Forestry Commission England

Bodmin Forest Plan

2018 - 2028

West England Forest District

Ben Robinson

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Forestry Commission England

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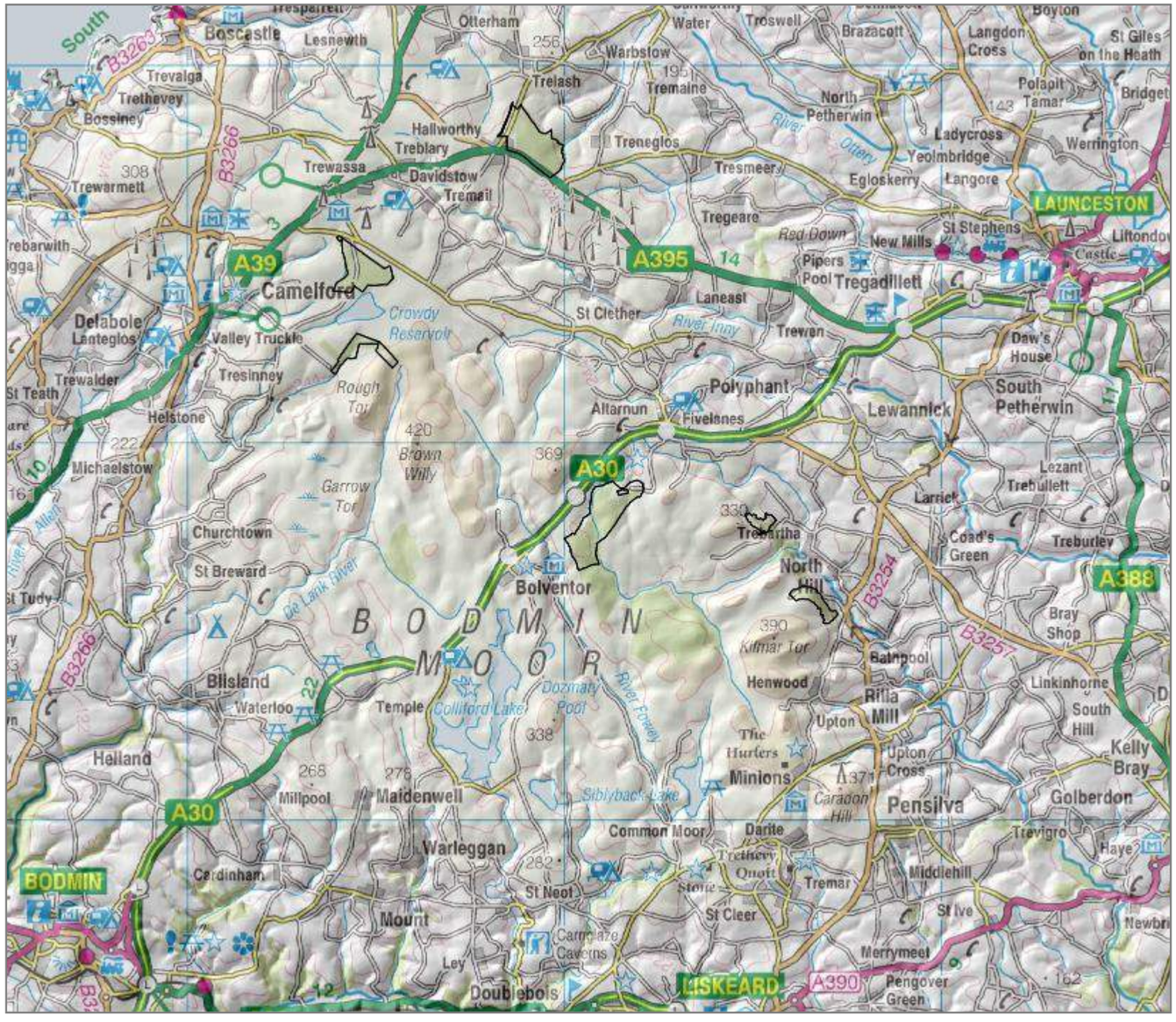


Location

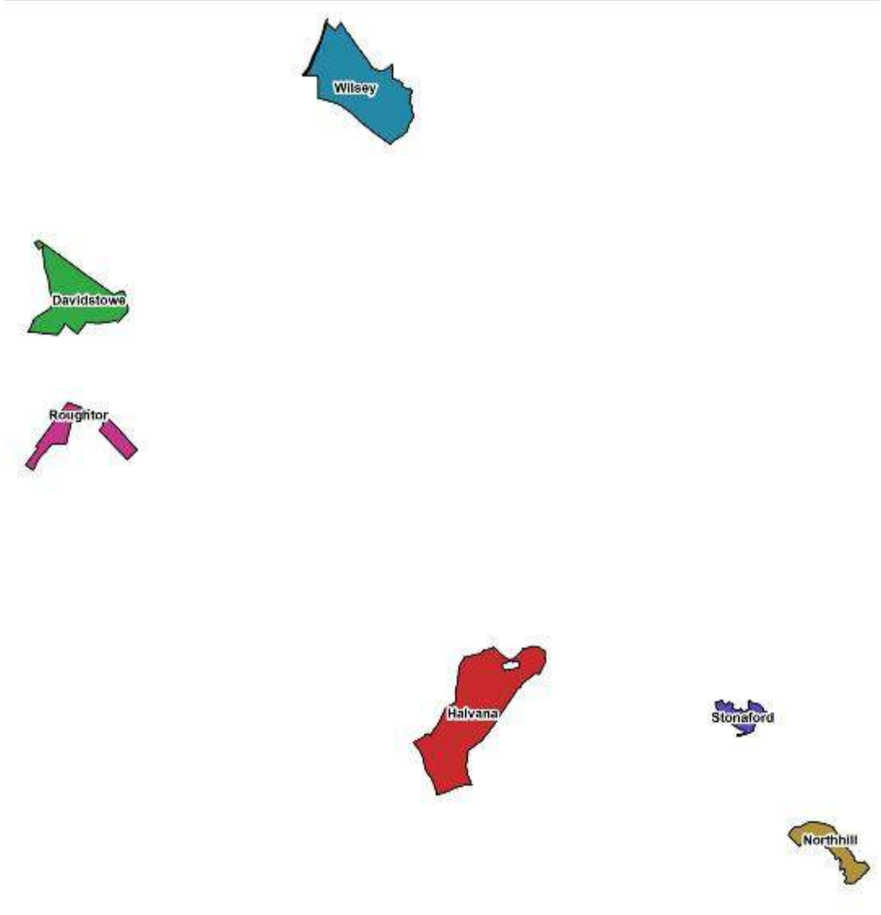
The Bodmin Forest Plan area lies in north Cornwall across Bodmin Moor between the towns of Liskeard and Camelford. The Plan area is made up of six coniferous forest plantations on the north Devon plateaux totalling 589ha.

The Plan area sits within an upland grassland landscape and provides both a visual feature and recreational attraction for the surrounding area. Numerous watercourses source within or near the forests and then traverse the blocks most of which then feed into and make up the Lynher River. Roughtor and Davidstow being the exceptions which feed into the River Camel.

The majority of the land is at 160-300 metres above sea level and is predominantly on top of the flat plateau with a few moderate gradients in places. The climate is warm and fairly moist with an average annual rainfall of 1100—1400mm, a soil moisture deficit of around 127mm, and an accumulated temperature over 5°C of 1700°C. The close proximity of the blocks to the Atlantic coast mean that wind exposure and salt burn is a common issue in the more westerly blocks of Wilsey and Davidstow.

The soils are primarily poor ironpans some with areas of deep peat and others upland brown earth. This is underlain by granite intrusion, typical of the moors of the south west peninsular.

Forest Name	Area	Plan Area
Davidstow	112ha	19%
Halvana	199ha	34%
Northhill	42ha	7%
Roughtor	48ha	8%
Stonaford	23ha	4%
Wilsey	165ha	28%
	589 ha	**100%**



Summary

About

The Bodmin Forest Plan area is made up of six separate forest blocks totalling 589 hectares in north Cornwall. Some of the forests lie within the Bodmin unit of the Cornwall AONB. As individual forest blocks set within the distinctive elevated plateau moorland they offer very high natural and landscape diversity and value.

The forests managed as part of the public forest estate are Wilsey Down Davidstow, Roughtor and Halvana to Stonaford and North Hill in the south east which is clustered around Trebartha.

The public forest here is a predominantly conifer having been planted after the First World War to address the national timber shortage. The area is known for its production of high quality Sitka spruce which makes up the vast majority of the trees here. Most of the areas have historically been managed for timber for local, national & international markets using limited thin rotation silvicultural practices due to high wind exposure.

The Plan area contains a rich cultural heritage including scheduled and unscheduled monuments. These are made up of numerous archaeological features of barrows and mounds which are free of tree cover.

The Plan area is rich for ecology and neighbours a Site of Special Scientific Interest and Special Area of Conservation (SAC). Most notably Crowdy Marsh which hosts rare bird species such as the golden plover, snip and curlew. The forests are also important for a number of nationally important birds, including nightjar, willow tit and starling .

The vast majority of the Plan area is Open Access under the Countryside Rights of Way Act. The exception is an area of Trebartha which is de facto Open Access due to it being leased from another landowner. Recreational activity is light and informal with walkers along the public rights of ways the main users.

Objectives

The core vision of the Plan is to produce woodlands with increased conservation and landscape benefits whilst maintaining a viable timber output. The long term aims of management here are to continue the substantial timber production while increasing resilience to climate, pest and disease risks, and to deliver the forest for people and nature.

The social, economic and environmental objectives of management here are:

- The continued production of sustainable and marketable woodland products.
- Protect and enhance woodland and open habitats and their associated species.
- To conserve, maintain and enhance cultural and heritage assets.
- To protect and enhance areas of Ancient Semi-natural Woodland and restore areas of PAWs in line with ‘Keepers of Time’.
- The diversification of woodland species and structure for greater ecological and economic resilience.
- Deliver well-designed forests that both protect and enhance the internal and external landscape in keeping with the local landscape character.
- The provision and maintenance of recreation facilities.

What we'll do

The current plan outlines management proposals including felling and restocking over several decades, with felling licence approval for operations up until 2028.

Crops in more exposed positions will continue to be managed through non-thin for conifer timber production under a clearfell and restock scheme. Whereas more sheltered areas will be structurally diversified through thinning.

The Plan makes provision to diversify the species composition and move away from a reliance on Sitka spruce by investigating and advocating suitable alternatives delivering a resilient, climate change ready forest.

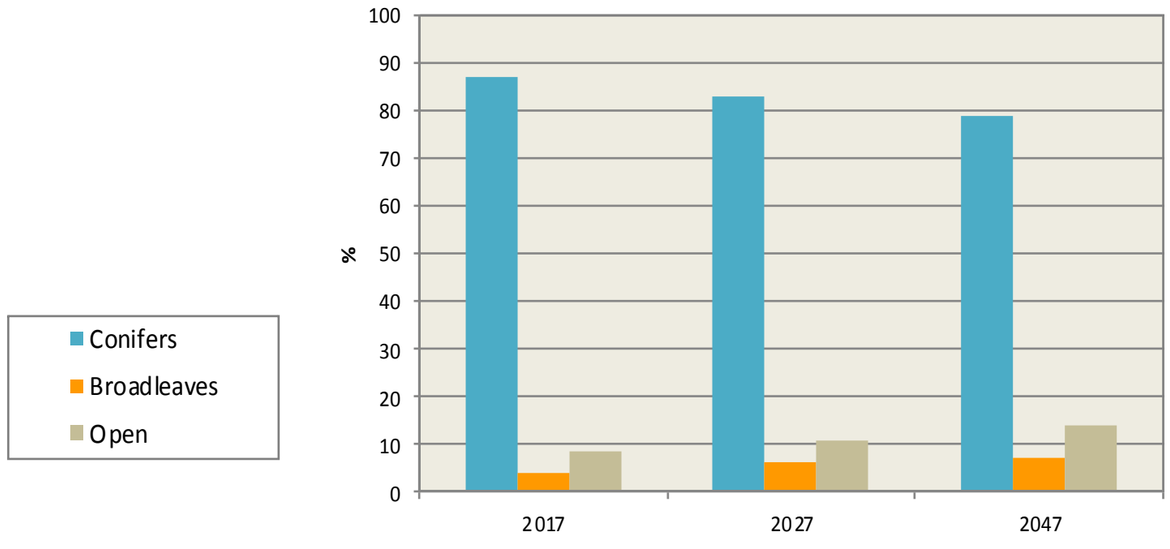
Implementation and maintenance of an environmental corridor system will continue to increase diversity of habitat and internal landscaping.

The planned areas of clearfelling, restocking and permanent open space creation during the ten years to 2028 are summarised in the chart below.

HECTARES	Conifers	Broadleaves	Open space
Clearfelling	80	0	-
Restocking/Regeneration	58	11	11

In addition to these defined operations, ongoing thinning and selective felling of both conifers and broadleaves will be carried out in the plan area at five to ten year intervals.

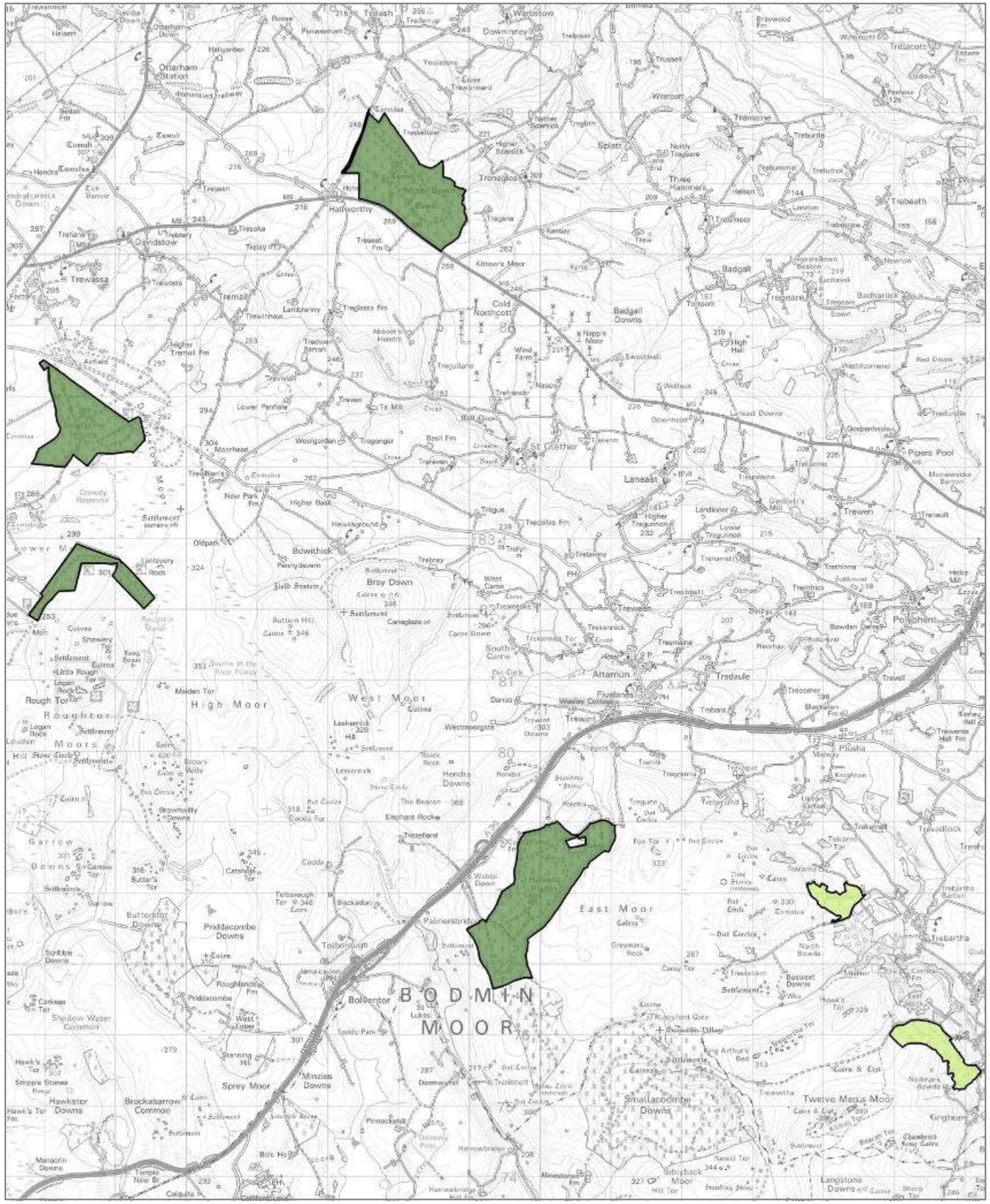
The proportions of conifer and broadleaved woodland and open space at the beginning of the plan period are shown in the bar chart. The increase in native broadleaves and open space expected within the plan period and over time is indicated in the middle and right hand columns of the chart.



Tenure & Agreements

The majority of the Plan area is held under freehold—524ha. Most of this was acquired in the 1930s (Halvana and Wilsey), with Davidstow secured in the 1960s and Roughtor in the 1990s.

The two smaller blocks of North Hill and Stonaford are held through leasehold as part of the Trebartha Estate. This area of leasehold totals 65ha.



Legend

- Freehold
- Leasehold

0 0.05 0.1 0.2 0.3 0.4 Miles

A 50 Year Vision

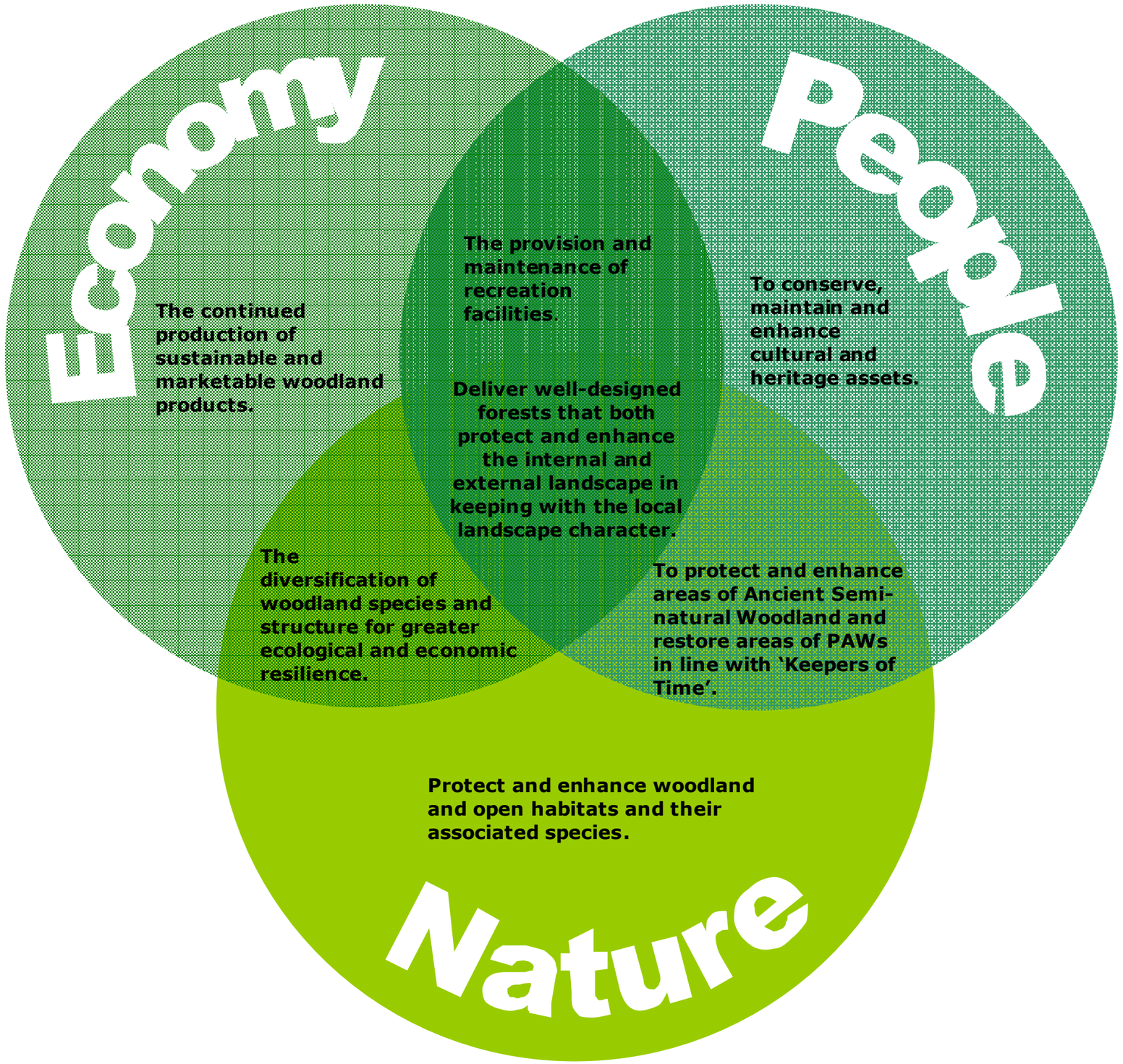
The Vision for the future of the Plan area is bold but in keeping with the Forestry Commission's key strategic goals and the local and national value which is placed on the area. Set against the backdrop of the National Character (Natural England, 2013) whereby *the area has a distinct upland character and a strong sense of place resulting from the bleak and remote feel of the uplands, the ever-changing palette of colours, the extensive land use and occasional regimented conifer plantations,* this Vision looks to achieve an area which is a haven for wildlife, fun and commerce. A 'Key Planning and Development Guideline of the Landscape Character Assessment (2008) is *to conserve local landscape character by ensuring that major infrastructure projects, such as forestry plantations, communications and transport corridors, are assessed for their potential impact on landscape character and, where approved, designed to be in scale with local landscape pattern and scale.* In 50 years time this Plan will look to have delivered a rich mosaic of robust habitats which supports a multitude of rare and common flora and fauna species, respects and enhances historic features as well as contributing to a low-carbon economy.

The conifer dominated forest will predominantly be managed through clearfell and then restock systems contributing to a vibrant woodland economy. Rare and protected species, such a goshawk, hobby, willow tit, owls and nightjar will continue to thrive as a result and call the forest home. The Forest will also be a popular and safe place to come exercise, learn and relax in a robust natural environment. The trees will be valued not only for their ecological and social value but also as a timber product, water regulation and for carbon sequestration which as climate change takes effect will be of increasing importance. A diverse structure of young, thicket and maturing crops across the area will be provide suitable continuous habitat over time.

Broadleaf woodland will grow in size and improve in condition as restoration to native cover takes affect in certain areas. Managed more sensitively but still with productivity in mind through thinning or coppicing, these more secluded areas will become a haven for a multitude of micro habitats, species and ecosystem functioning. Veteran, mature and future significant trees will be retained and allowed to breakdown providing deadwood habitat and nutrient cycling. Everything from rare dormice and butterflies to lichens and wet willow will enhance the contribution to ecology, cultural heritage and social value and to the wider landscape. Riparian areas will be enhanced through broadleaf intrusion and opened up to dappled shade to become invaluable to the quality and storage of water that passes through.

Bogs and mires a key part of the Landscape Character, will feature more significantly in the area's makeup. Areas will be restored to mire edge habitat through conifer removal and drain blocking to support the rare and protected flora and fauna species which inhabit these habitats. The considerable existing areas of acid and wet grassland will be maintained and rides and roadsides will be wider than currently to enhance the setting of historic monuments and support common and protected butterflies and other rotational scrub loving species. These areas will also be invaluable to the enjoyment of the area for people, creating windows into the wider forest and out into the landscape.

The 50 Year Vision outlined in this Plan will be delivered in part over the next 10 years through the Objectives outlined on Pages 8 and 9 with the proposal and prescriptions following.



Management Objectives

WEST ENGLAND FOREST DISTRICT

PROTECTING AND EXPANDING ENGLANDS FORESTS AND WOODLANDS AND INCREASING THEIR VALUE TO SOCIETY AND THE ENVIRONMENT.

The objectives of this Plan will, in part, deliver the *West England Forest District Strategic Plan* (2013a) and the national *Strategic Plan for the Public Forest Estate in England* (2013b).

Sustainable management of the woodland will be to the standards required to maintain FSC and PEFC accreditation and therefore must deliver economic, environmental and social objectives.

The meeting and monitoring of these objectives is outlined on the following page.

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

Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

Forestry Commission England

National Vision and Overall Goal:

To secure and grow the economic, social and natural capital value of the Public Forest Estate for the people of England.

Meeting Objectives

District Strategy

Economy

Maintain the land within our stewardship under FSC/PEFC certification.

Improve the economic resilience of our woods and forests.

Encourage and support business activity on the Estate

Nature

Improve the resilience of the natural environment of the Estate under our stewardship.

Realise the potential of the Public Forest Estate for nature and wildlife.

Maintain and improve the cultural and heritage value of

People

Maintain existing established consultation panels and engage with other consultative bodies such as National Park Authorities and AONBs.

