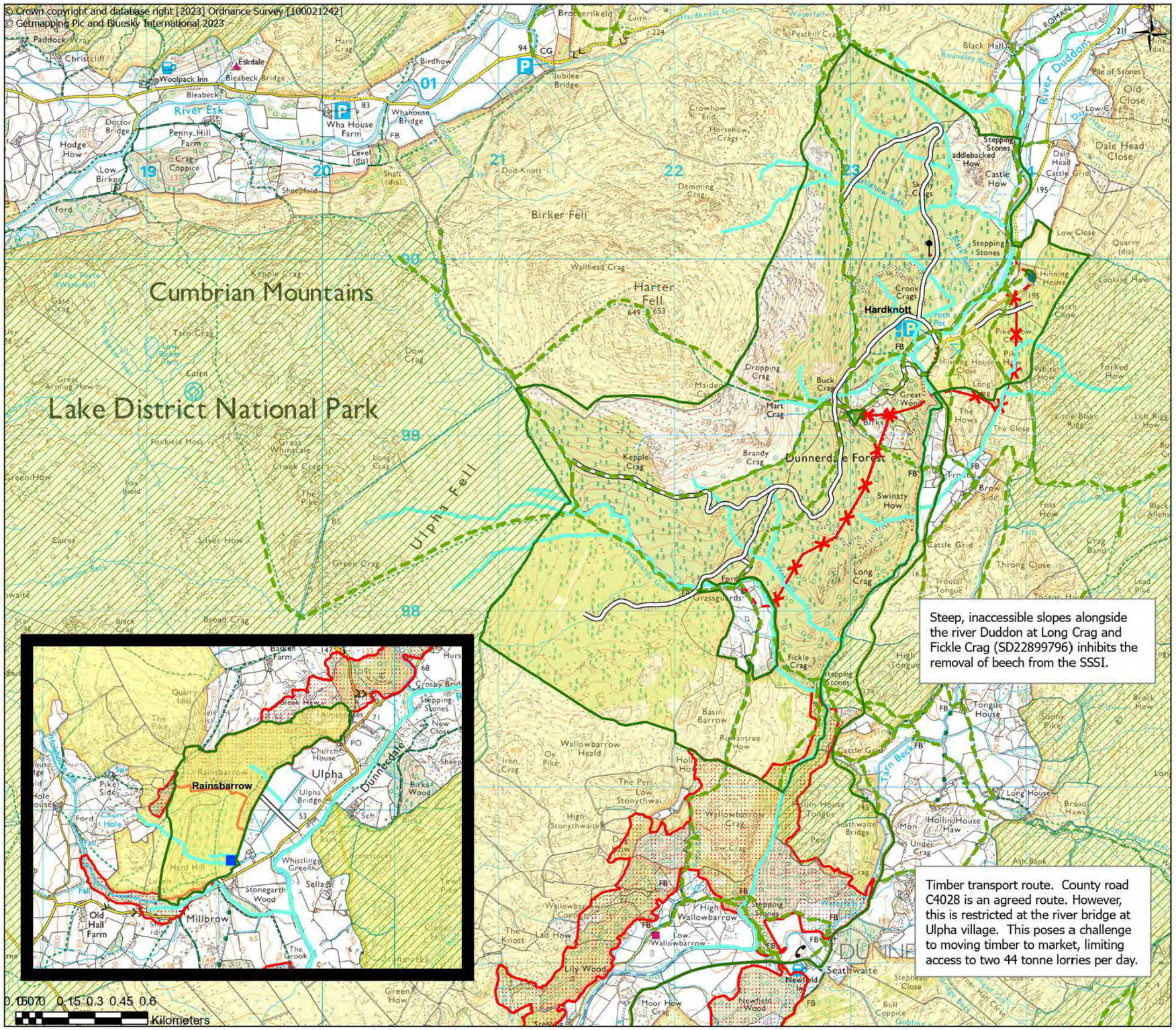
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ancient Wood Pasture
- Sites of Special Scientific Interest
- Forest Roads
- Watercourses

0 0.075 0.15 0.3 0.45 0.6

Kilometers

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

Forestry England



Forestry England

Title: Map 5 Hazards & Constraints

Print Date: 30/01/2026

Author: Giles Brockman

Scale: 1:20,000

Scale at A3

Legend

- Hardknott & Rainsbarrow
- Forest Roads
- Water Pipelines
- Water Supply Points

Communications

- Overhead telephone or fibreoptic
- Underground telephone or fibreoptic

Electricity Powerlines

- Overhead powerline
- Underground powerline
- Gas Pipelines
- Masts/Aerials
- Water Pipelines
- Water Supply Points
- Watercourses
- Sites of Special Scientific Interest
- CRoW 2000 Open Access Land
- CRoW 2000 - S4 Registered Common Land

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

Forestry England

Design Concept 1. Conversion to Native Woodland Structure.