Provide high quality woodland based recreational opportunities for people and

Forest Plan Objective	Meeting Objective	Monitoring
The continued production of sustainable and marketable woodland products.	The majority of the Plan area will remain productive through clearfell yield. Increasing timber production will occur from the thinning of stable conifer crops.	Comparison of total production forecast yield (30000m³ (by 2021) and 100,000m³ (by 2028)) with actual production at the Forest Plan (FP) five and ten-year review. Pre– thinning survey and post thinning control. Site planning and site supervision
Protect and enhance woodland and open habitats and their associated species.	Operational site planning should highlight opportunities where conservation benefits can be delivered. Appropriate reinstatement works will be carried out once operations have been concluded. Creation of over 9ha of mire fringe area, adjacent to Crowdy Marsh SAC	Monitored via Review process, through local records and updated sightings, including nightjar surveys. Operational site planning of harvesting and restocking operations will help monitor the effect of management. NE SSSI Condition surveys
To conserve, maintain and enhance cultural and heritage assets.	Liaise with Cornwall County Archaeology Service and Historic England for scheduled sites prior to commencement of works in proximity to heritage assets. Where appropriate limit shrub encroachment on features. Manage Wilsey SM in line with Management Plan	Operational site planning of harvesting and restocking operations will help monitor the effect of management. Feature condition monitored through Review process and records updated. 0.45ha of Monument enhancement felling.
To protect and enhance areas of Ancient Semi-natural Woodland and restore areas of PAWs in line with 'Keepers of Time'.	Targeted felling of conifer crops and suppression of non-native regeneration to aid natural native regeneration.	Analysis of woodland naturalness at FP review Photographic survey at FP review
The diversification of woodland species and structure for greater ecological and economic resilience.	Delayed & premature felling program where possible will continue to diversify stand and age structure. Proactive increased diversity in species planting and regeneration	Operational site planning of harvesting and restocking operations will help monitor the effect of management
Deliver well-designed forests that both protect and enhance the internal and external landscape in keeping with the local landscape character.	Implementation of proposals will soften and better integrate the woodland with the surrounding landscape	Fixed point photography analysis at Forest Plan review stage
The provision and maintenance of recreation facilities.	Management of existing facilities will be maintained by the Beat team, including road corridors.	Beat team will monitor usage and ensure the upkeep of the access points and routes.

153 Bodmin Moor National Character Assessment Profile

Source: Natural England (2012)

The remote, open upland moorland landscape of Bodmin Moor provides a stark contrast to the more productive landscape of the surrounding area. The edge of the moor is fringed with deciduous damp wooded valleys, which contain dispersed farmsteads that are linked to the larger areas of common land on the higher granite-strewn moorland.

Following the Second World War a number of large blocks of conifer were planted on the north and south moors, including Davidstow, Roughtor, Halvana and Trebartha. These have developed over time, in stark contrast to the surrounding open moorland, and provide important roosting habitats for birds and shelter for moorland mammals.

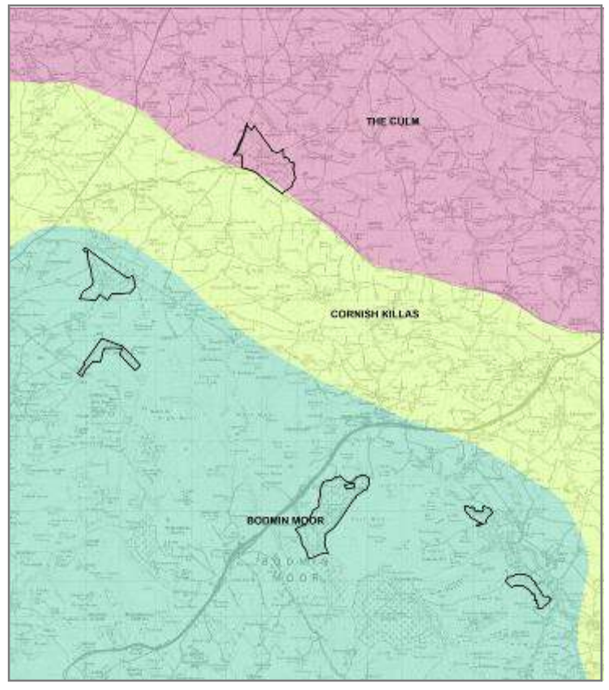
While woodland is not currently a significant part of land cover, 7.5 per cent of the NCA (3.3 per cent conifer, 3.5 per cent broadleaved), it has an important role locally in landscape character and habitat connectivity. Thirty per cent of the woodland falls within the Forestry Commission Estate and is located in large blocks around Crowdy Reservoir and Colliford Lake. Since 1999 a very small area of new planting has occurred less than 2 ha, with a similar amount of felling and restocking occurring, none on plantations on ancient woodland sites (PAWS).

149 The Culm National Character Assessment Profile

Source: Natural England (2012)

The rolling ridges and plateaux of the Culm extend across north-west Devon and north-east Cornwall, The open, often treeless, ridges are separated by an intricate pattern of small valleys forming the catchments of the Rivers Taw, Torridge and Mole. This is largely a remote and sparsely populated landscape.

Heavy, poorly-drained soil is found across the area, which supports a pastoral landscape of low agricultural quality but high nature conservation interest; however, plantations at the centre of the area have capacity to produce both hard and soft wood in significant volume. Some substantial areas of post-war conifer plantations, including Wilsey Down mainly of Sitka spruce, on the high, poor ground are significant visual and recreational features on the plateaux.



CHARACTER DESCRIPTION

Bodmin Moor (Davidstow, Roughtor, Halvana and Trebartha)

Source: Cornwall County Council (2008)

An extensive exposed granite upland of tors, rocky outcrops and heath with pastoral farmland in the more sheltered areas especially in the valleys around the edges of the moorland. This is some of the highest land in Cornwall with Rough Tor and Brown Willy being the two highest peaks. Much of the area is unenclosed and unsettled, wild and often bleak with panoramic views of moorland grass and wet heath sweeping into the distance punctuated by granite boulders and scree as well as hidden bogs and mires and unsettling blocks of coniferous plantations. From the moorland plateau streams flow in all directions
cutting into weakness in the underlying rock to form narrow incised valleys that are wooded and enclosed with attractive cataracts and waterfalls. Anciently enclosed farmland with its small fields and sinuous boundaries can be found in the sheltering folds of the undulating plateau usually surrounded by more rectangular fields where the moorland has been more recently enclosed. The area around Caradon Hill is part of the international World Heritage Site and carries extensive well-preserved remains of former industrial activity. The centre of the moor is crossed by the A30 trunk road which bypasses Jamaica Inn made famous by Daphne du Maurier and the planned post-medieval settlement of Bolventor. Besides a natural water feature, the legendary Dozmary Pool, there are three reservoirs at Colliford, Siblyback and Crowdy that are used extensively for recreation.

Visions and objectives

This landscape is perceived as a wilderness area with a great richness and diversity in terms of the visual, historical and ecological elements. Pressures for change can result in the incremental loss of the special features which create a sense of place. The objective must be to retain and enhance the wild nature seeking to ensure a balanced management of the area's diverse landscape, ecological and archaeological landscape character.

Relevant Planning and Land Management Guidelines

Conserve local landscape character by ensuring that major infrastructure projects, such as forestry plantations, communications and transport corridors, are assessed for their potential impact on landscape character and, where approved, designed to be in scale with local landscape pattern and scale.

Delabole Plateau (Wilsey Down)

Source: Cornwall County Council (2008)

Elevated and undulating slate, shale and limestone plateau with sweeping skylines forming a backcloth to the coast. The character of the vegetation is influenced by coastal winds and there are few trees. The area is predominantly a pastoral landscape of improved grassland at a medium to large scale from enclosed former rough ground and heath with some arable. There are Cornish hedges with local stone, turf banks and hedgerows with beech. Settlement is generally thinly scattered with some clusters. The A39 and A379 bring movement to the landscape and the junction forms a focus for some large scale development. Two windfarms also form a focus for open views in the area which displays the characteristics of development
pressure.

Visions and objectives

The sweeping landform and wide sky means any vertical object like pylons and tall buildings will create a strong visual intrusion. The objective should be to consider the capacity of this exposed landscape fordevelopment and try to conserve and enhance the open tranquil landscape character.

Relevant Planning and Land Management Guidelines

Consider restoration of Lowland Heathland at Wilsey Down conifer plantation

Designations

Crowdy Marsh SAC

Crowdy Marsh SAC is one of several valley mires found around the edge of the granite massif of Bodmin Moor. The deep hollows are dominated by bog-moss with a mix of typical transition mire species. The recent blocking of feeder streams to the reservoir will considerably improve the quality of this waterlogged habitat.

River Camel SAC

The Rivers Camel, Allen and tributaries, their associated woodlands, carr, fen, heath and wet meadows are of special interest for wildlife. The system is particularly important for otters Lutra lutra which benefit from some of the most unspoilt river corridors in the South West with extensive woods, excellent bankside cover and little disturbance. This SAC likes in close proximity to the eastern flank of Roughtor plantation.

Cornwall AONB

Bodmin Moor is a component of the Cornwall AONB which covers part of the Plan area. The landscape is valued for its open, exposed common moorland with aspirations for a reduction in the visual impact of existing conifer plantations.

'For example at Priddacombe, Hawkstor, Bolventor, Halvana, Smallacoombe and Roughtor consistent with established best practice'. Seek opportunities for this to be achieved by productive felling with restoration to open habitats balanced with greater productive woodland creation at appropriate local sites in the vicinity order in order to conserve and enhance the open moorland landscape and also protect the economic resource.

Bodmin Moor SSSI

Bodmin Moor occupies much of the central part of east Cornwall. It is remarkable as a moorland both for its low altitude: between 230 m in the valley bogs and 420 m at the summit of Brown Willy, and for the Atlantic elements in its flora and fauna with a number of species known only from south-west Britain. Only a small part of the SSSI is actually within the Plan area, at Roughtor, however much of Davidstow and Roughtor plantations are surrounded by the designation.

Ancient Woodland

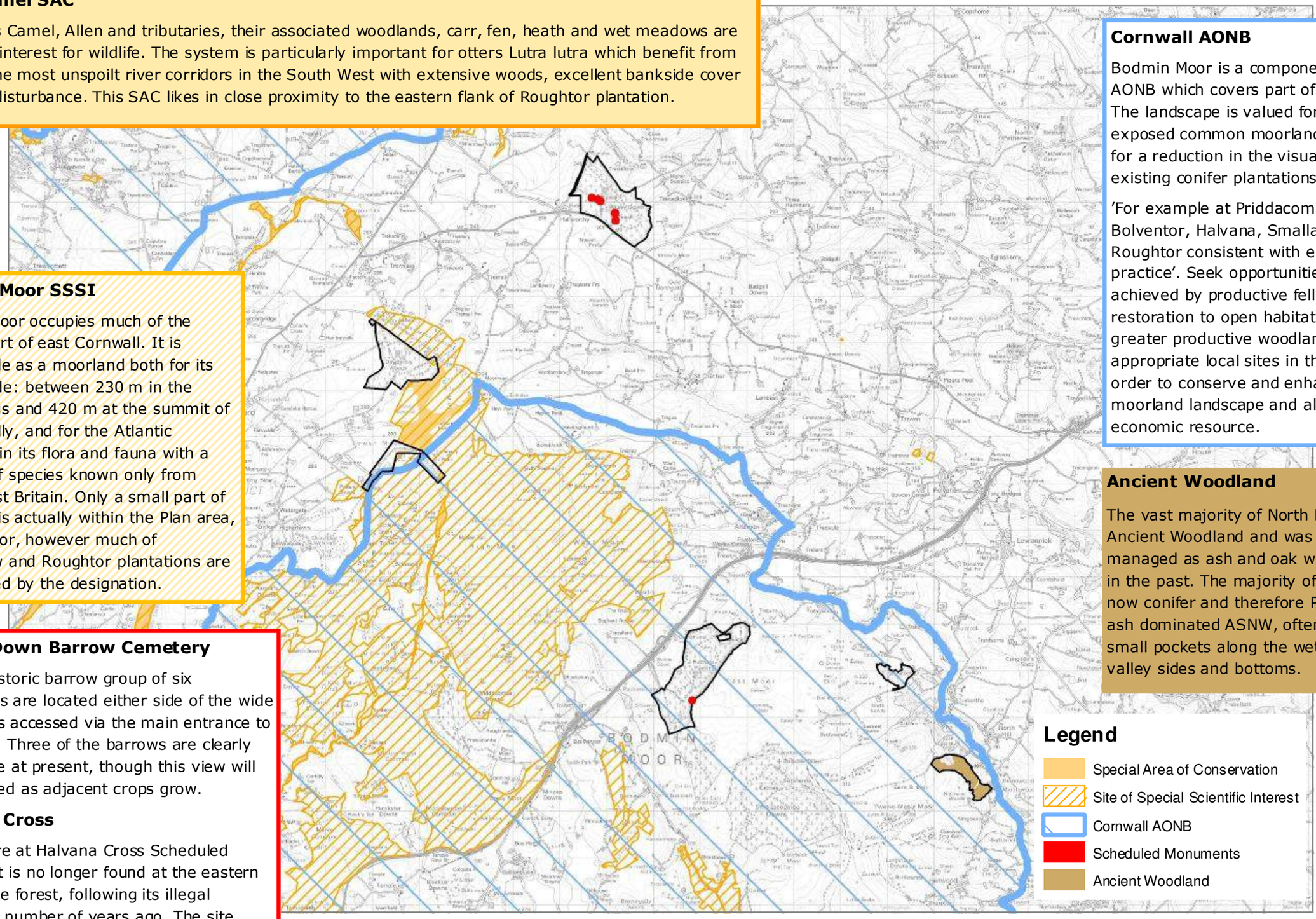
The vast majority of North Hill woodland is Ancient Woodland and was most likely managed as ash and oak with hazel coppice in the past. The majority of these areas are now conifer and therefore PAWS. Areas of ash dominated ASNW, often W10, remain in small pockets along the wetter and steeper valley sides and bottoms.

Wilsey Down Barrow Cemetery

This prehistoric barrow group of six earthworks are located either side of the wide ride that is accessed via the main entrance to the forest. Three of the barrows are clearly intervisible at present, though this view will be obscured as adjacent crops grow.

Halvana Cross

The feature at Halvana Cross Scheduled Monument is no longer found at the eastern edge of the forest, following its illegal removal a number of years ago. The site remains free of trees.



Analysis & Concept
Wilsey Down

This Sitka spruce dominated plantation is on a prominent cap in the landscape being viewed from the A39 and A395 trunk roads. The area is a historical moorland in an exposed position with poor intergrade ironpan soils. Therefore low yield and damage from wind are an ever-present threat and the design of the felling coupes needs to be carefully considered and take into account the landscaping implications as well as affording protection to the remaining crops. Despite this, conifer timber production will remain the key objective of this plantation, all first rotations, originating from the mid 1950s and early 1960s have now ended. Where possible, steps will be taken to look to extend crop rotation through thinning, with the added aim of species diversification, to deliver more resilient and ecologically diverse forests. With this, and the age of current crops, in mind there will be limited clearfell intervention in this plantation in the coming decade.

Analysis: The western edge of the plantation is 8km from the north Cornish coast. Salt exposure is a minor issue with consideration of wind exposure also required.

Concept: Planting of species resilient to exposure will be considered, as well as possibly building in buffer strips at the time of restocking to secure the viability of future crops.

Analysis: Areas of recent windblow following programmed felling have meant that significant areas have been felled or require further treatment.

Concept: These areas have or will be restocked and managed with windthrow hazard in mind, through the use of planted buffers, thinning and mindful coupe design. Acknowledgement will need to be made for the management of the adjacent mature crops.

Analysis: The A395 is a major tourist and transport route across north Cornwall which runs adjacent to Wilsey Down, with significant views across the forest from the road.

Concept: Good coupe and corridor design will ensure that the short and long views of the forest are of a high value. This will be measured and monitored through modelling and fixed photography.

Analysis: A number of key watercourses and waterbodies source and traverse near the plantation and then feed into the River Ottery. Areas of the forest are considerably wet and waterlogged given the ironpan soils.

Concept: Prescriptions will be sensitive to the important part the forest plays in water storage and management.

Analysis: The woodland is popular for informal recreation use, predominantly as a pleasant place for dog walking with a number of circular walks using the roads and ride network.

Concept: Prescriptions will ensure that the woodland remains a popular and enjoyable place to exercise and experience the outdoors.

Analysis: Before being afforested the area was unimproved agricultural and moor land. Surrounding areas remain nutritionally poor and are used for pastoral agriculture or have been allowed to colonise with willow, hazel and oak scrub.

Concept: Proposals will be in consultation with neighbours to ensure management complements adjacent visual habitats of open moorland enclosed fields, scrub and woodland.

Analysis: Areas of open space are found along external forest edge corridors and as a component of the internal roading. The majority of this is in good condition with minor scrub encroachment thus delivering a rich mosaic of open space of heath and grassland assemblages, scrub and high forest.

Concept: This method of open space will continue as the most efficient form of delivery. This will be predominantly focussed in areas of archaeological interest.

Analysis: This prehistoric barrow group of six earthworks were Scheduled in 1973 and form part of this rich historic landscape.

Concept: Management will be to preserve and enhance these features and other unscheduled features where possible. This will likely be through the widening and connecting of open space to improve the monument's setting under a cover of acid grassland which incidentally enhances the woodland for ecology and provides a more interesting landscape for walkers.

Legend

- Scheduled Monument
- Open Space
- Restock following windblow
- Vulnerable to windblow
- A395
- Watercourses
- Class A/B Roads
- Class C Roads

0 0.05 0.1 0.2 0.3 0.4 Miles

Analysis & Concept
Davidstow & Roughtor

These two plantations are situated within a moorland and unimproved farmland landscape, with Crowdy Reservoir and the Crowdy Marsh Special Area of Conservation (SAC) lying between the two. Both plantations are viewed from the A39 trunk road and also from the summit of Roughtor itself, this being a popular tourist destination. Both plantations are characterised by straight linear boundaries and high levels of exposure and part of Roughtor falls within the Cornwall AONB. Davidstow is a disused wartime airfield and the remnants of the infrastructure remain. Crops in Davidstow are even aged and on relatively short rotations given the high exposure, whereas the 'strippy' shape of Roughtor means that whilst crops are varied they are vulnerable to wind. Hen harriers have been recorded nesting in Davidstow wood in the past. Snipe and short eared owl are present in Roughtor with sand martin, merlin, kingfisher, peregrine, golden plover, gold crest, song thrush and otter all recorded as is or adjacent to the forests.

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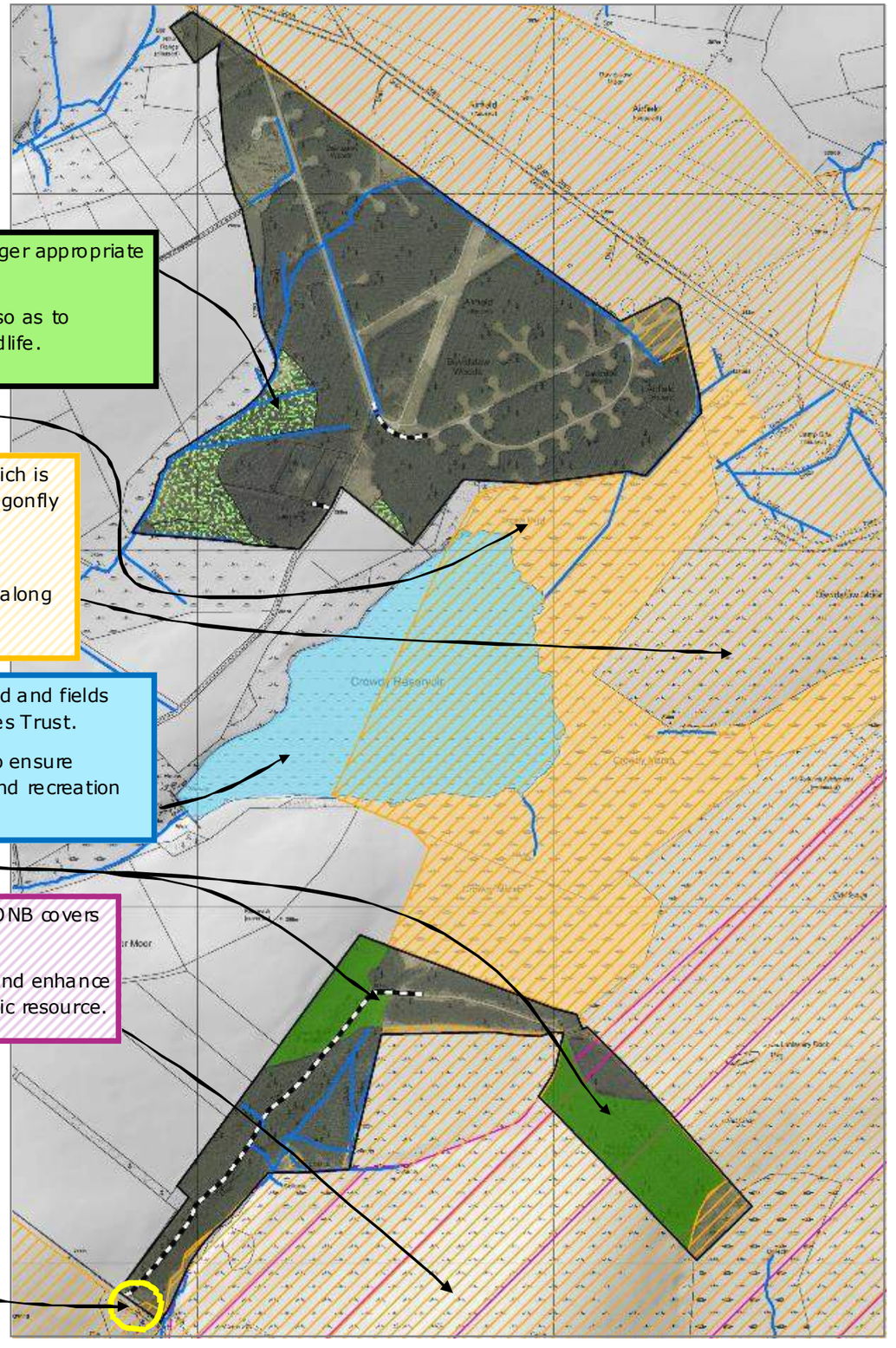


Analysis: Crowdy Marsh SAC is one of several valley mires found around the edge of the granite massif of Bodmin Moor. The deep hollows are dominated by bog-moss with a mix of typical transition mire species. The recent blocking of feeder streams to the reservoir will considerably improve the quality of this waterlogged habitat.

Concept: The impact of conifer trees on the water table and to a less degree pH is deemed to adversely affect the SAC. The recent drain blocking could compromise the yield of some crops. Opportunities to remove tree cover close to the SAC will be explored to enhance this rare and valuable ecosystem.

Analysis: A significant area inundated with water is no longer appropriate for productive forestry due to poor access and low yield.

Concept: Proposals will ensure that this area is enhanced so as to overtime become a wet woodland/marshland haven for wildlife.

Analysis: Both blocks are adjacent to Bodmin Moor North SSSI which is important for nesting and wintering birds and is one of the best dragonfly and damselfly sites in the county.

Concept: Management will be to ensure the SSSI and condition is maintained and enhanced. This will include sympathetic restocking along the boundary at the time of clearfell and restocking.

Analysis: Crowdy Reservoir and the surrounding marshland and fields are a popular recreation area managed by South West Lakes Trust.

Concept: Proposals will be in consultation with the Trust to ensure management complements adjacent habitats, water flow and recreation provision.

Analysis: Original plantings of Sitka spruce from the late 1950s and early 60s are found within Roughtor and are now at economic maturity and terminal height.

Concept: A strategic approach will be taken in retaining or perpetuating these stands. Restocking will be sympathetic to the adjacent SSSI and high landscape impact to create a forest that better integrates with the surrounding landscape.

Analysis: The Bodmin Moor component of the Cornwall AONB covers the eastern portion of Roughtor plantation.

Concept: The Plan will look to assist in the aim conserve and enhance the open moorland landscape and also protect the economic resource.

Analysis: An unpaid car park is situated at the entrance of the plantation and is popular with walkers climbing Roughtor, which is a prominent feature and viewpoint managed by the National Trust.

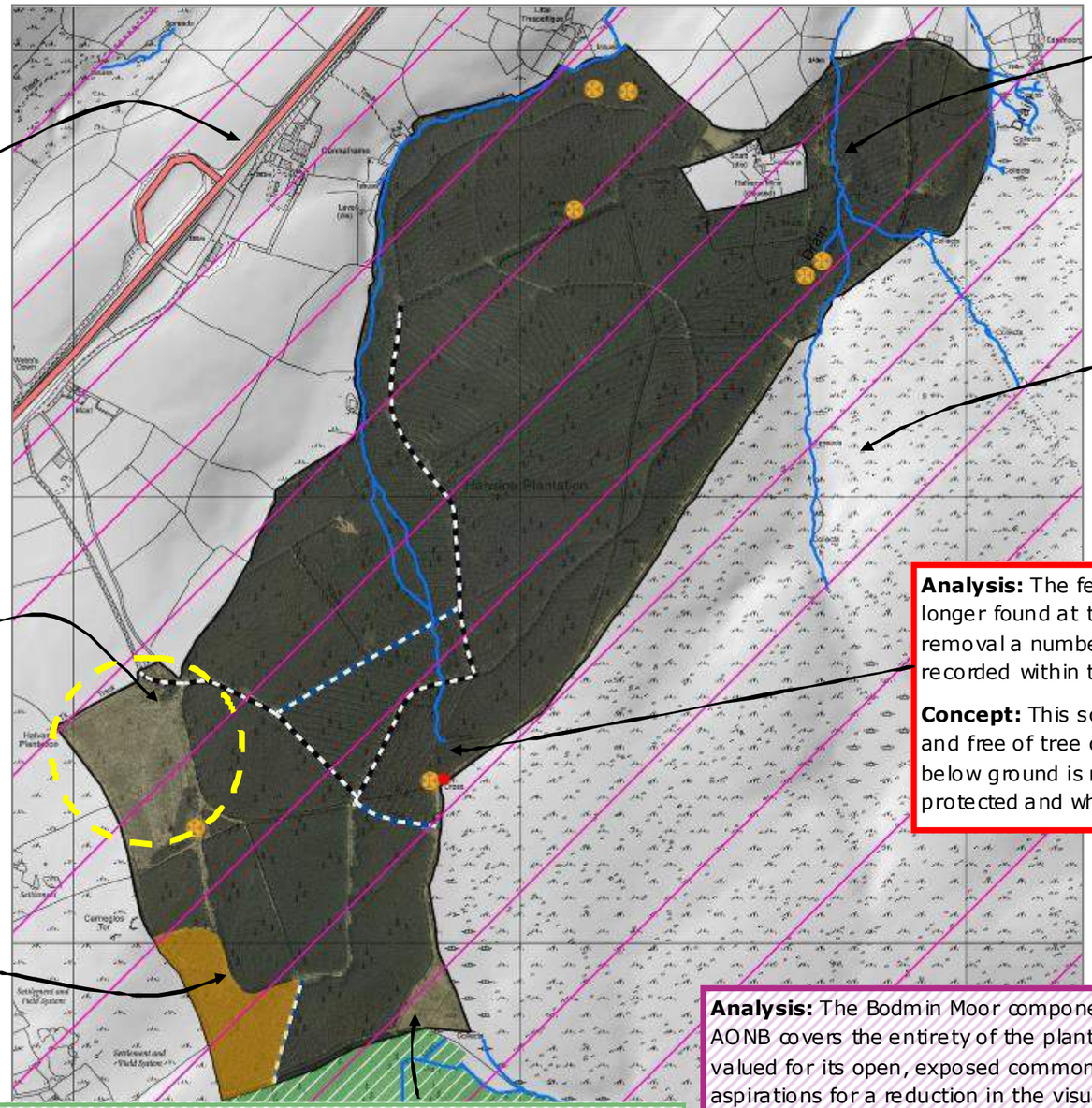
Concept: The Plan will look to continue to provide a place popular for visitors and ensure that proposals do not compromise the value of the landscape. This will be achieved through detailed coupe design, 3D modelling and landscape analysis.

Legend

- Cornwall AONB
- Crowdy Marsh SAC
- Bodmin Moor, North SSSI
- Crowdy Resevoir
- Inundated areas
- Exposure mature conifer crops
- Watercourses
- Class A/B Roads
- Class C Roads

Analysis & Concept
Halvana

This woodland comprises predominantly of Sitka spruce, has a relatively even aged structure, and sits with an area of moorland punctuated by conifer forest. The plantation also adjoins and is in close proximity to other similar privately owned plantations. The woodland is locally prominent in the landscape with the area being viewed from the A30 trunk road and is situated within the Cornwall Area of Outstanding Natural Beauty. The soils are nutrionally poor and wet with a typical ironpan formation and the exposure is very high making it an inhospitable place to live and work. The past practise of creating sequential felling coupes has created a very favourable habitat for nightjars and this habitat will be maintained through continued sequential felling and replanting. This demonstrates whilst timber production remains the key focus of the Halvana plantation, ecology benefits hugely from habitat diversity and mosaics provided by the forests. Conifer production will continue in most areas with allowance for the high amenity value and ecological value whilst building resilience through the diversification of stand structure and composition.



Analysis: The A30 is a major trunk road through Cornwall which runs close to Halvana and views across the forest from the road are significant.

Concept: Good coupe and corridor design will ensure that the short and long views of the forest are of a high value. This will be delivered and monitored through modelling and fixed photography.

Analysis: A number of watercourses source and traverse the forest and then feed into River Lynher. Areas of the forest are considerably wet and waterlogged given the poor drainage and ironpan soils.

Concept: Significant areas of open space are proposed along the riparian areas, which are due to be created at the time of felling. Whilst riparian areas will still be created their extent and composition will be considered in light of open space creation appraisal across the Plan Area.

Analysis: Before being afforested the are was moorland. Surrounding areas remain nutritionally poor and are used for pastoral agriculture or have been allowed to colonise with willow, hazel and oak scrub.

Concept: Proposals will be in consultation with neighbours to ensure management complements adjacent visual habitats.

Analysis: Large populations of nightjar are recorded as using the plantation, particularly the recent felled and restocked and the edges, for habitat.

Concept: Proposals will ensure that cyclical provision of transient open habitat is provided, both through clearfell and through rotation ride site cutting.

Analysis: The feature at Halvana Cross Scheduled Monument is no longer found at the eastern edge of the forest, following its illegal removal a number of years ago. Numerous unscheduled features are also recorded within the forest.

Concept: This scheduled site and 15m surrounding will remain protected and free of tree cover to ensure the location of the cross and any interest below ground is not compromised. Unscheduled heritage features will be protected and where appropriate enhanced at the time of intervention.

Analysis: A number of planned clearfells have not taken place. This area in the south west corner is experiencing significant sporadic windblow with natural regeneration now becoming prevalent.

Concept: The concern for catastrophic windblow in this area is high and therefore removal of wind vulnerable crops will be targeted. The redesigning of the coupe shape and sequencing is required to ensure the long tern viability of the restructuring of this plantation.

Analysis: Whilst the forest block sits in an moorland landscape, it is surrounded and connected with other coniferous woodlands under different ownership and management.

Concept: Proposals will be in consultation with neighbours to ensure management complements adjacent crops and habitats.

Analysis: The Bodmin Moor component of the Cornwall AONB covers the entirety of the plantation. The landscape is valued for its open, exposed common moorland with aspirations for a reduction in the visual impact of existing conifer plantations.

Concept: The Plan will look to assist in the aim to deliver an area that benefits the economy, community and environment of the moor, in order to conserve and enhance the open moorland landscape and also protect the economic resource.

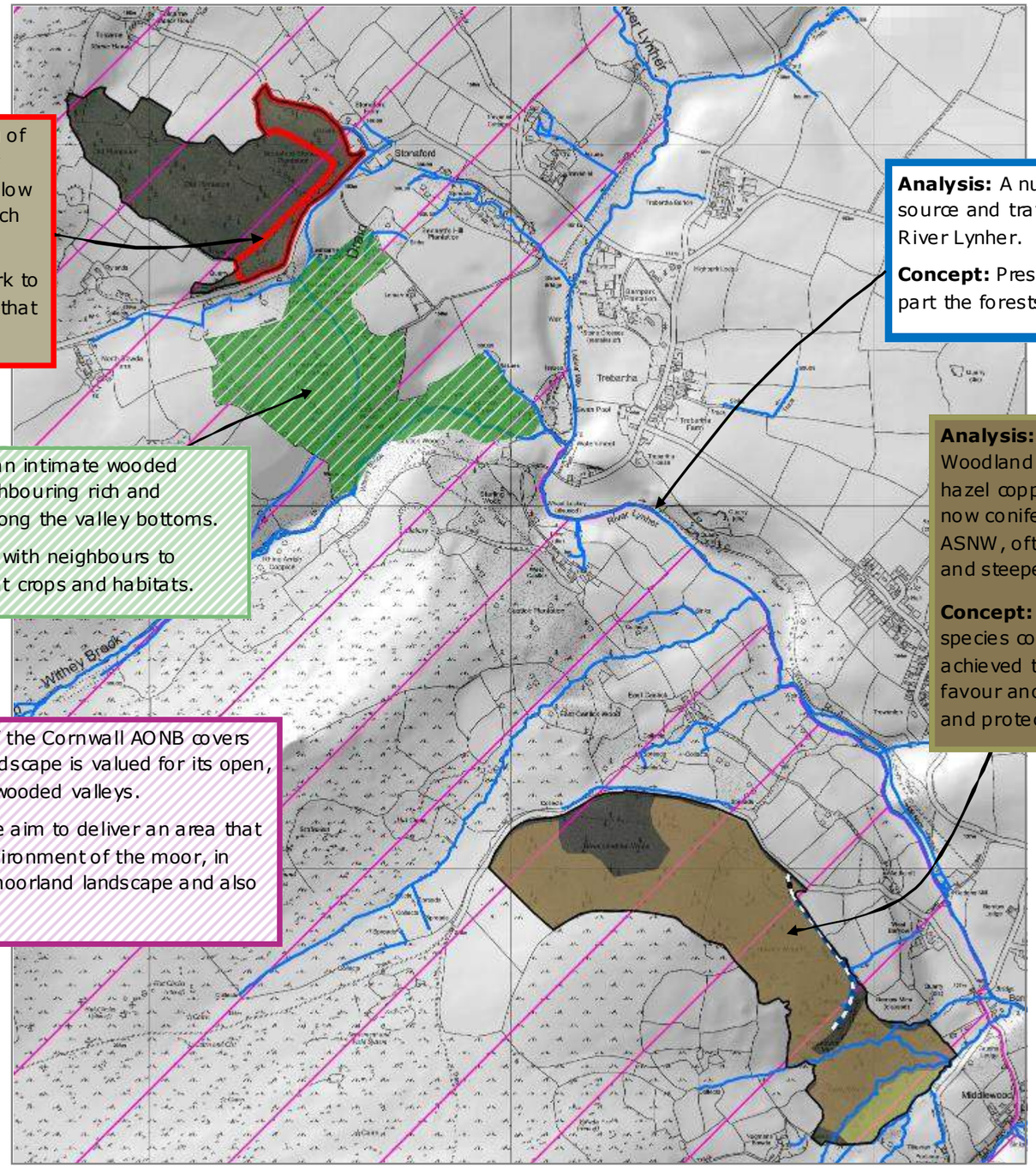
Legend

- Cornwall AONB
- Scheduled Monument
- Heritage Feature
- Overdue clearfell
- Surrounding forest
- A30
- Watercourses
- Class A/B Roads
- Class C Roads

0 0.05 0.1 0.2 0.3 0.4 Miles

Analysis & Concept
Trebartha

The Trebartha woodlands of Stonaford and North Hill are on the eastern edge of Bodmin Moor and are north east facing in aspect. Considerably different to the other four Bodmin woodlands, soils are much deeper and richer, with the majority of the North Hill wood registered as an ancient woodland site. Both woodlands are predominantly conifer although each has a significant broadleaved component which is ash dominated. The following notable species have been recorded in or adjacent to the Trebartha woodlands since 1990: kingfisher, sparrowhawk, hen harrier, hobby, red poll, pied flycatcher, dipper, grasshopper warbler, spotted flycatcher, willow tit, redstart, sand martin, willow warbler, wood warbler, barn owl, short eared owl, dipper, stoat, otter, common dormouse, pipistrelle, brown long-eared bat, lesser horseshoe bat, greater horseshoe bat, adder, pearl-bordered fritillary, small pearl-bordered fritillary, silverwashed fritillary and marsh fritillary. The objective in these woodlands will be to continue to deliver timber production with this significant ecological value in mind. This will be through continuous cover forestry where possible and gradually restoring to native cover in North Hill.



Analysis: Following the compulsory felling of diseased larch crops, a number of recently restocked areas have been created. Windblow resultant of the felling is a minor issue which needs addressing.

Concept: Appraisal of whether further work to improve the integrity of the site to ensure that this small woodland is protected.

Analysis: A number of watercourses and waterbodies source and traverse the Plan area and then feed into the River Lynher.

Concept: Prescriptions will be sensitive to the important part the forests play in water storage and management.

Analysis: Much of the forest block sits in an intimate wooded landscape and is surrounded by small neighbouring rich and biodiverse broadleaf woodlands situated along the valley bottoms.

Concept: Proposals will be in consultation with neighbours to ensure management complements adjacent crops and habitats.

Analysis: The vast majority of North Hill woodland is Ancient Woodland and was most likely managed as ash and oak with hazel coppice in the past. The majority of these areas are now conifer and therefore PAWS. Areas of ash dominated ASNW, often W10, remain in small pockets along the wetter and steeper valley sides and bottoms.

Concept: Proposals will outline a plan of restoration to native species cover in line with Keepers of Time policy. This will be achieved through a process of thinning out the conifer to favour ancient woodland features and native regeneration, and protecting areas of remnant ancient woodland.

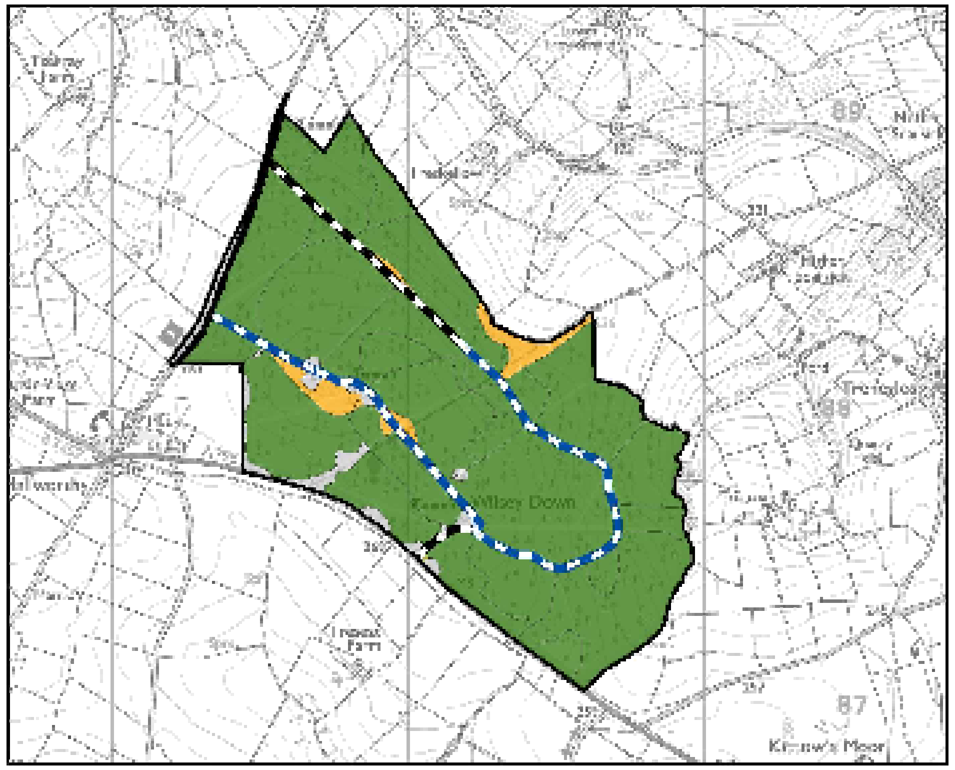
Analysis: The Bodmin Moor component of the Cornwall AONB covers the entirety of the two woodlands. The landscape is valued for its open, exposed common moorland as well as its wooded valleys.

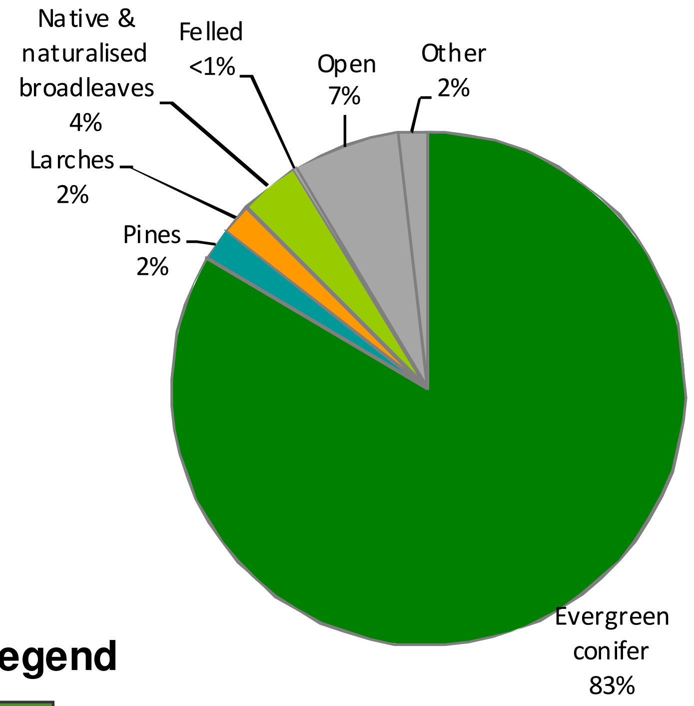
Concept: The Plan will look to assist in the aim to deliver an area that benefits the economy, community and environment of the moor, in order to conserve and enhance the open moorland landscape and also protect the economic resource.

Legend

- Cornwall AONB
- Statutory Plant Health Notice area
- ASNW
- PAWS
- Surrounding Forest
- Watercourses
- Class A/B Roads
- Class C Roads

0 0.05 0.1 0.2 0.3 0.4 Miles





Legend

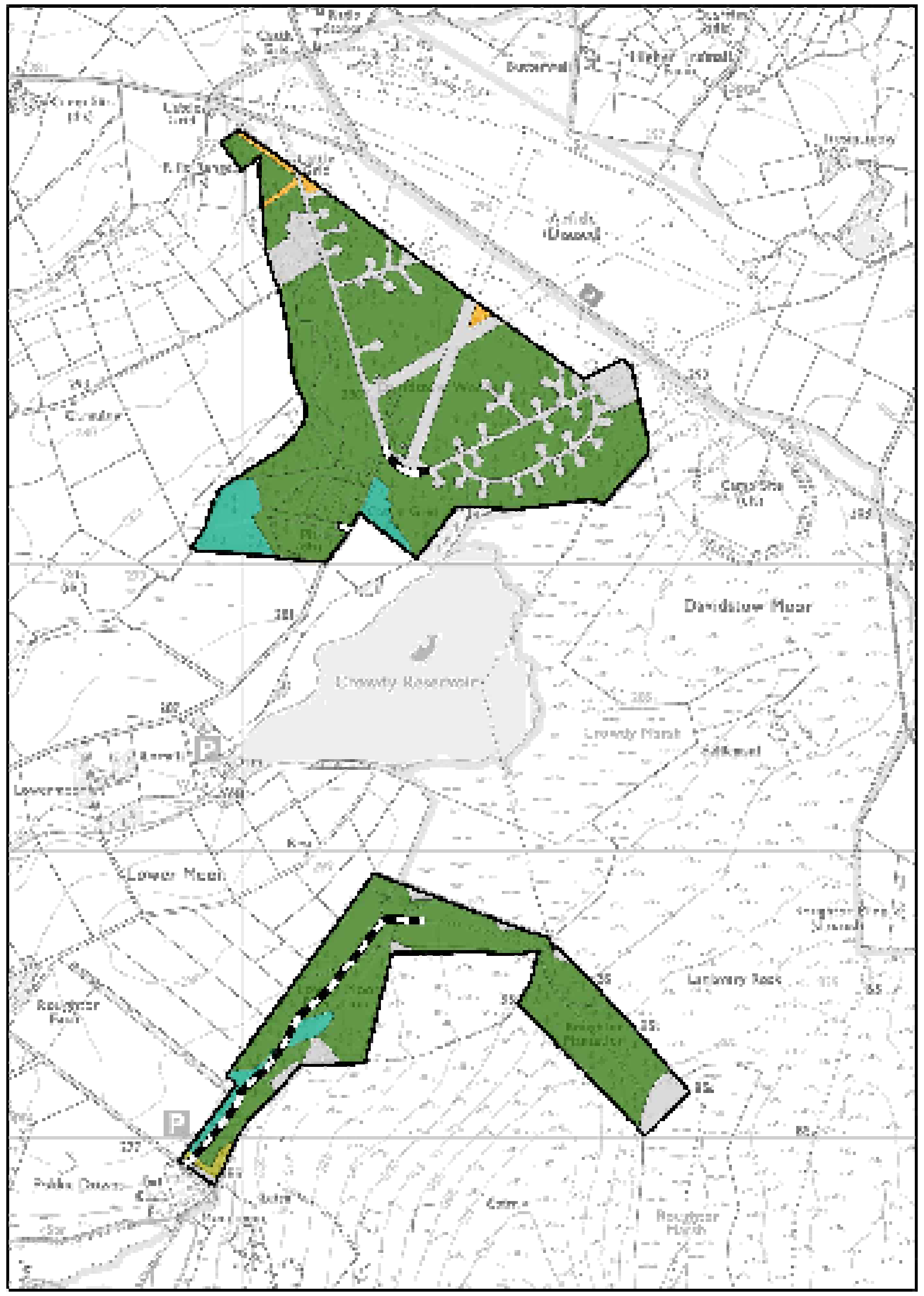
- Evergreen Conifer
- Pines
- Larches
- Native & naturalized broadleaves
- Non-native broadleaves
- Open/other

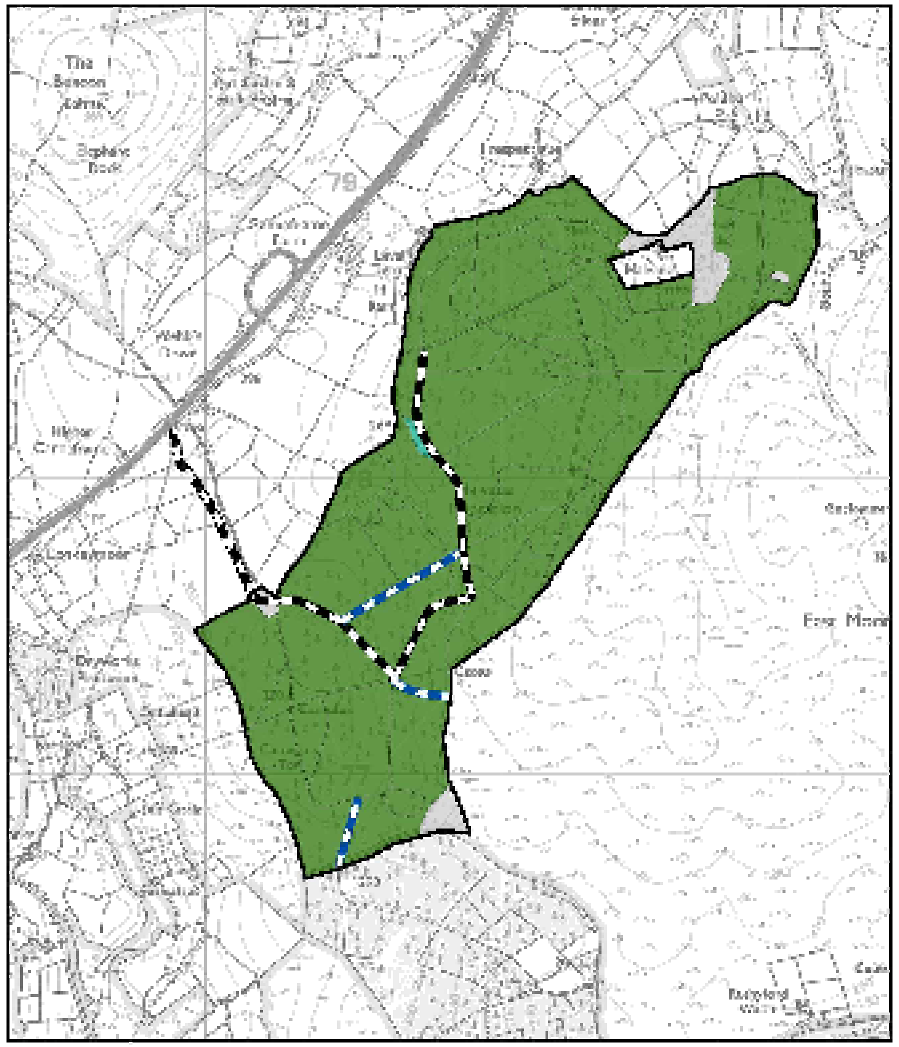
Woodland Composition

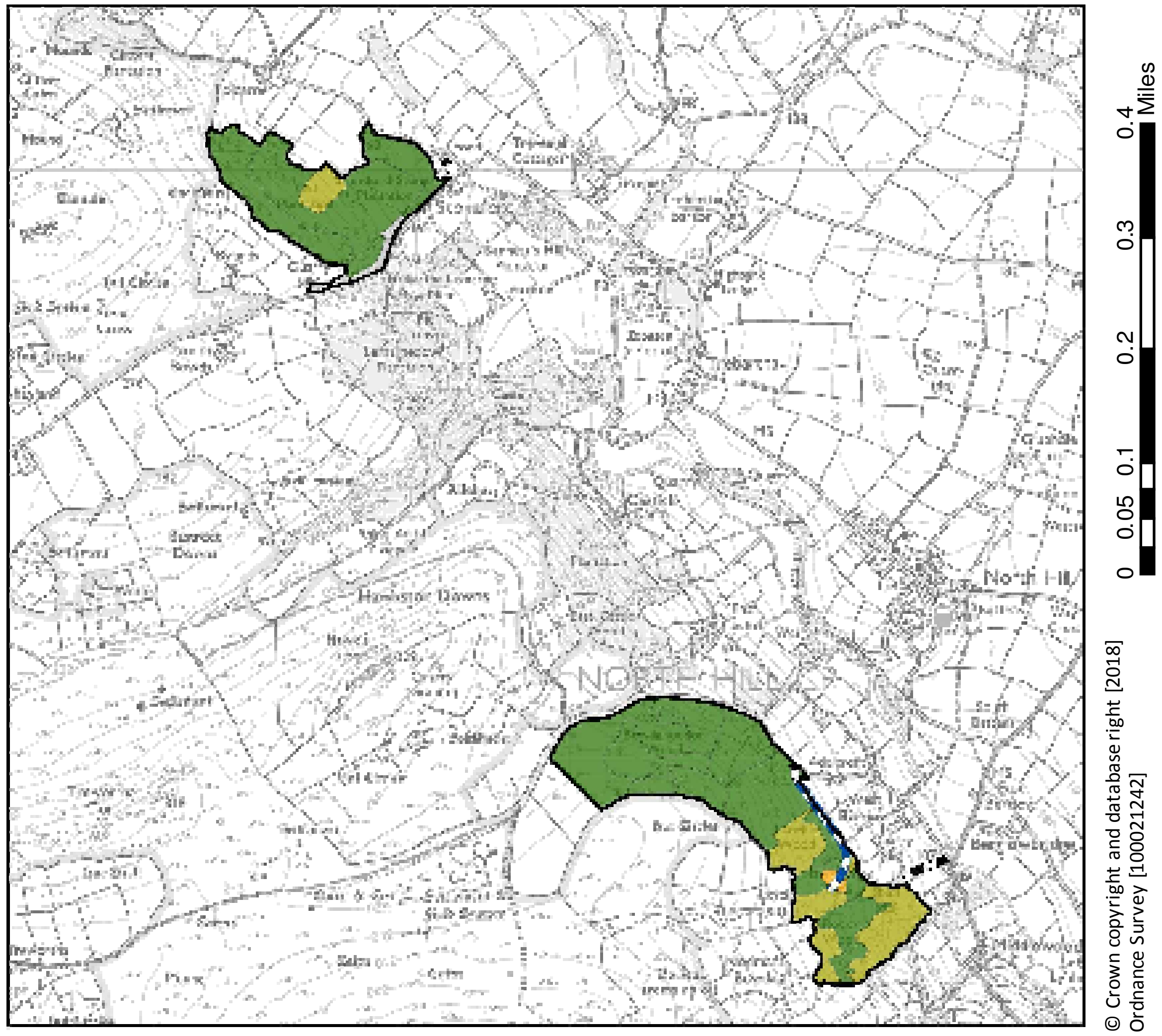
The Plan area is conifer dominated with Sitka spruce making up over 80% of Plan area. The use of Sitka spruce is extensive due to the wet site conditions where the species can achieve YC 16-18. However, its use has resulted in extensive monocultures with little species diversity. Japanese larch, Lodgepole pine and Douglas fir in the richer areas, play a supplementary role in the woodland's productive composition.