Hardknott. Achieve the initial conversion to a native woodland structure by continuing to remove non-native conifers using clearfell.

Complete the clearance of larch to meet the requirements of the statutory plant health notice to control Phytopthora ramorum.

Package operations to complete the felling programme over 8 years, to 2034.

Develop natural regeneration as the main tool to restock after felling. Birch and willow is being successful. Supplementary planting of other species to increase diversification.

Manage deer/sheep to minimise browsing damage on natural regeneration.

Thinning programme to manage secondary regeneration of non-native conifers.

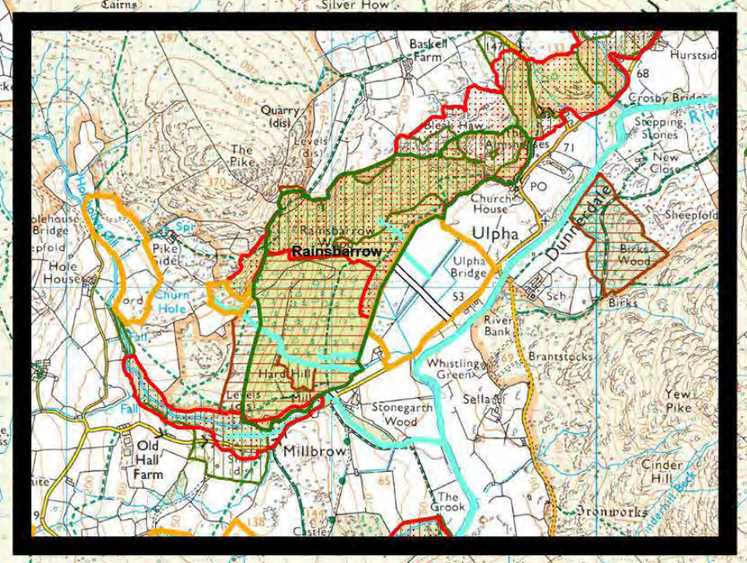
Design Concept 2. Improve SSSI/Ancient Woodland Condition

Rainsbarrow. Thin the beech stands to make space for introduction of other native broadleaved species. Use irregular shelterwood/group felling systems.

Manage deer/sheep to reduce browsing damage on tree regeneration.

Identify a range of other native tree species that would be acceptable to diversify woodland mix.

Maintain a thinning programme to manage beech regeneration in the wood.



Design Concept 3. Improve SSSI/Ancient Woodland Condition.

Hardknott. Consider strategies for improving ancient woodland condition on the steep river valley banks. Management of beech.

Cumbrian Mountains

Forestry England

Title: Map 6 Design Concept

Date: 19/12/2025

Author: Giles Brockman

Scale: 1:20,000

Scale at A3

Legend

- Hardknott & Rainsbarrow
- Sites of Special Scientific Interest
- Watercourses
- County Sites
- Forest Roads

Ancient Woodlands

Ancient & Semi-Natural Woodland	Ancient & Semi-Natural Woodland
Ancient Replanted Woodland	Ancient Replanted Woodland
Ancient Wood Pasture	Ancient Wood Pasture

0 0.075 0.15 0.3 0.45 0.6 Kilometers

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

Forestry England

Felling proposals.

Hardknott. Removal of non-native conifers will be through clearfell operations over an 8-year period.

Future management of regeneration/restock will be using low impact silviulcultural systems (LISS), primarily through thinning and small group felling to create an irregular shelterwood structure.

Rainsbarrow. Thinning and group felling in the beech/sycamore stands to break up the woodland structure and create light to increase diversity through regeneration or planting.

Lake District National Park

Rainsbarrow

0 0.075 0.15 0.3 0.45 0.6
Kilometers

Forestry England

Title: Map 7 Management Operations
Print Date: 18/12/2025
Author: Giles Brockman
Scale: 1:20,000
Scale at A3

Legend

Hardknott & Rainsbarrow

Management Operations

Felling Period

- 2022-2026
- 2027-2031
- 2032-2036
- LISS
- Open
- Forest Roads

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

Forestry England

Conversion to Native Woodland Structure.

Natural regeneration to be the main tool to restock after felling. Birch and willow is being successful. Supplementary planting of other species to increase diversification.

Future thinning programme will be used to manage secondary regeneration of non-native conifers.

0 0.075 0.15 0.3 0.45 0.6
Kilometers

Forestry England

Title: Map 8 Future Habitats

Print Date: 12/12/2025

Author: Giles Brockman

Scale: 1:20,000
Scale at A3

Legend

- Hardknott & Rainsbarrow

Future Species

- Beech
- Mixed Blvd
- Oak
- Pine
- Open
- Successional open
- Forest Roads

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