The broadleaf components are predominantly made up of regenerating scrubby birch, ash and sycamore assemblages with discrete areas of plantation beech. Willow is an evident pioneer species and in places can compete with established crops. Broadleaf crops vary in age and quality depending on their location. Most are of unmarketable quality or size and provide more value for amenity, habitat and soil improvement.

Note: Beech, sycamore and sweet chestnut are considered to be not within their native range but are considered to be 'naturalised'

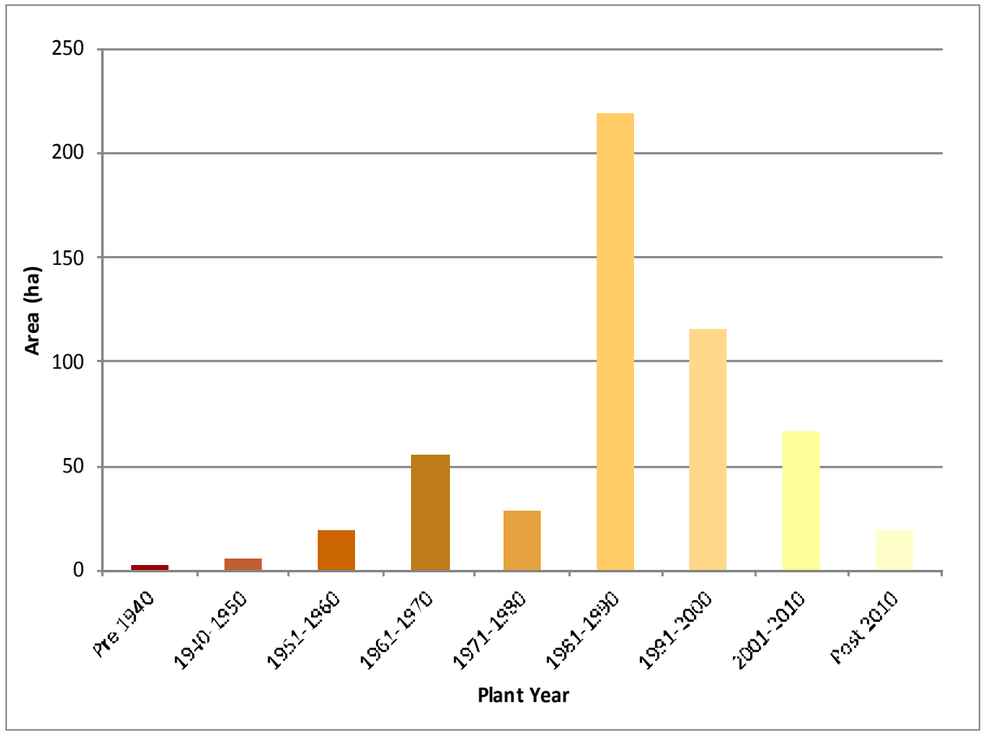


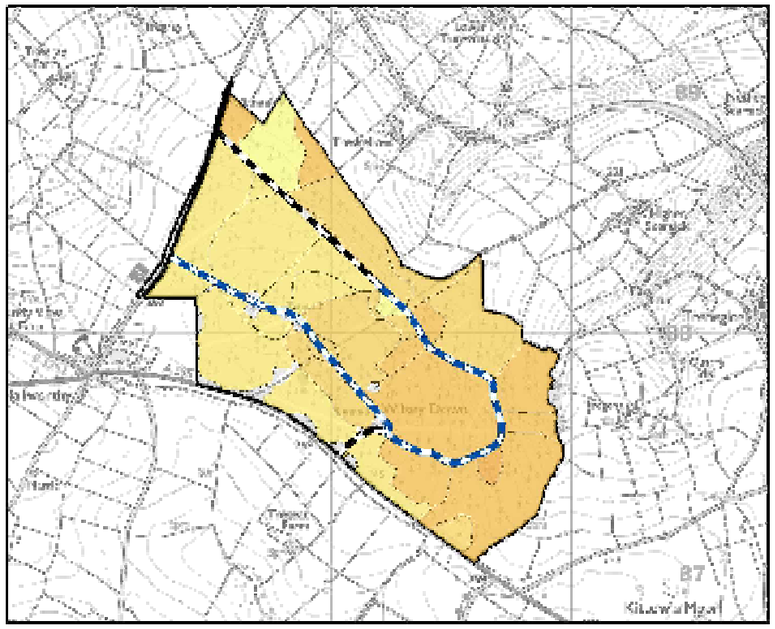


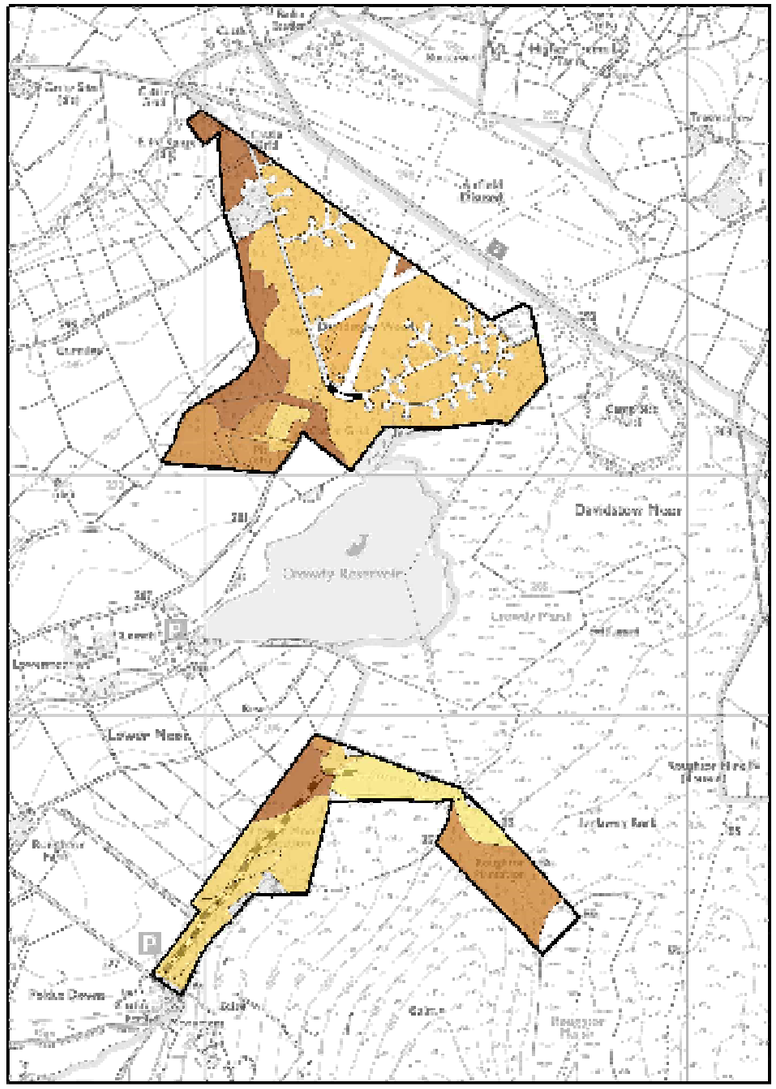


Age Structure

The age structure through the Plan area is fairly uniform and short. This is due to the high exposure to high winds meaning that many are underthinned for fear of windblow. As a result the blocks are even aged and many sites are on their second and third rotation. Areas of Stonaford, North Hill and to a lesser degree Halvana have deeper, fresher soils which mean that thinning can be safely implemented and therefore rotations are longer.







0 0.05 0.1 0.2 0.3 0.4 Miles

Legend

- Pre 1940
- 1941 - 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- Post 2010

Resilience & Diversification

The Plan area over relies on Sitka spruce as its major timber producing species. This is due to its exceptional yield and a constant demand for its supply. The advent of increased threat to tree health from pests and diseases (see Page 44) in recent years has highlighted the need for forests to be resilient to change and threats. The additional complication of high wind exposure and hazard and the poor yield in second and third rotation spruce crops means that steps should be taken in thinning to diversify stand structure and in planting to diversify tree species. As understanding on this issue progresses, guidance and actions should reflect this. A comprehensive (but not exhaustive) list of suitable options are outlined:

Species		Site requirements	Notes for Bodmin
Noble fir *Abies procera*		Prefers a cool and moist (i.e. >1000 mm rainfall) climate; can cope with exposure and is more frost resistant than other firs, therefore most suited to upland Britain including higher elevations. Grows best on fresh to moist mineral soils of poor nutrient status, but suffers severely from heather competition.	Suitable to be used on some of the less exposed clearfell sites. Can be planted both solely and in mixture with Sitka spruce. Concerns around timber quality but strength considered better than other silver firs although Pacific silver fir (*Abies amabalis*) is another alternative given the high rainfall, on less exposed sites.
Scots pine *Pinus sylvestris*		A light demanding pioneer species that grows well on acid to neutral, light soils of low fertility. Is better suited to drier soils but will colonise and grow slowly on peat. Does not tolerate alkaline soils. The species is frost hardy, drought tolerant and windfirm but suffers from exposure.	Another species suitable to be used on some of the less exposed clearfell sites. Can be planted both solely and in mixture as an alternative to Sitka spruce. Salt exposure is a concern with a history of burn occurring on some 'coastalward' sites.
Swamp cypress *Taxodium distichum*		Prefers a humid and moist sub-humid climate with around 1000—1500mm of annual rainfall. It often grows in intermittently flooded or very poorly drained sites and does not grow well on alkaline soils.	An experimental species with great potential as a high quality timber producer. Should only be used on wetter sites with an acknowledgement of future climatic projections.
Aspen *Populus tremula*		A light demanding species which grows on a wide range of sites from slightly dry to wet soil moisture and of poor to rich soil nutrient status. Moderately tolerant of exposure and is cold hardy and frost resistant.	Will grow well in mixture with various broadleaves or on the fringes of conifer crops across Bodmin. Small plantings as part of a feathered edge would deliver high landscape value and wind resilience.
Grey alder *Alnus incana*		It is a light demanding pioneer species and cold hardy in Britain; however, it often spreads by root suckers which can be invasive. It is only moderately tolerant of exposure. It has a rather wider site tolerance than either common or red alder, being suited to moderately dry to wet soils of poor to medium nutrient regime.	Small plantings in wetter areas could improve soil fertility and provide visual diversity. Could be substituted with red (*Alnus rubra*) and common (*Alnus glutinosa*) alders.
Rowan *Sorbus aucuparia*		This is a light demanding pioneer species which often grows in mixture with other broadleaves or on the edges of conifer stands. It is cold hardy, frost tolerant and can withstand severe exposure, even if it does not grow to a large size.	Small plantings of select seed from good form source could produce significant timber yields on the edge of large plantings and as part of a feathered edge. Improved birch could also be considered.

Technique	Purpose	Description	Notes for Bodmin
Underplanting	Species diversification	The use of retained overstorey to suppress weeds create a more suitable micro climate for species which would otherwise struggle in an open planting situation following clearfelling. This allows a greater palette of species to be utilised and yield and production maximised from a site.	There is limited scope for this method of diversification within the Bodmin plantations due to reduced thinning interventions and therefore limited planting space. However richer areas of Halvana and Trebartha could be considered, using shade-tolerant species such as Douglas fir.
Enrichment Planting	Nutrient Availability	The planting of different species within areas of regeneration or monoculture planting helps bolster and diversify the range of species and in doing so can make it more resilient to future climate change and threats from disease.	Use of the species outlined above, particularly nitrogen fixing broadleaves will provide ongoing soil amelioration throughout the crop rotation. It also provides resilience in the evident of disease or pest as well as diversifying habitat provision. These plantings will be prescribed but additional planting is also possible.
Buffer Planting	Wind resilience Water regulation	Planting of deep and tap rooting species, such as broadleaves or pines, can provide protection to both soil and water courses as well as the standing productive crop. This can allow operations to be more interventionist whilst not compromising the soil or stand stability.	The high wind hazard and exposure to the coastal air means that buffer planting could have real benefit on the stability, condition and workability of the crops at Bodmin. The use of species such as of aspen, rowan and Scots pine will provide a suitable buffer and marketable crop. These plantings will be written into the Coupe layer to aid the local team by but additional planting is also possible

Ancient Woodland

The Plan area contains one area of designated ancient woodland. North Hill is a discreet woodland of 42ha which is almost entirely designated as ancient woodland. A large proportion of this area (14ha) is remnant ash and oak W10 ancient semi-natural woodland. The remainder is dominated by first and second rotation conifer crops, namely Sitka spruce, Douglas fir, red cedar and Japanese larch and is therefore PAWS.

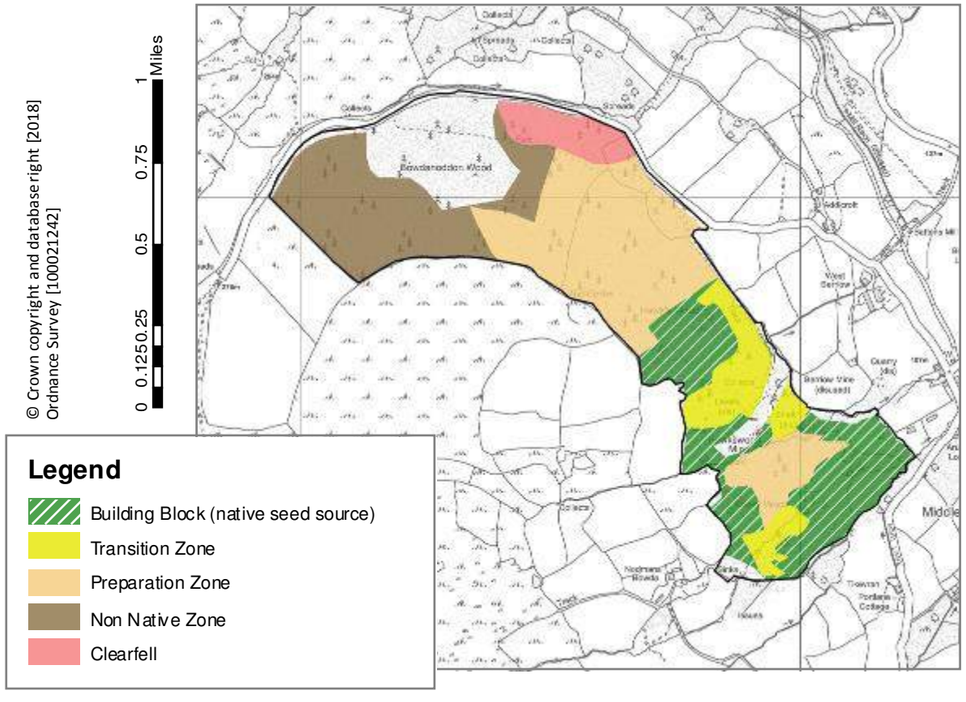
PAWS Management

Restoration of Plantations on Ancient Woodland Sites (PAWS) has already begun and this continued restoration is going to take a considerable amount of time and resource because of the limited native remnants from which sites can regenerate.

Therefore a proactive yet realistic approach will be used to transform these sites over a period of time.

The aim of the transitional period to woodland containing 80% or more of native species should be to achieve:

- a varied age structure with varying ratios of high canopy, secondary canopy and understory through out.
- transition that ensures a minimum future content of 3 native species, with 4 to 5 species being the preferable target.
- a minimal reliance on monocultures especially of birch, ash, hazel or oak. In practice this may involve either underplanting or group felling and planting within existing mid rotation broadleaf crops.
- restoration of beech and sweet chestnut stands will not be prioritised as these species are to be naturalised and offer greater broadleaf diversity and therefore resilience.
- If adequate regeneration is not evident in the 'Transition' and 'Preparation' zones after 10 years a reappraisal of the prescription will be needed.



Transition Zone

The indicative proportion of native tree species is 50% or more of the crop. Removal of remaining conifer will be achieved through repeated thinning operations.

The establishment period to predominantly native woodland within this category is anticipated to be 20 – 30 years but is dependant on successful regeneration and establishment although maybe sooner depending on the level of conifer needing to be removed. Scattered individual conifers or small groups may remain.

Preparation Zone

Areas within this category contain less than 50% of native tree species but have a proportion greater than 20% of the crop and the area neighbours an area of significant native species cover which can be utilised as a seed source. Enhancement of native content will continue through thinning of the conifer content.

These areas will be thinned heavily to release ancient woodland remnants and features and to encourage natural regeneration and intrusion in to the non-native crop.

The anticipated time scale for establishment of predominantly native species is expected be around 50 – 60 years or so, but could be as long as 70-80 depending on success of establishing the future crop.

Non-native Zone

The proportion of native tree species within a management area is less than 20% of the crop. Thinning in both these sub-categories should encourage crown development of broadleaf components. Progress will be monitored and crops moved into either depending on development of stand structure and the response of natural regeneration.

Clearfell Zone

One clearfell will be used where windthrow is occurring. This will be

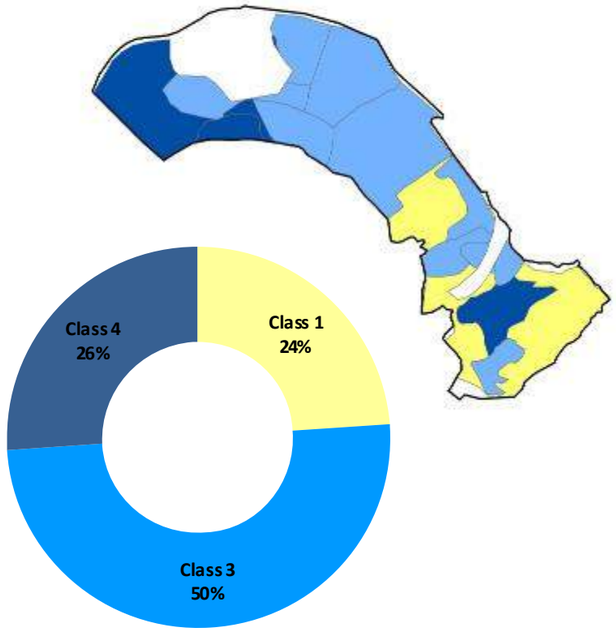
Naturalness

Naturalness is the measure to show the percentage of site native tree species in a given area. This measure is used to record and monitor the condition and restoration of Ancient Woodland Sites previously planted with non-native species. For note, beech, sycamore, sweet chestnut and felled areas contribute to a higher non-native score.

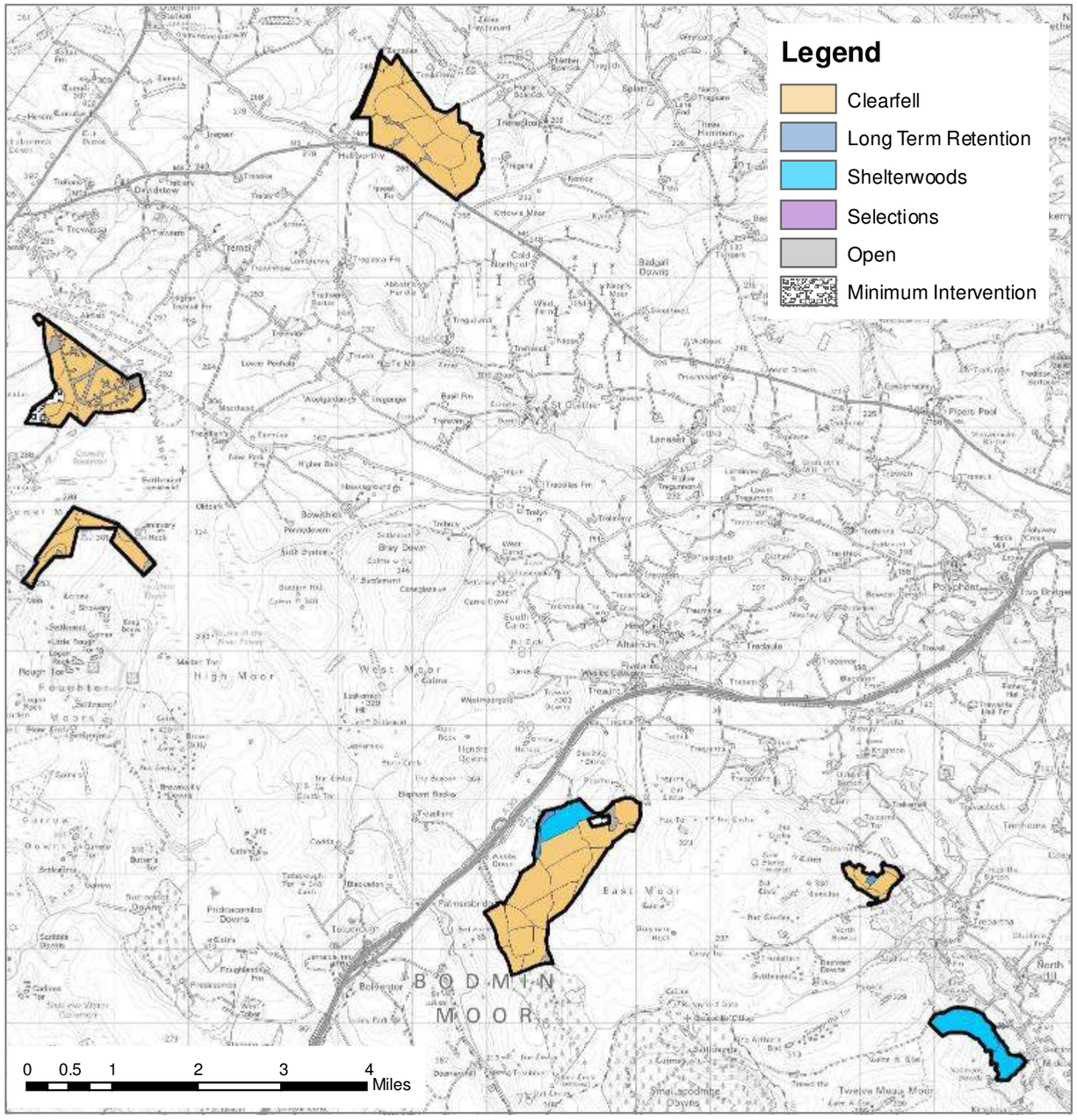
Classes 2, 3 and 4 are classified as Plantations on Ancient Woodland Sites (PAWS). Areas of Semi-Natural Woodland (Class 1 - > 80% site native species) are mostly found towards the bottom of valleys, in wetter riparian areas where the soils are richer.

The transformation of Classes 2, 3 and 4 AWS towards Class 1 is a key objective of this Plan and is in line with the Forestry Commission England, *Keepers of Time* Policy (Forestry Commission, 2005).

Naturalness in 2017



Silviculture



Thinning

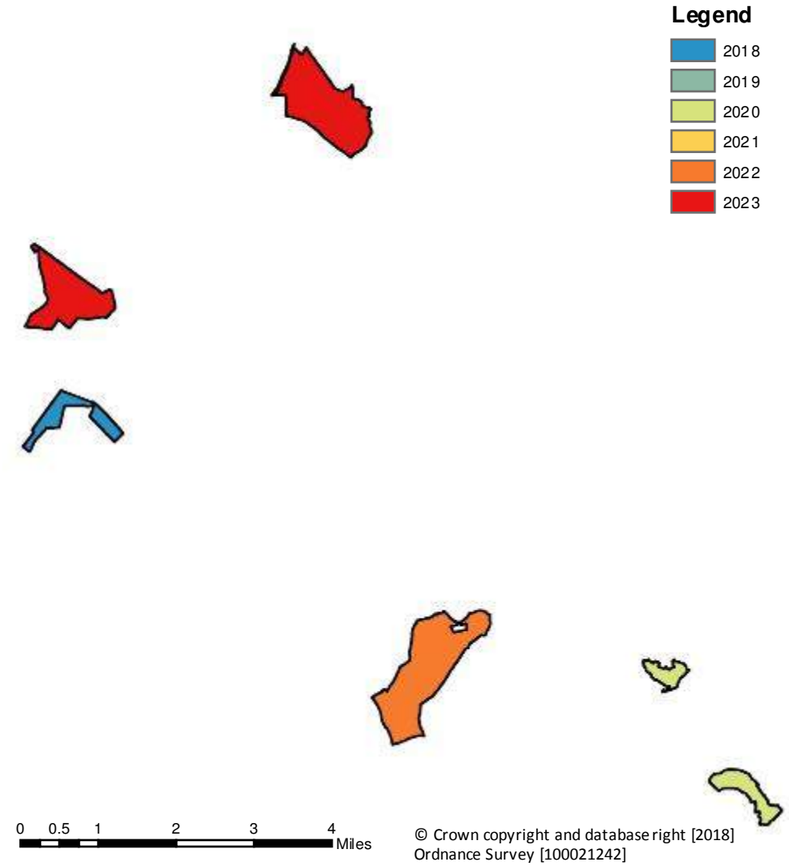
Areas will be assessed and approved for thinning on a site-by-site basis by the local Beat Team. As attempts to improve the structural diversity of the crops are made, initiation of thinning may be made early (uneconomic) or later to address windfirm concerns. The intention to intervene every 5 years as well as on multiple occasions may not be appropriate and therefore will be administered in an adaptive approach by the Beat team.

Conifer Thinning

Areas of conifer are assessed for thinning every 5 years with the targeted removal of larch species a key objective. Other factors such as the quantity, condition, age and distribution of any broadleaf content, will also help decide if an area of conifer is to be thinned or not, with light levels, existing ground vegetation and any evidence of natural regeneration also impacting on how many trees are marked for removal.

Broadleaf Thinning

Broadleaf high forest will be assessed for thinning every 10 years with a visual inspection of the stand. Thinning will allow sub-dominant broadleaves sufficient light and space to mature or will release existing advanced regeneration. Younger patches of regeneration can be thinned to favour site native species with trees of good form and vigour being retained. Where broadleaves consist primarily of a single species, it may be possible to enlarge natural gaps through irregular thinning rather than create new gaps through group felling, however, in all cases the size of gap will be dependent on slope, aspect and site fertility and must not be detrimental to crop stability.



Clearfell coupes will simply be managed through clearcutting (of over 0.25ha) and restocked either through natural regeneration, replanting or a combination of the two.

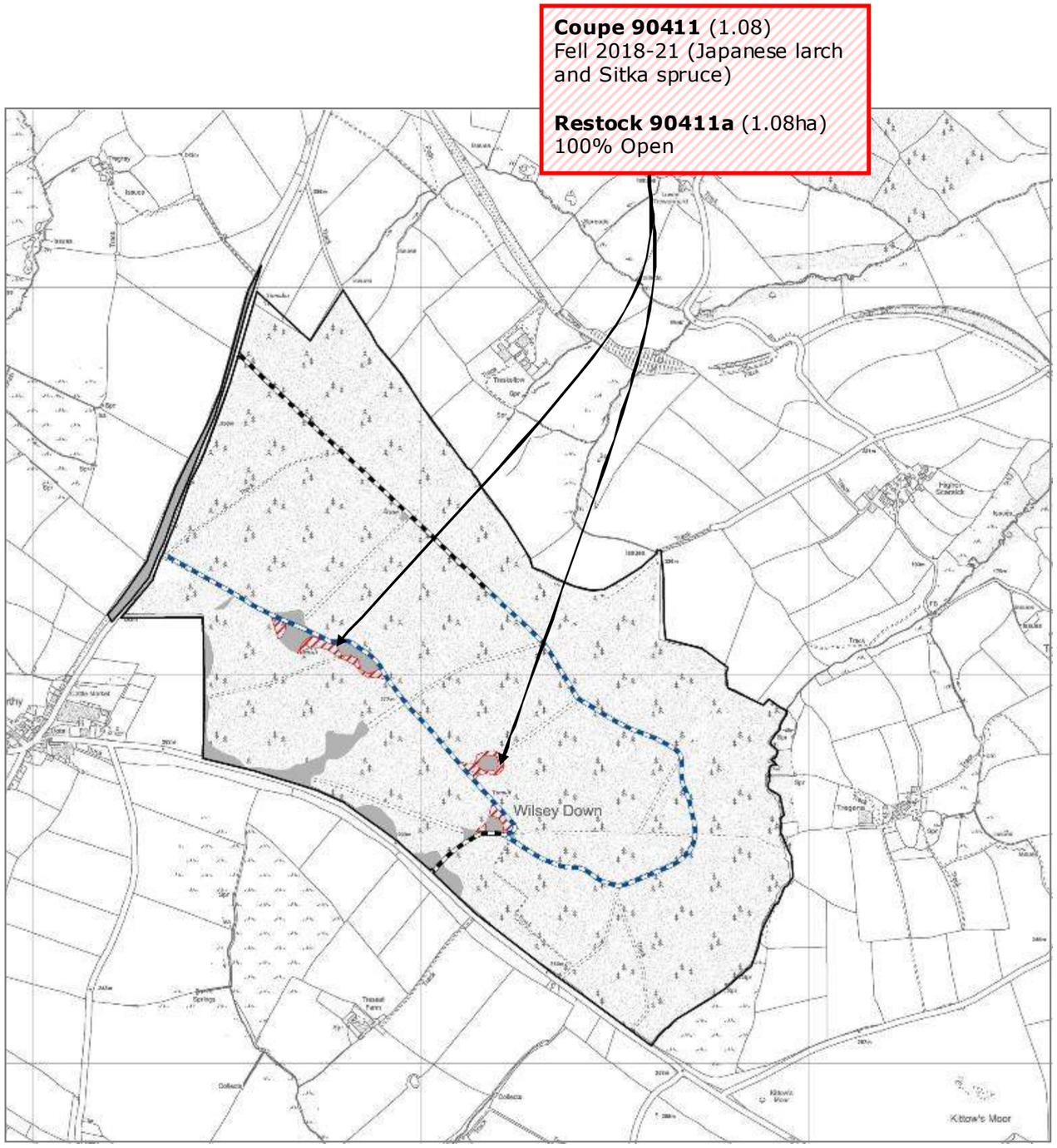
Minimum Interventions are predominantly inaccessible or ecologically valuable areas where intervention will only occur to protect and ensure the future succession of key habitats and species.

Open space is managed to ensure forest cover does not exceed 2m in height, a tolerance of 20% forest cover will be accepted on some lower priority sites.

Uniform shelterwoods are predominately broadleaved dominated and ASNW sites which will be managed using seeding fellings with possible under planting of site suitable species to control light levels and develop good timber quality.
Irregular shelterwoods will look to develop a complex CCF structure through the identification and thinning towards quality final crop trees for the future.

Single-tree selections are used on existing complex structured stands or sensitive sites often important for amenity value, such as in close proximity to areas of high amenity value.

Felling and Restocking
Wilsey Down
2018 - 2028



Legend

- Fell 2018 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2028
- Retentions
- Minimum Intervention
- Natural Reserve
- Open

Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

0 0.125 0.25 0.5 0.75 1 Miles

Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

Felling and Restocking
Davidstow
2018 - 2028

Coupe 90017 (4.76ha)
Fell 2022-26 (Sitka spruce & Japanese larch)

Restock 90017a (4.76ha)
80% Evergreen conifer
20% Open

Proposed Species
40% Sitka spruce (planted)
40% Noble fir (planted)

Coupe 90767 (6.46ha)
Fell 2022-26 (Sitka spruce)

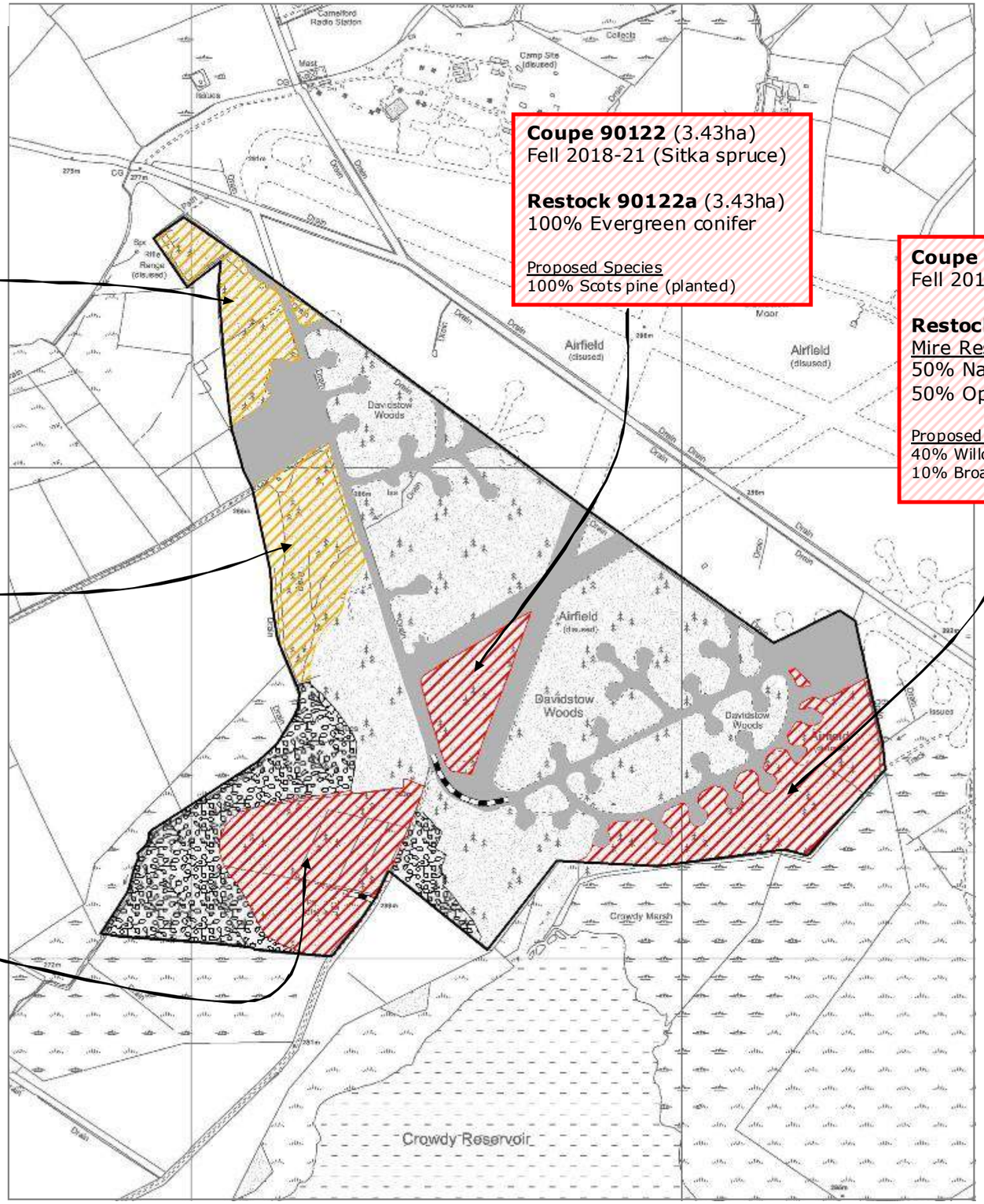
Restock 90767a (6.46ha)
80% Evergreen conifer
10% Native broadleaf
10% Open

Proposed Species
80% Sitka spruce (planted)
10% Broadleaf (natural regeneration)

Coupe 90030 (9.34ha)
Fell 2018-21 (Sitka & Norway spruce)

Restock 90030a (9.34ha)
80% Evergreen conifer
10% Native broadleaf
10% Open

Proposed Species
80% Sitka spruce (planted)
10% Broadleaf (natural regeneration)



Coupe 90122 (3.43ha)
Fell 2018-21 (Sitka spruce)

Restock 90122a (3.43ha)
100% Evergreen conifer

Proposed Species
100% Scots pine (planted)

Coupe 90022(9.17ha)
Fell 2018-21 (Sitka spruce)

Restock 90022a (9.17ha)
Mire Restoration
50% Native broadleaf
50% Open

Proposed Species
40% Willow (natural regeneration)
10% Broadleaf (natural regeneration)

Legend

- Fell 2018 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2028
- Retentions
- Minimum Intervention
- Natural Reserve
- Open

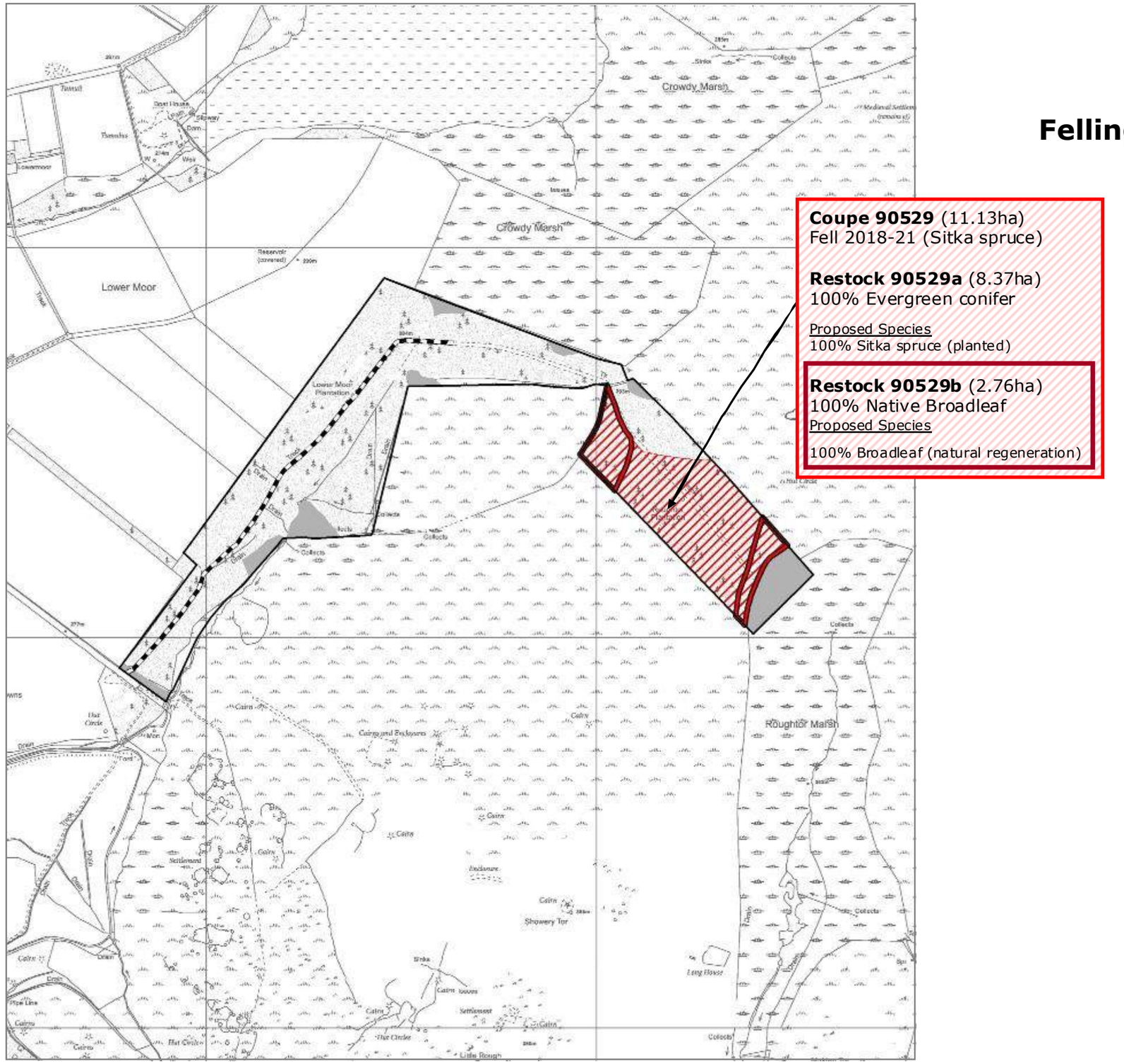
NB. Whilst 'Restock Proportion' is often prescribed at 100% Evergreen Conifer the use of suitable broadleaves to build in resilience and utilise site conditions is anticipated and in places is proposed.

0 0.125 0.25 0.5 0.75 1 Miles

Felling and Restocking

Roughtor

2018 - 2028



Legend

- Fell 2018 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2028
- Retentions
- Minimum Intervention
- Natural Reserve
- Open

0 0.125 0.25 0.5 0.75 1 Miles

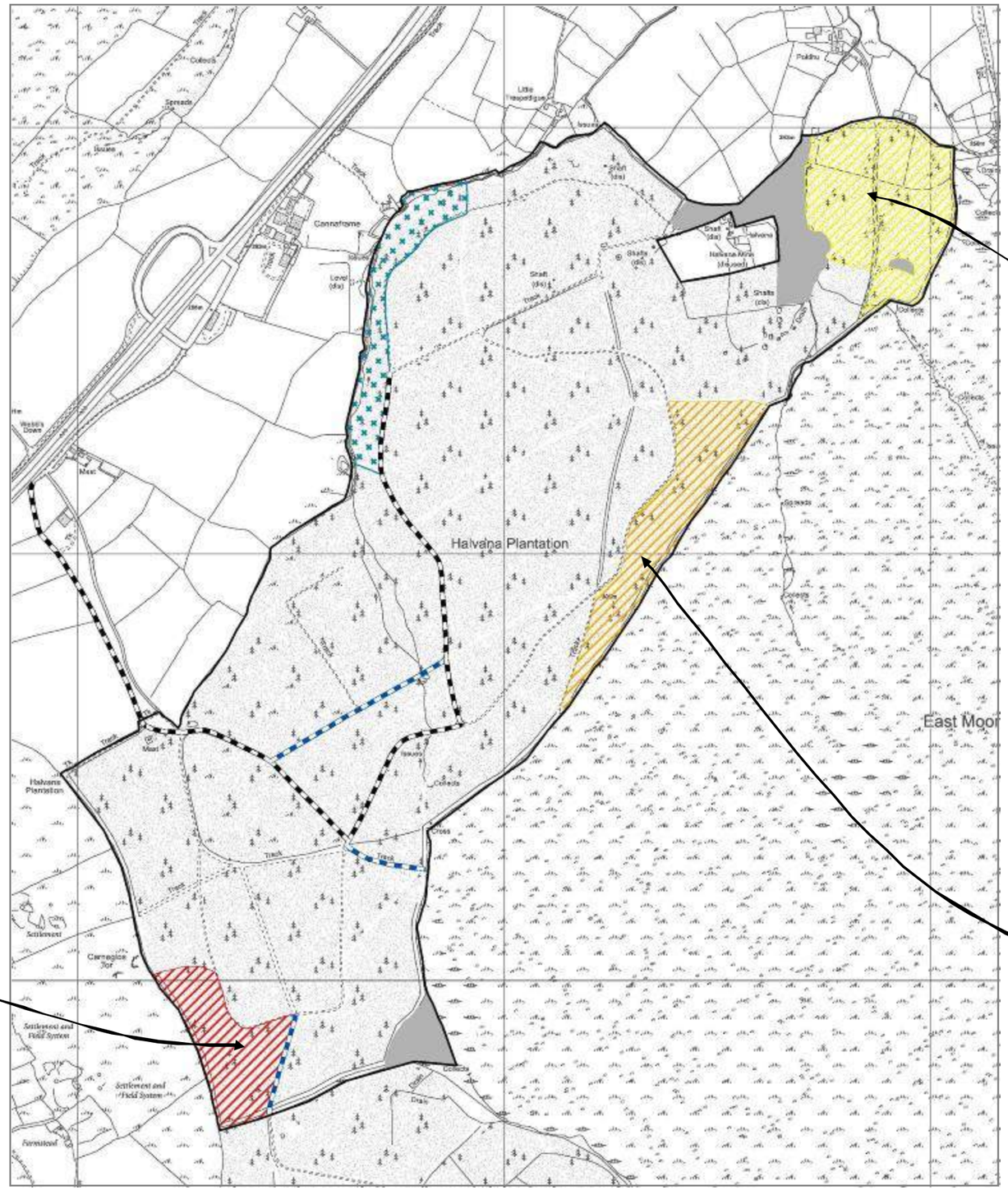
Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

Felling and Restocking
Halvana
2018 - 2028

Legend

- Fell 2018 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2028
- Retentions
- Minimum Intervention
- Natural Reserve
- Open



Coupe 90552 (11.66ha)
Fell 2027-28 (Sitka spruce)

Restock 90552a (11.66ha)
90% Evergreen conifer
10% Open

Proposed Species
50% Scots pine
40% Oriental spruce

Coupe 90727 (5.91ha)
Fell 2018-21 (Sitka spruce)

Restock 90727a (5.91ha)
100% Evergreen conifer

Proposed Species
60% Sitka spruce (planted)
40% Macedonian pine (planted)

Coupe 90425 (8.03ha)
Fell 2022-26 (Sitka spruce)

Restock 90425a (8.03ha)
80% Evergreen conifer
20% Open

Proposed Species
40% Sitka spruce (planted)
30% Serbian spruce (planted)
10% Willow (natural regeneration)

NB. Whilst 'Restock Proportion' is often prescribed at 100% Evergreen Conifer the use of suitable broadleaves to build in resilience and utilise site conditions is anticipated and in places is proposed.

0 0.125 0.25 0.5 0.75 1 Miles

Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

Felling and Restocking
Trebartha
2018 - 2028

Coupe 90180 (6.56ha)
Fell 2018-21 (Douglas fir)

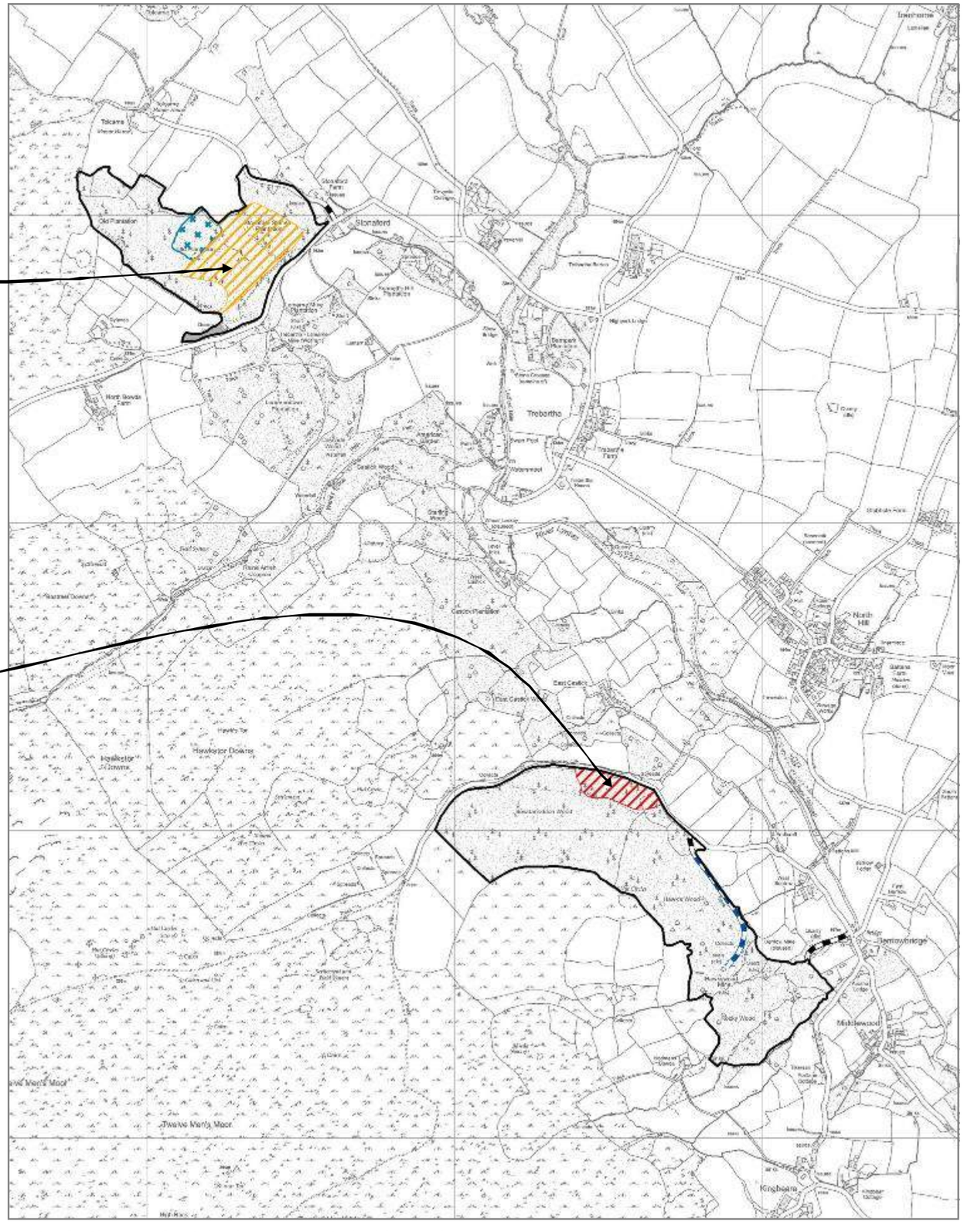
Restock 90180a (6.56ha)
100% Evergreen conifer

Proposed Species
60% Douglas fir
40% Western red cedar

Coupe 90928 (2.15 ha)
Fell 2018-21 (Sitka spruce)

Restock 90928a (2.15ha)
100% Evergreen conifer

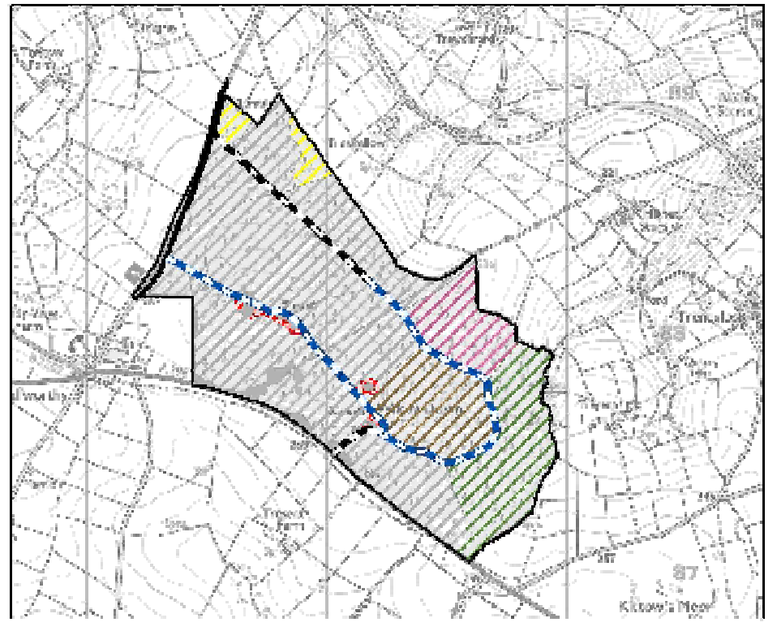
Proposed Species
60% Oak (planted)
40% Broadleaf (regeneration)

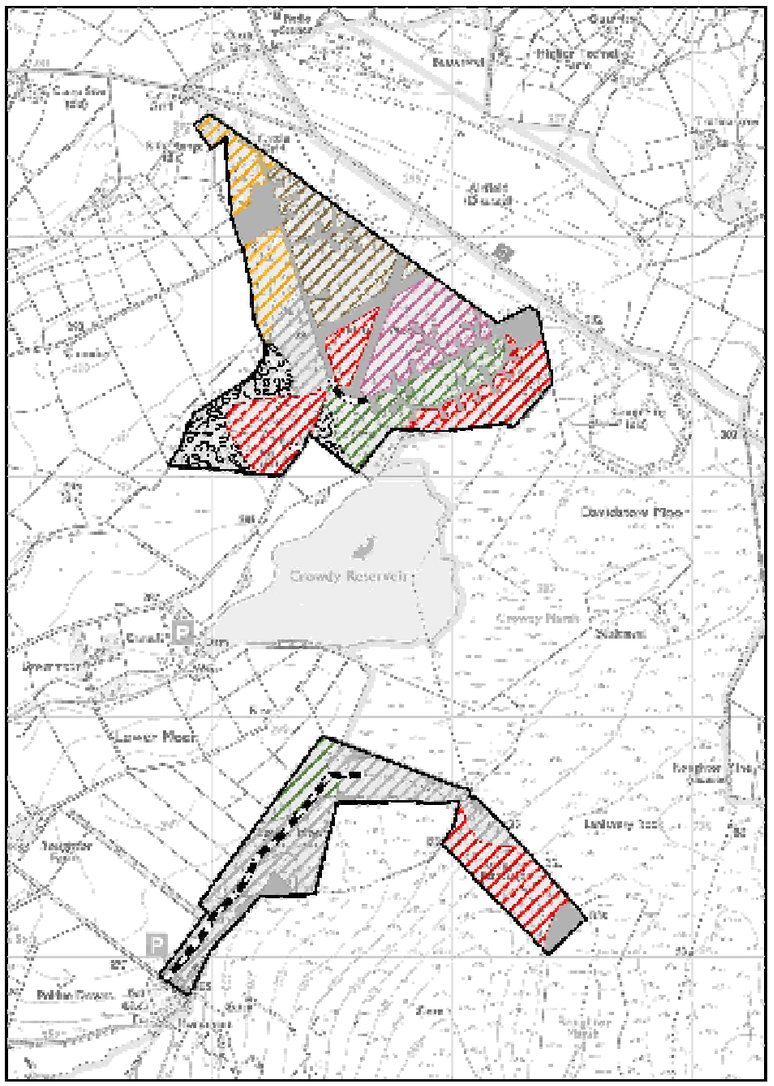


Legend
- Fell 2018 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2028
- Retentions
- Minimum Intervention
- Natural Reserve
- Open

0 0.125 0.25 0.5 0.75 1 Miles

NB. Whilst 'Restock Proportion' is often prescribed at 100% Evergreen Conifer the use of suitable broadleaves to build in resilience and utilise site conditions is anticipated and in places is proposed.





Legend

- Alternatives to Clearfell
- Fell 2017 - 2021
- Fell 2022 - 2026
- Fell 2027 - 2031
- Fell 2032 - 2036
- Fell 2037 - 2041
- Fell 2042 - 2046
- Fell post 2046
- Coppice
- Wood Pasture
- Retentions
- Minimum Intervention
- Natural Reserve
- Open
- Class A/B Roads
- Class C Roads

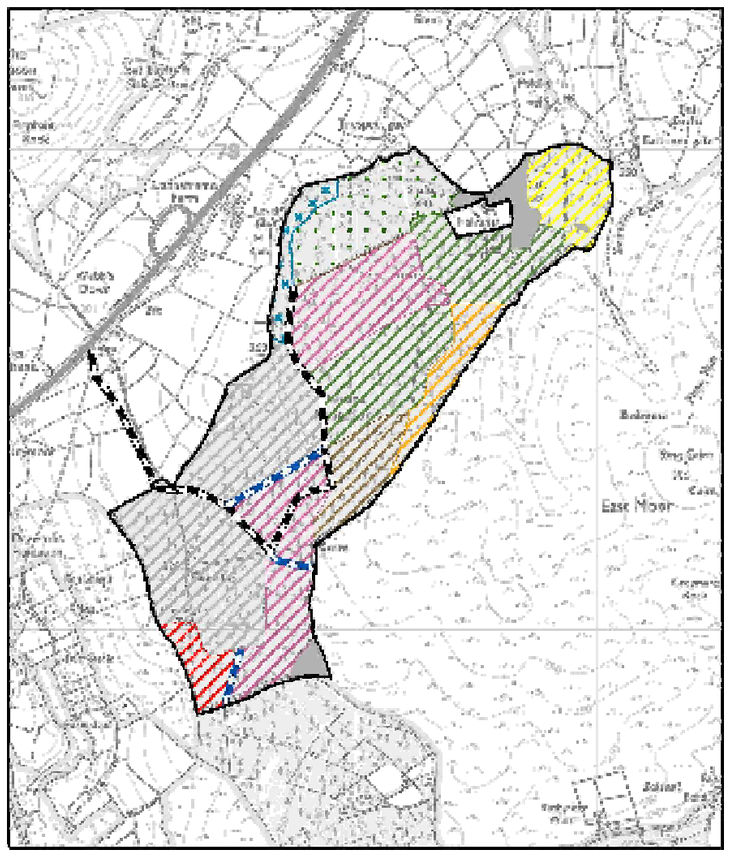
Management Prescriptions
2018 - 2048

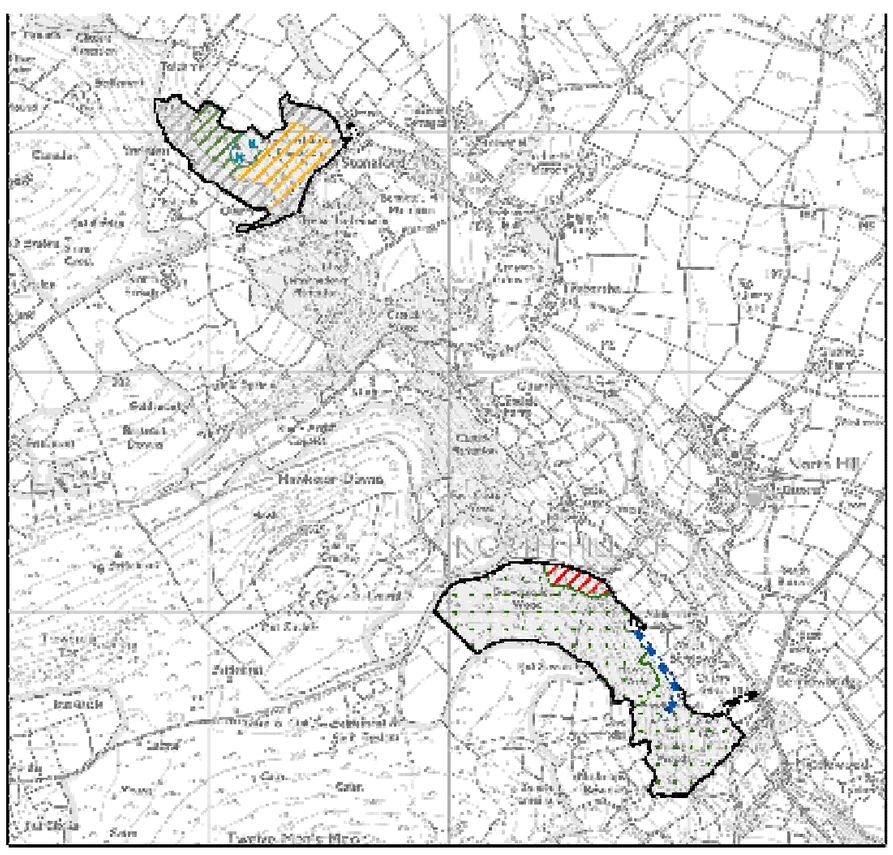
An outline of the intended management prescriptions for the Plan area for the next 30 years, including silvicultural, felling and open proposals.

Declaration by FC as an Operator.

All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

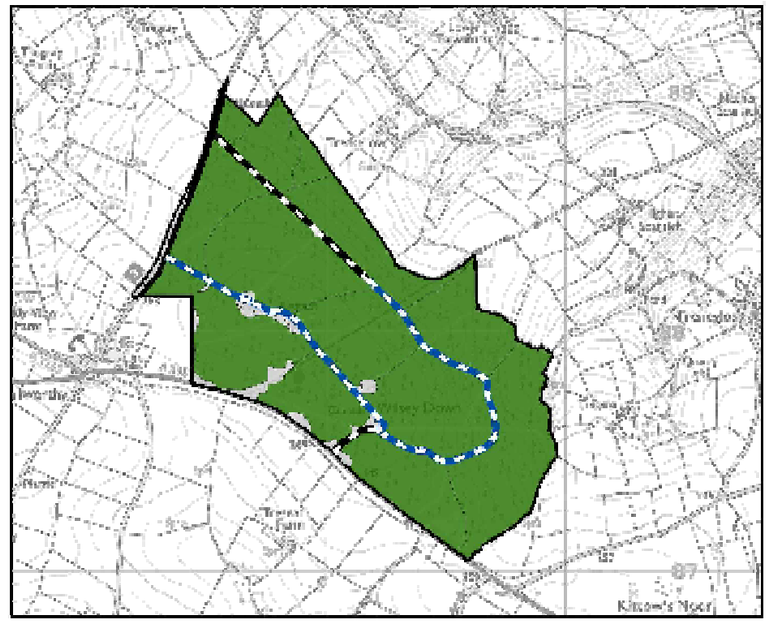
0 0.05 0.1 0.2 0.3 0.4 Miles

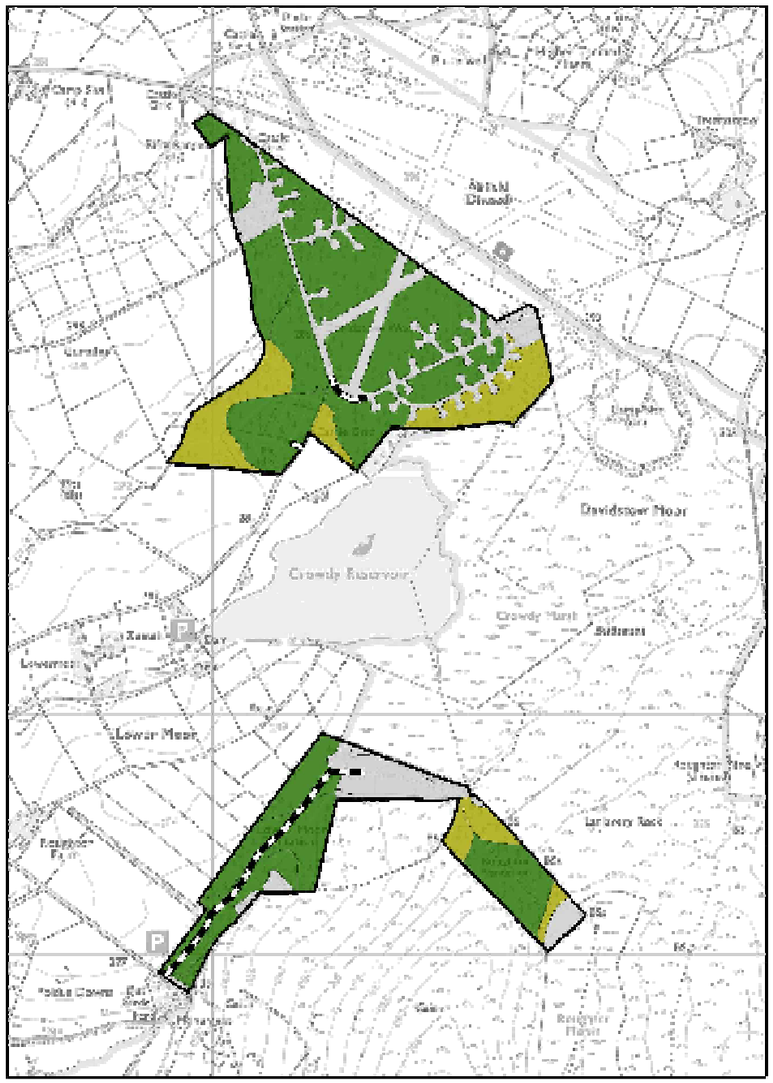




Restock Prescriptions

An outline of the intended restocking prescriptions through planting or natural regeneration for the next rotation, following the removal of the current stock.



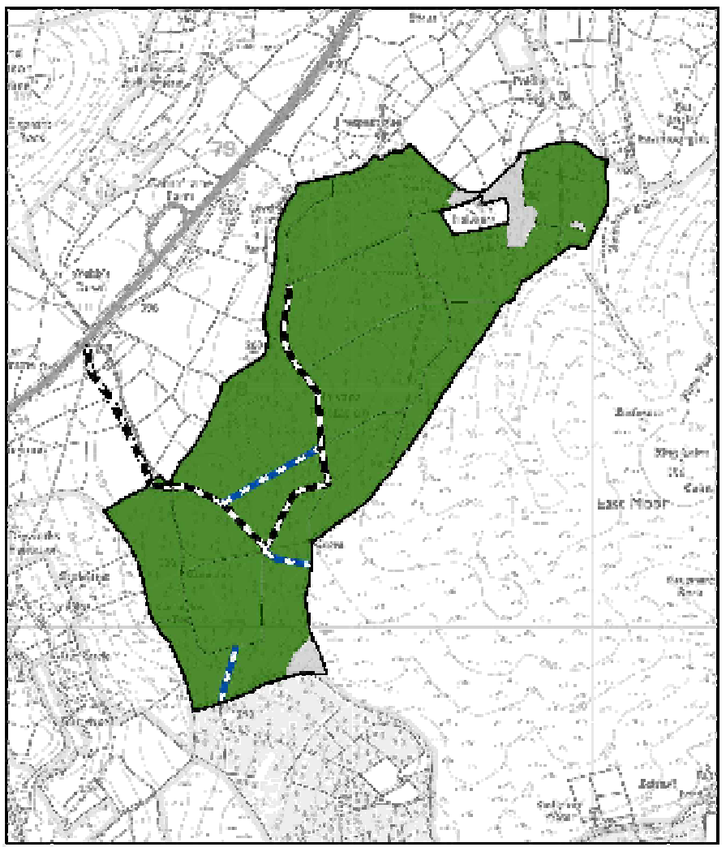


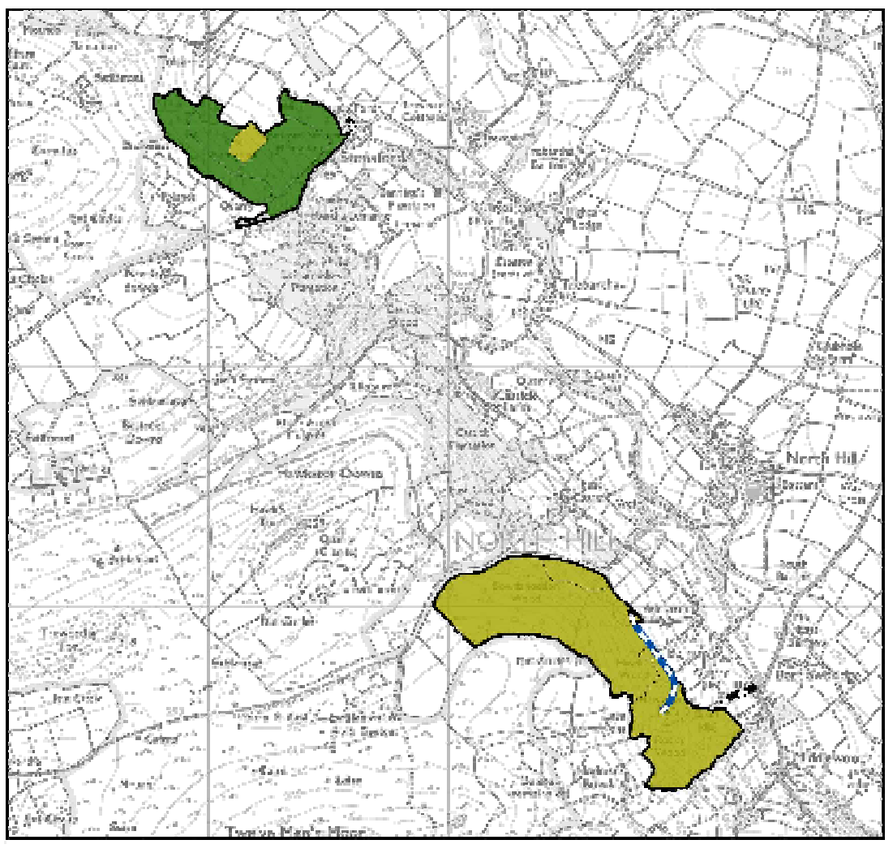
Broadleaf Forest
Coniferous Forest
Open Space

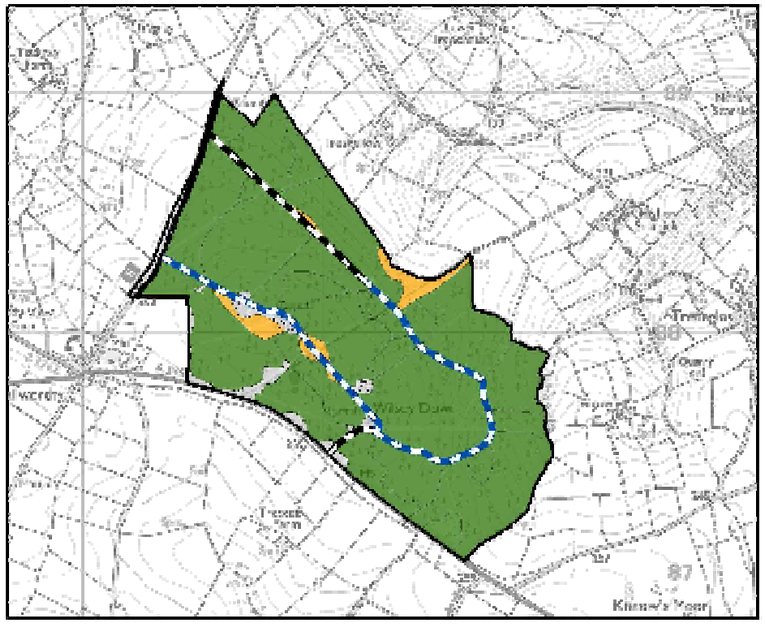
Declaration by FC as an Operator.

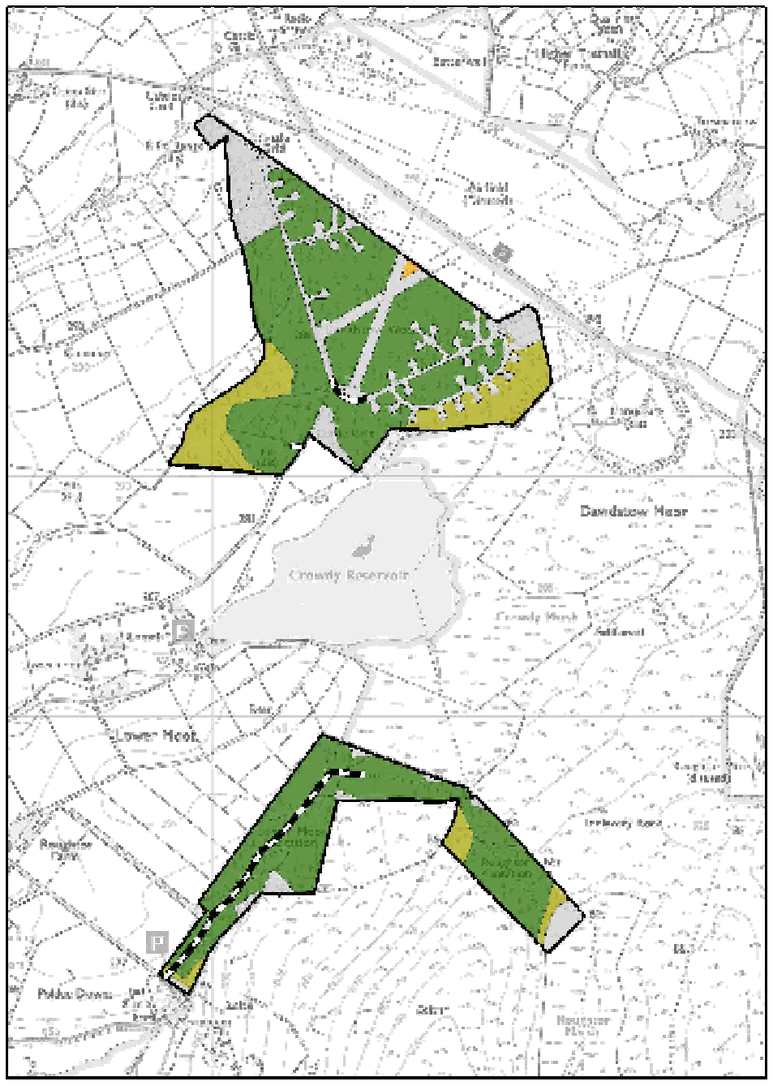
All timber arising from the Forest Enterprise estate represents a negligible risk under EUTR (No 995/210)

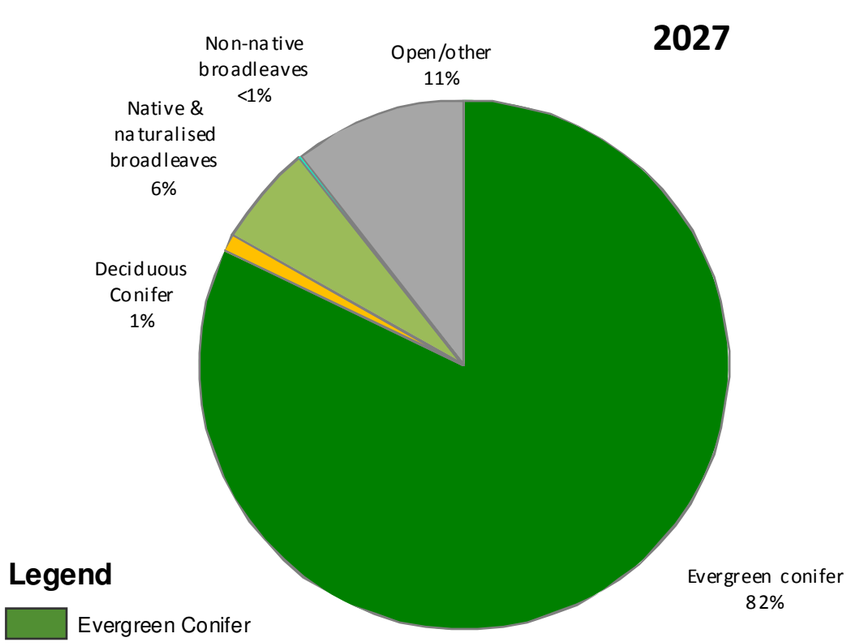
0 0.05 0.1 0.2 0.3 0.4 Miles





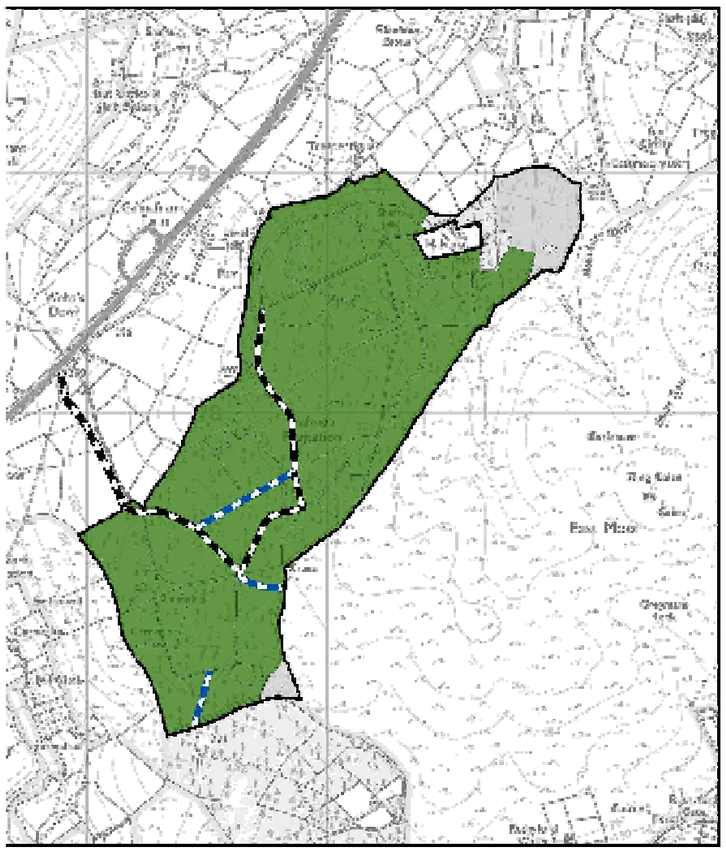


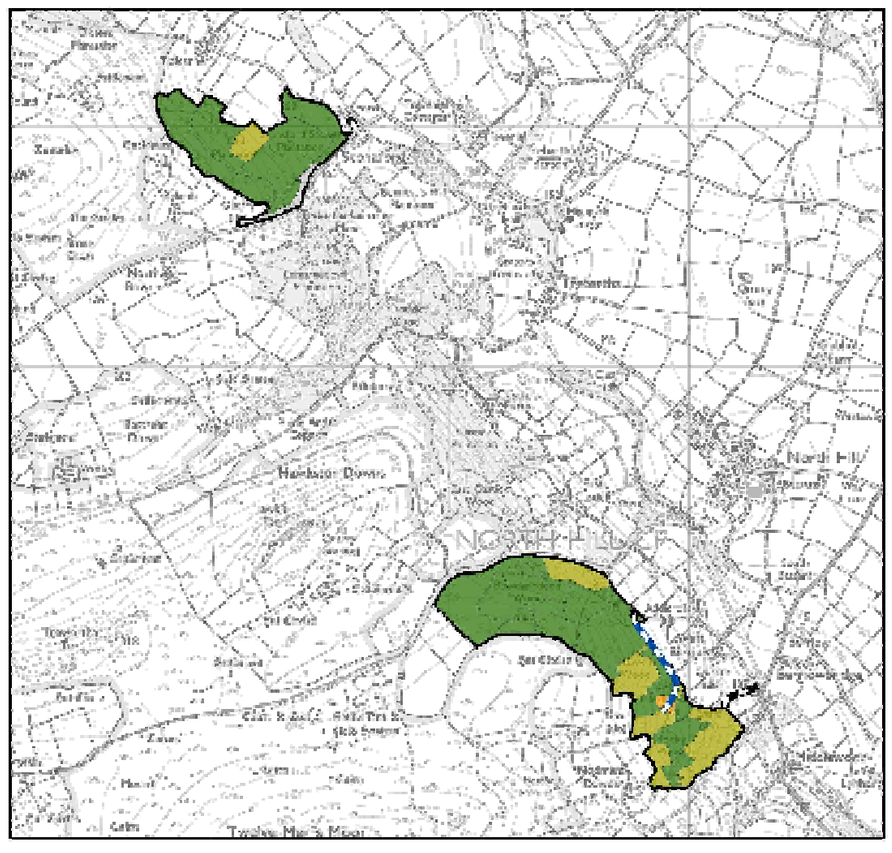




Legend

- Evergreen Conifer
- Deciduous Conifer
- Native & naturalized broadleaves
- Non-native broadleaves
- Open/other



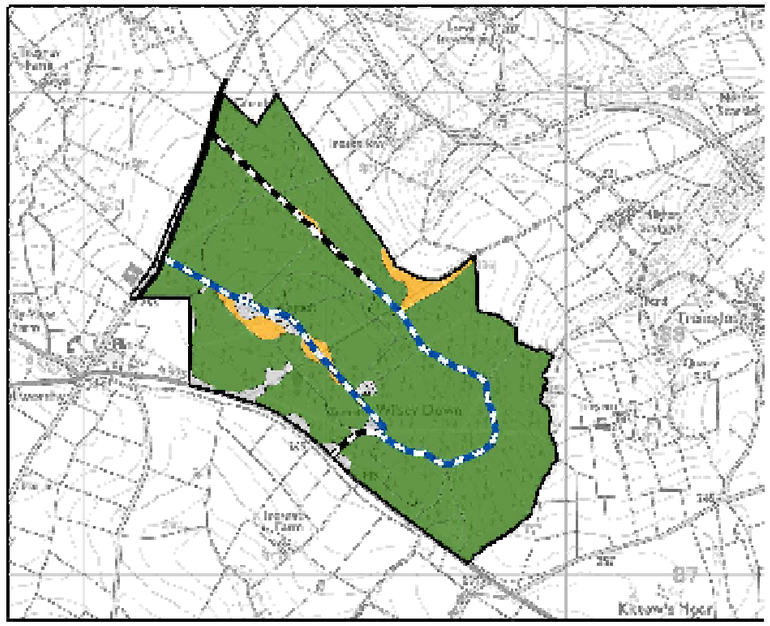


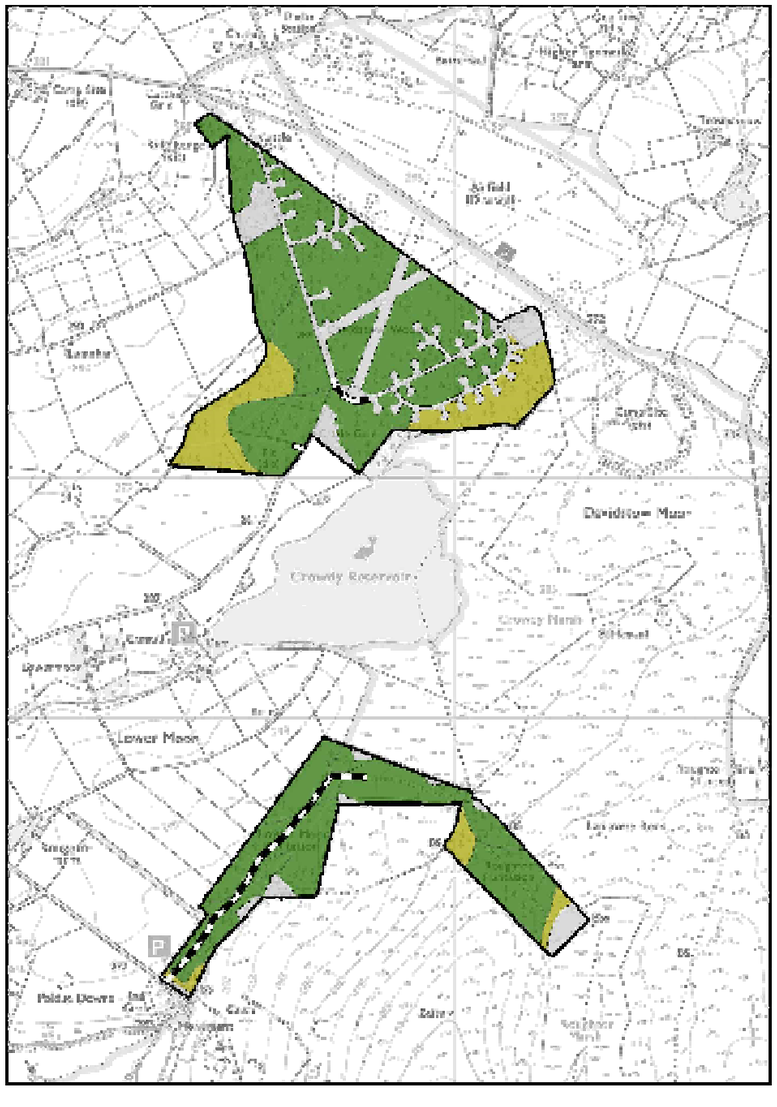
Indicative Future Species 2028

The projections made are indicative of species composition in ten and thirty years time. They do not constitute a guarantee and merely act as an indicator of how the vision for the Plan area will be delivered over time.

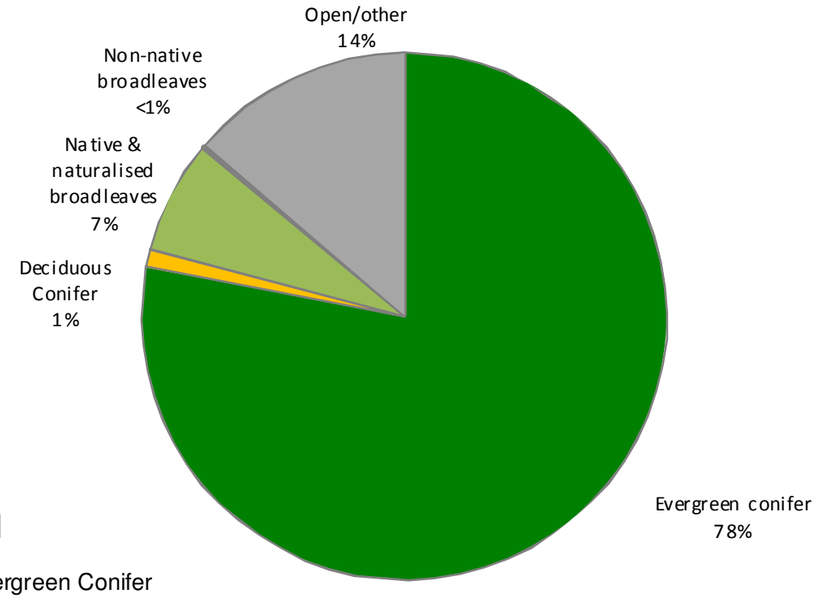
0 0.05 0.1 0.2 0.3 0.4 Miles

Indicative Future Species 2048





2047

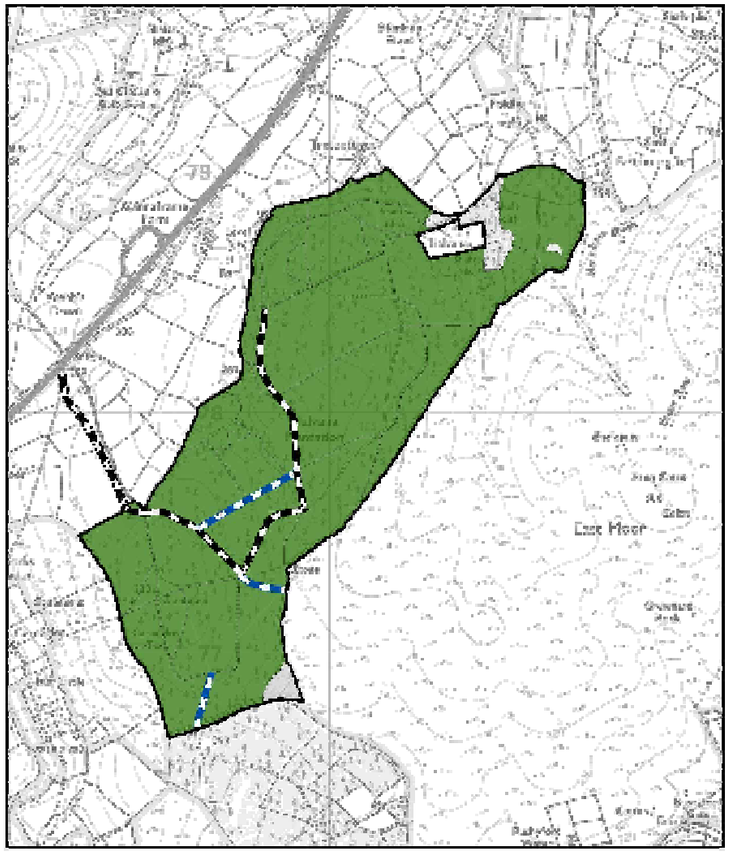


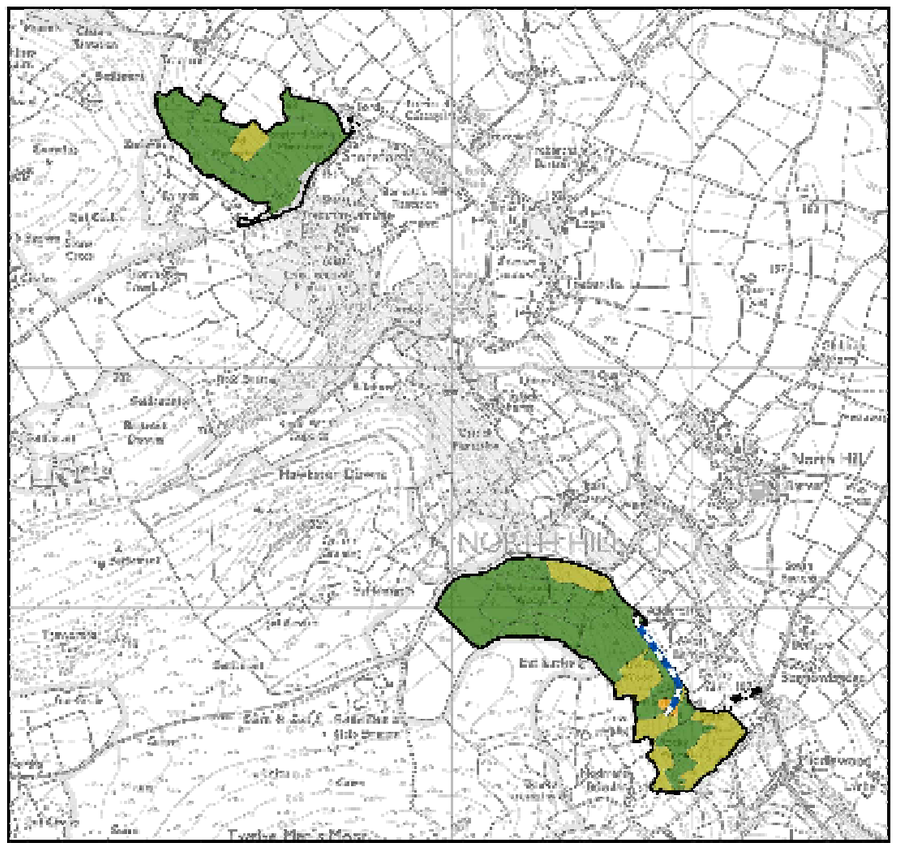
The projections made are indicative of species composition in ten and thirty years time. They do not constitute a guarantee and merely act as an indicator of how the vision for the Plan area will be delivered over time.

Legend

- Evergreen Conifer
- Deciduous Conifer
- Native & naturalized broadleaves
- Non-native broadleaves
- Open/other

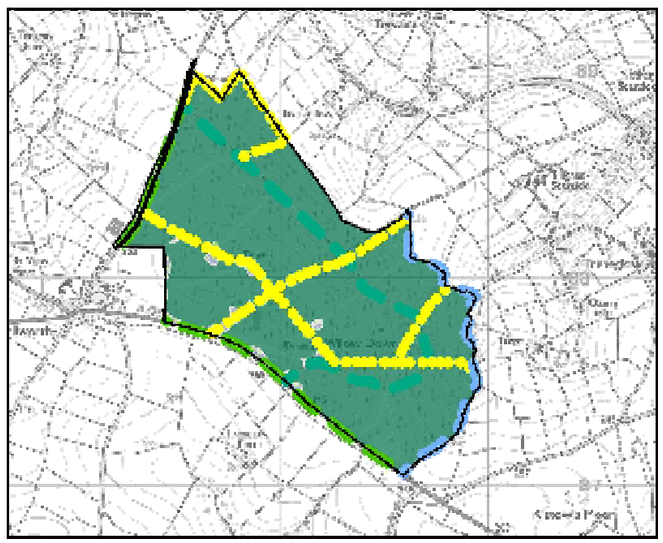
0 0.05 0.1 0.2 0.3 0.4 Miles





Conservation - Habitats

0 0.05 0.1 0.2 0.3 0.4 Miles



<u>Bogs and Wet Grassland</u>

Areas of significant water inundation, valued by birds such as curlew and snipe, may be enhanced by removing conifer cover, blocking drains and increasing the water table to better support the array of sphagnum assemblages which have already presented themselves. Opportunities to build on areas adjacent to, and/or creating linkage between, mire habitats will be taken at the time of felling, particularly in Davidstow, as outlined on page 22. Given the significant water logging in these areas willow colonisation may be slower than elsewhere but this will need to monitored to ensure it creates a rich mixed convergence habitat between high forest and open mire.

<u>Riparian Habitats</u>

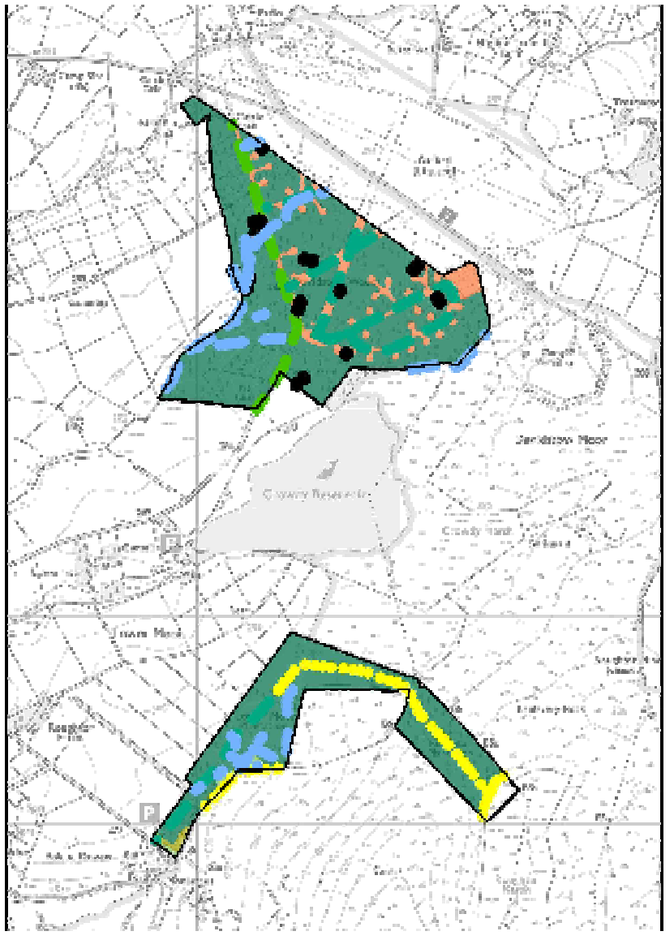
The streamsides and wet woodland found at the bottom of hollows and small valleys remain predominantly willow dominated broadleaf woodland. The majority of these sites will be managed at the time of intervention to aid the recruitment of suitable wet woodland species such as alder, willow and birch encouraged as well as patchy open space to create dappled shade and light penetration. See page 36 for more detail.

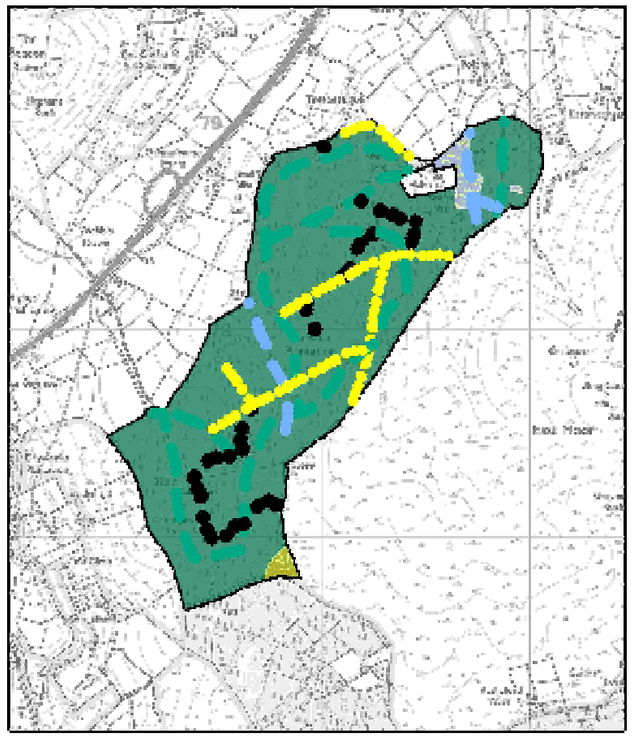
<u>Corridor Habitats</u>

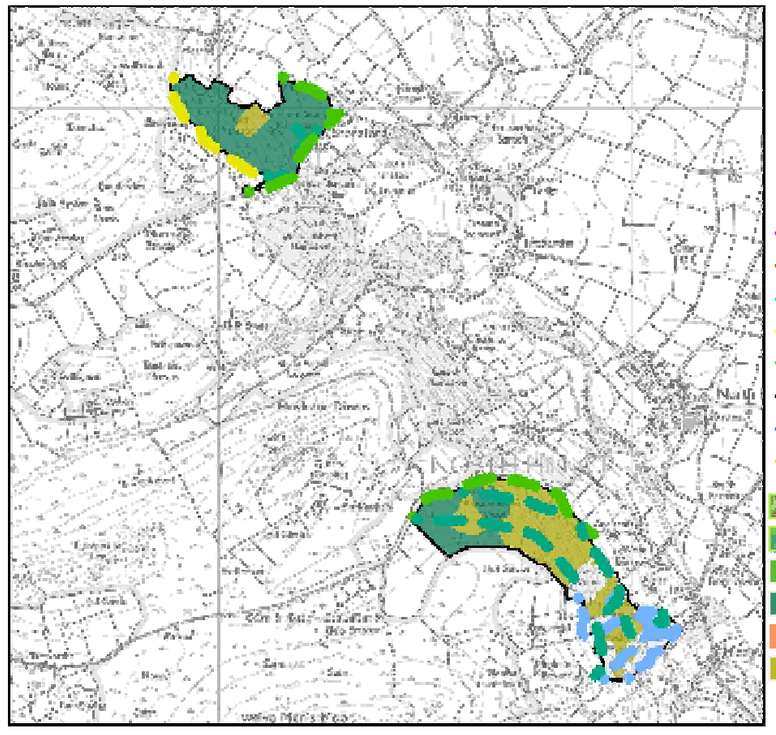
Road and rides sides will conform to the prescriptions outlined in the District document, *Design and Management of Environmental Corridors* (Lucas, 2006). The road and ride network within the Plan area will be utilised to extend and connect ride side habitats and transient open spaces, this will be achieved through targeted widening and unstocking of edges to some coupes following felling operations to create a mixed transient open and scrubby habitat for a multitude of species. In practice this means that regenerating vegetation on road sides will be regularly cut where access is easiest to create a dynamic edge habitat which the likes of lepidoptera, warblers, thrush and nightjar choose to inhabit. Whilst wetter and often remote rides which are not used for deer control will be allowed to regenerate, notably with willow, to provide habitat and linkage for a variety of species including willow tit.

<u>Deadwood</u>

Mature established broadleaved trees with their moss and fauna will be retained as much as possible, and allowed to developed in senescent habitats. A variety of deadwood will be retained according to the level of ecological value and in line with Guidance (Humphrey & Bailey, 2012). Retaining decaying snags and logs as well senescent trees throughout the forest will create suitable deadwood habitat for numerous associated species including raptor, smaller birds (including willow tit) and an array of insects.







Legend

- Moor and Heath
- Hedgerow
- Forest Road Edge
- Conservation + Recreation
- Public Roadside
- Windthrow protection
- Watercourse
- Broadleaved Belt
- Wet woodland
- Lowland mixed deciduous woodland
- BROADLEAVED; MIXED/YEW WOODLANDS
- CONIFEROUS WOODLANDS
- BOUNDARY & LINEAR FEATURES
- BOGS

Conservation - Natural and Cultural Heritage Features

The Forest Plan area is used by an array of common and rare flora and fauna (including rare orchids and ferns) some of which are highlighted below. The considerable contribution the forests and their associated areas make to habitat provision in the otherwise moorland dominated landscape is widely recognised. Whilst there are also a range of species that will be supported by the open ground within or adjacent to the sites included in this Plan. These include nightjar, cuckoo, grasshopper warbler, whinchat, tree pipit, reed bunting, curlew and snipe.

On the other hand some non-native flora and grazing fauna species can have a detrimental impact on the forest and its features if their numbers are too high. Species such as rhododendron, wild deer and squirrel will all be managed in line with District Strategy to ensure that their pressure does not have a negative impact on the condition of habitats and crops.

The introduction of new palatable tree species, in the bid to diversify the forest structure means that deer and small mammal impact will need to be taken into account. It is likely that protection and control will need to be increased and strategically targeted. This could include fencing, planting design and new deer glades which could be created following felling.

The Plan area is also an area of significant cultural heritage value. With a number of unscheduled and numerous scheduled features in the area the internal surrounding landscape needs to be preserved, and enhanced where possible, to retain and develop this cultural heritage. The management of the Wilsey Down is outlined in detail in Appendix 5. Otherwise all unscheduled monuments will be identified and treated sympathetically at the time of operation in consultation with the county archaeology team.

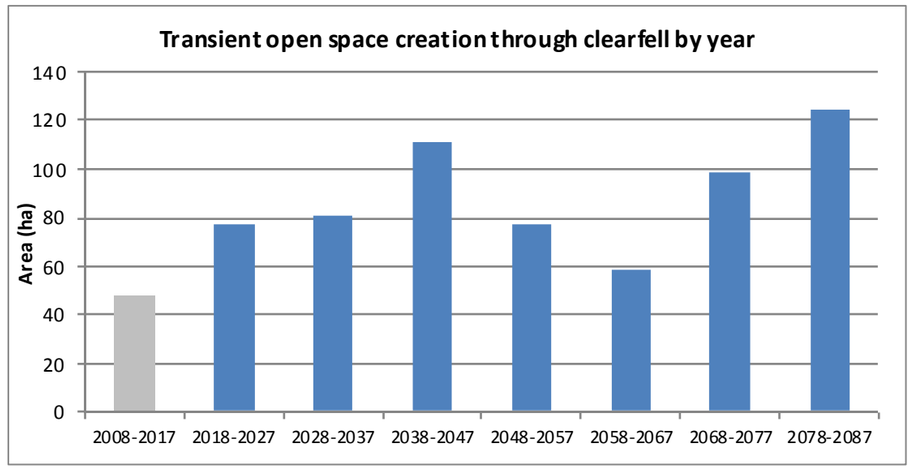
Otter - are known to use the full length of both the Rivers Camel and Crowdy Marsh area and is widespread across most watercourses in Cornwall This protected species experienced a decline in previous decades but has recovered well in the south west of England. They inhabit streamside and wetland areas and the riparian woodland habitats found within the Plan area are ideal for breeding otter. The management of 14ha of riparian wet woodland (see page 37), where a minimal intervention prescription will be employed will ensure that a rich diversity of open space, scrub and high forest will ensure otter habitat is preserved to support this species.

Raptor - notably hobby (above), goshawk and buzzard are known to roost and hunt within the forest areas. Many of the species choose to rest in high well branched conifer trees and then feed over open ground, making the forests ideal raptor habitat in an otherwise minimally treed landscape.

The management of 10ha of appropriate large or potentially large trees for extended rotations or long retentions will ensure that habitat provision is maintained. This will also benefit species such as flycatchers, long-eared owls and starlings.

Unscheduled Monuments - are found across the Plan area, demonstrating its rich cultural significant. Wilsey Down includes a number of 19th Century quarries, as well as the wartime airfield Davidstow (below) also includes a now of post-Medieval settlements as well as a prehistoric barrow. Halvana includes a number of field boundaries and markers as well as significant network of mines and associated works. Trebartha includes of more modern features including tin mines and trackways. All of these and any other recorded features will be taken in to consideration at the time of felling, restocking and management to protect and enhance their condition.

Nightjar - is a nationally rare bird and the Bodmin forests support a number of churring males. The bird nests in freshly cleared areas, most notably clearfell sites as do pipits, short eared owls, redpoll and thrush. The provision of both permanent and transient open space through rotation clearfelling (76ha in Plan period) and scrubby open space creation will continue to support this important species into the future (as show in the chart below).



Willow tit — is a rare and declining bird which is often found in willow thickets in damp places, such as the edge of lowland peat bogs, marshes, and around gravel pits. The Bodmin plantations, with Wilsey Down in particular, are known sites for Willow tit which is likely due to the good habitat provision and condition there. As a result road sides will continue to be cut on a rotation basis to provide an supply of suitable habitat whilst wetter and more remote rides which are not used for deer control will be allowed to regenerate with willow over time to provide a considerable amount of habitat.

Recreation and Access

Bodmin Forest Plan area experiences a high level of low-key recreational usage. The vast majority of the Plan area is Open Access, this is confirmed by the Countryside Rights of Way Act with the exception of Trebartha which is de facto access due to the nature of the landholding. The use of the Plan area by local individuals as well as numerous visitors and tourists demonstrates the value of the forests to the local community, these features will be maintained in balance with ecological value. The Plan area also absorbs a lot of the recreational pressure which would otherwise be placed on the fragile marshes and moorland.

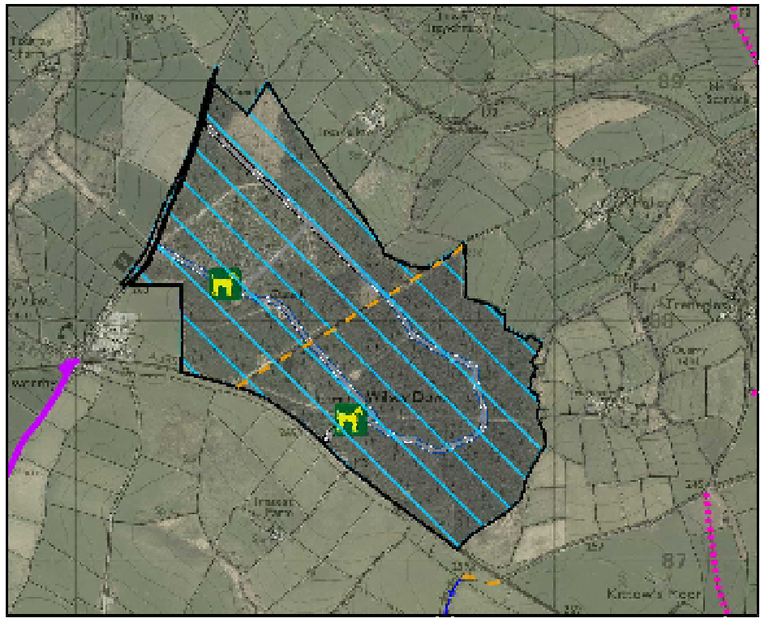
One maintained car park is found at Roughtor and a number of Public Rights of Way in the form of footpaths and bridleways traverse the Plan area and connect with the surrounding landscape. Many of these Rights of Way are designated and/or signposted.

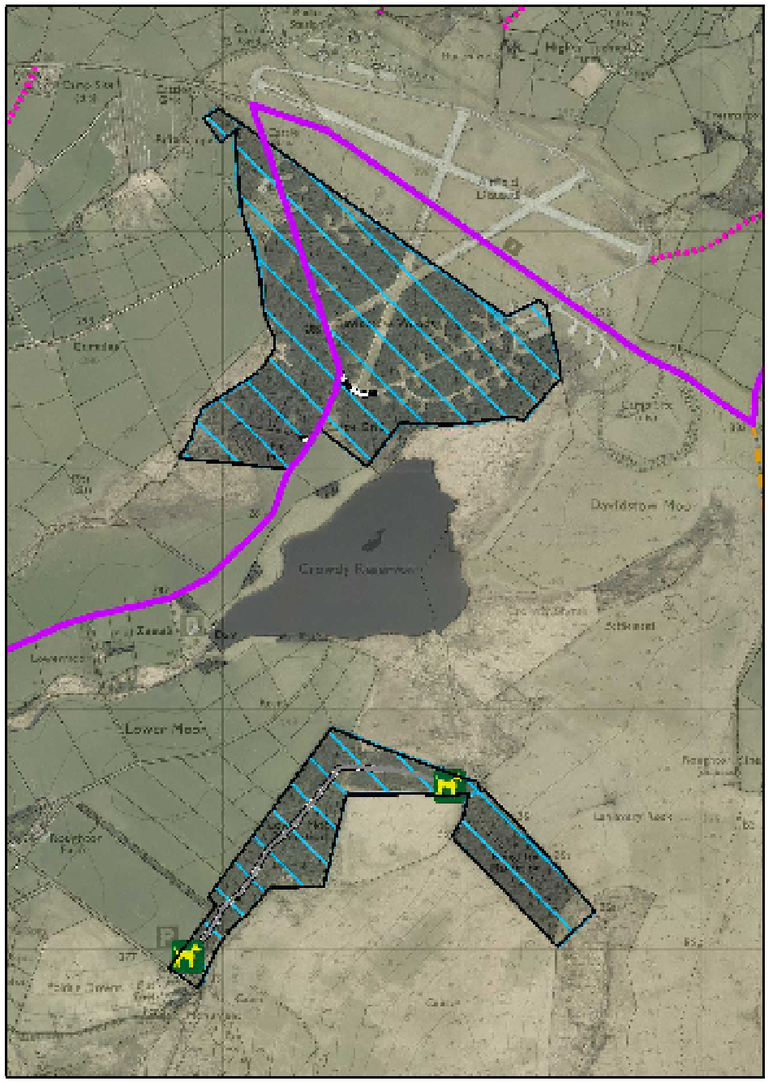
Numerous one-off and annual permissions are granted throughout the Plan area for recreational purposes. These include educational visits, sports and mountain biking events and cultural events.

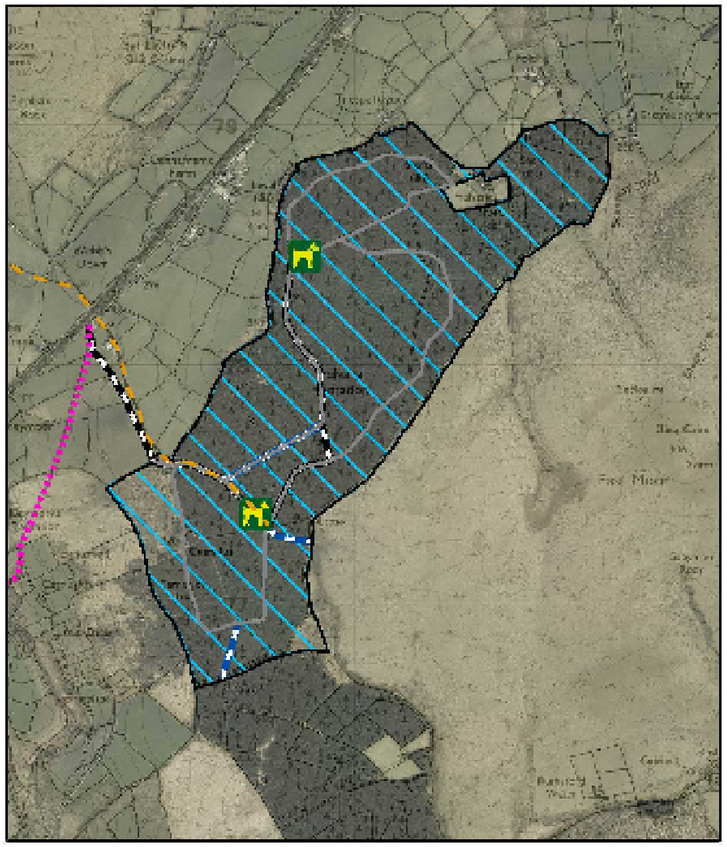
Legend

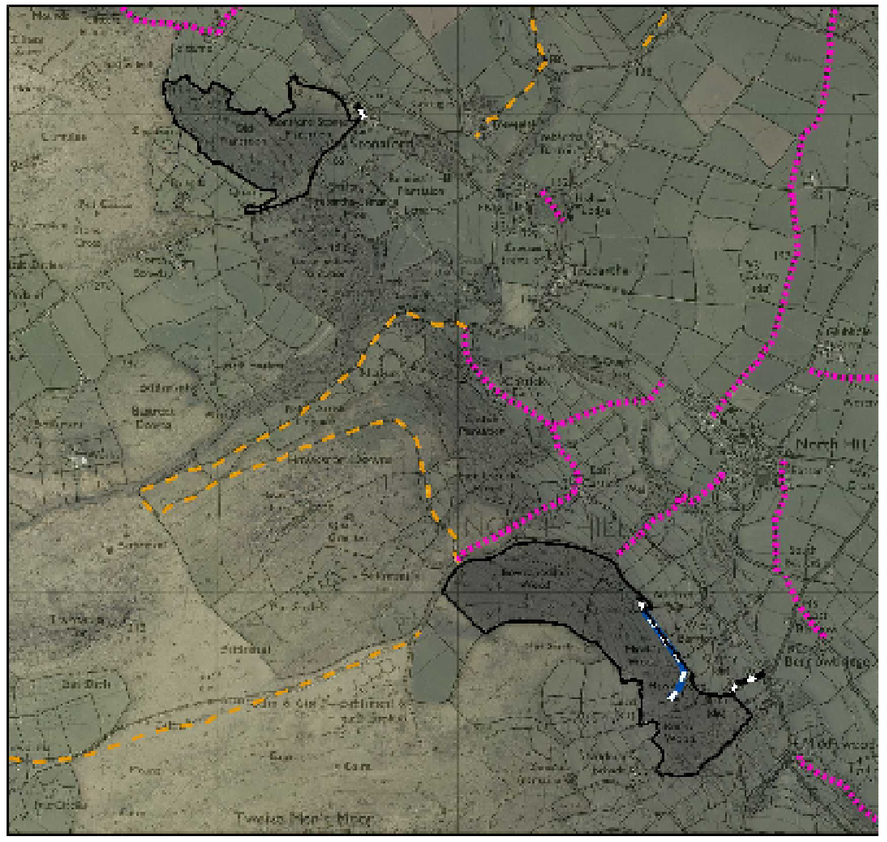
- Open Access
- Footpath
- Bridleway
- Byway
- Multi Use Trail
- Huskies Route
- Class A/B Roads
- Class C Roads

0 0.05 0.1 0.2 0.3 0.4 Miles



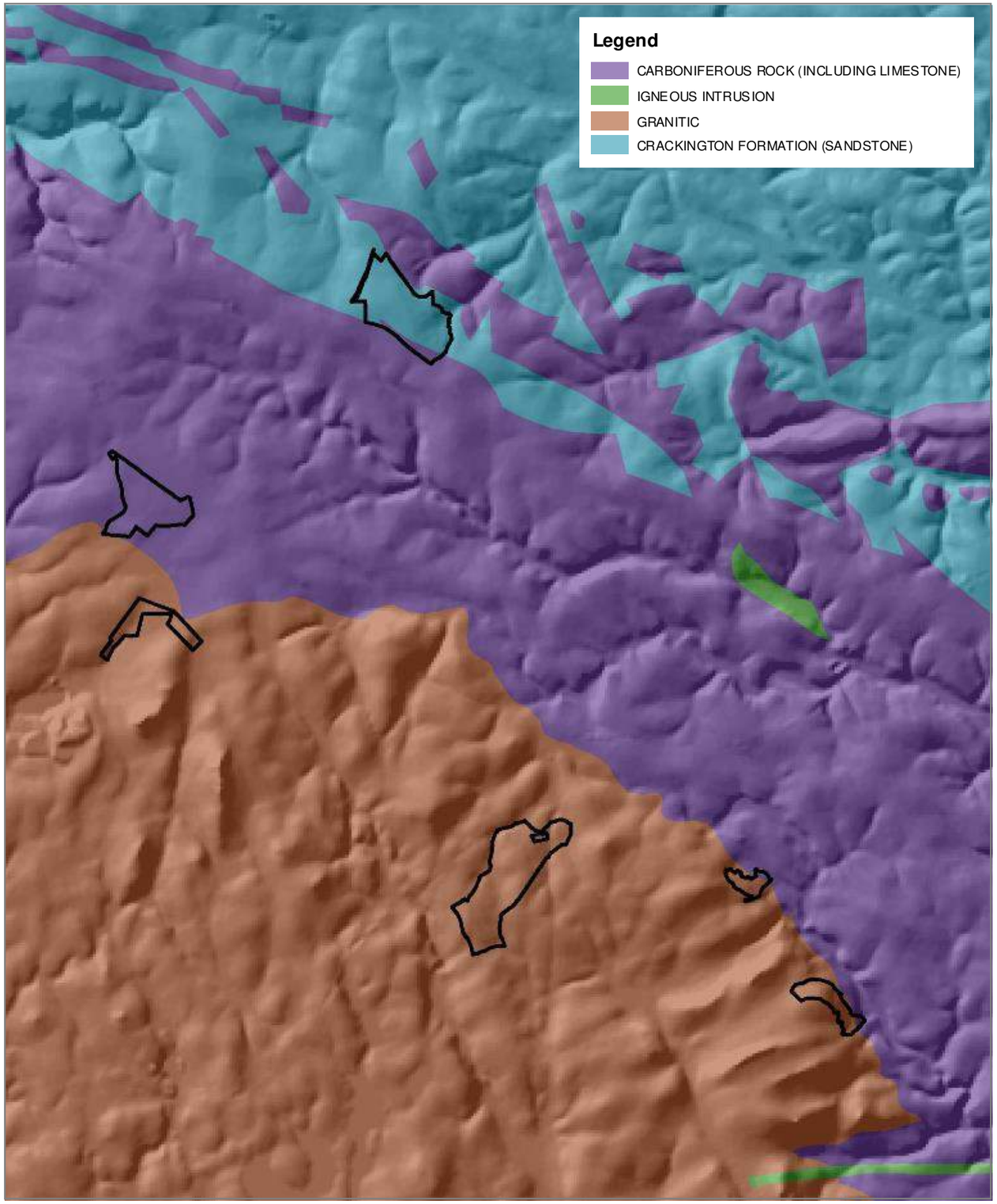




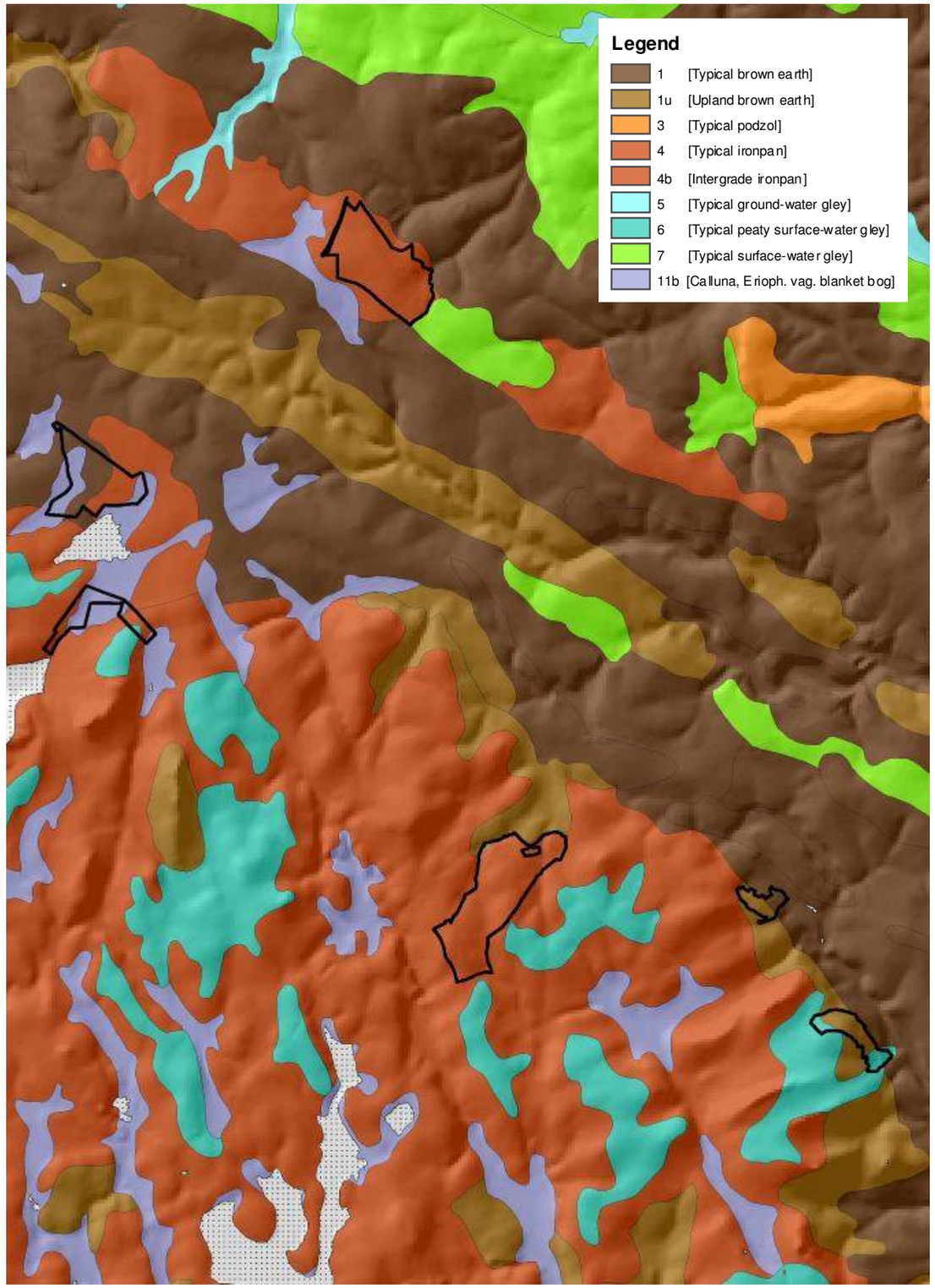


0 0.05 0.1 0.2 0.3 0.4 Miles

APPENDIX 1- Geology



Soils



Landform Analysis

The landscape analysis is used to assess the landform patterns and demonstrates how it is in keeping with the surrounding landscape character.

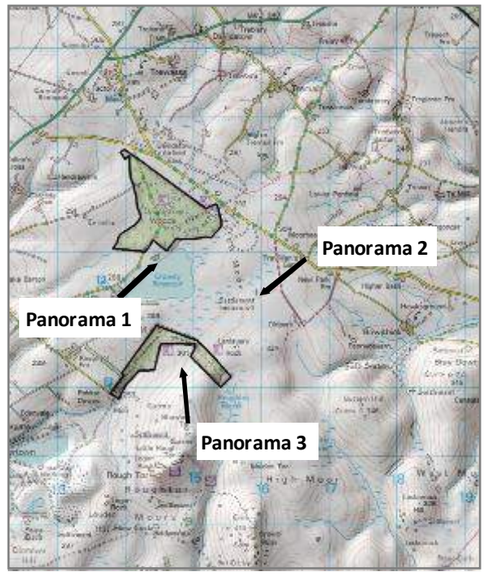
One's eye is naturally drawn up the valleys and down the ridges. These principles will be used to design the shape of future coupes. Following the principles of good landscape design the shape and size of felling and restocking will ensure forests do not detract from the landscape appearance and character.

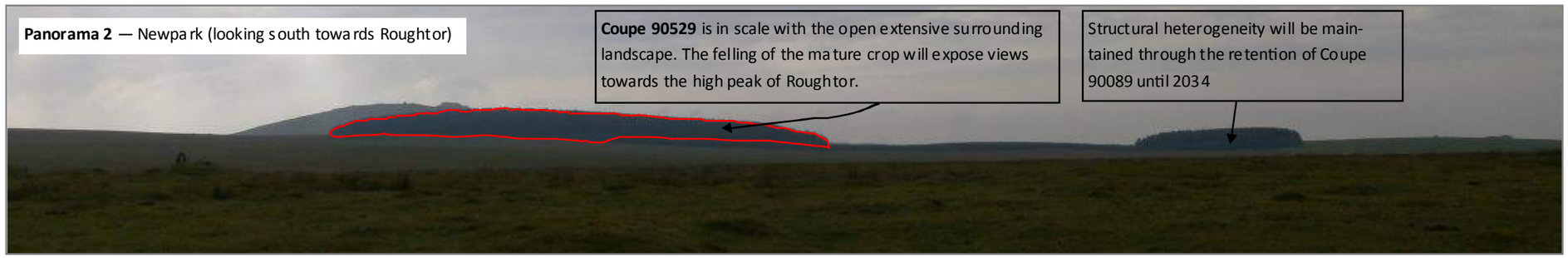
Lines of downward force

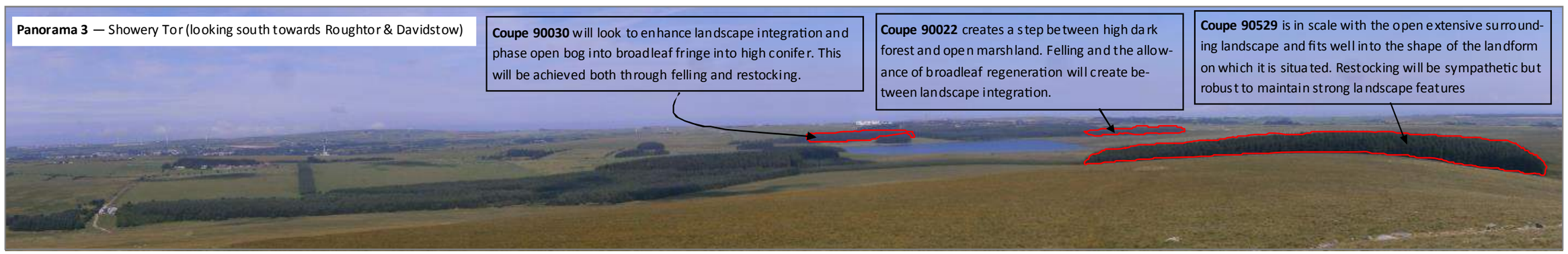
Lines of upward force

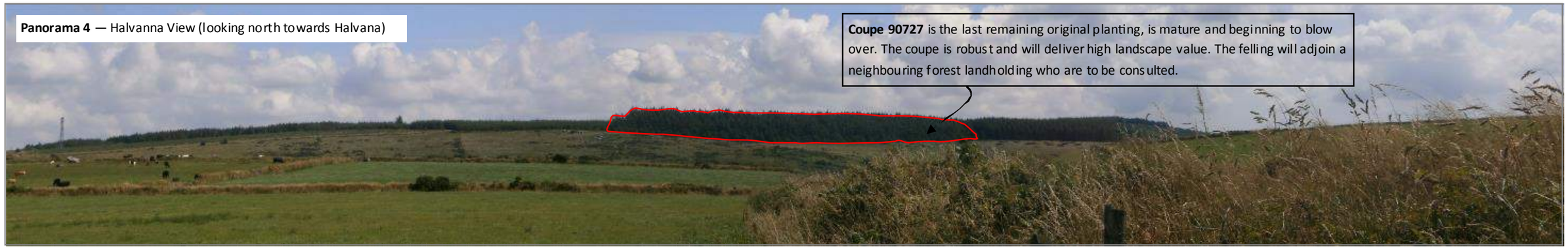
Landscape Analysis

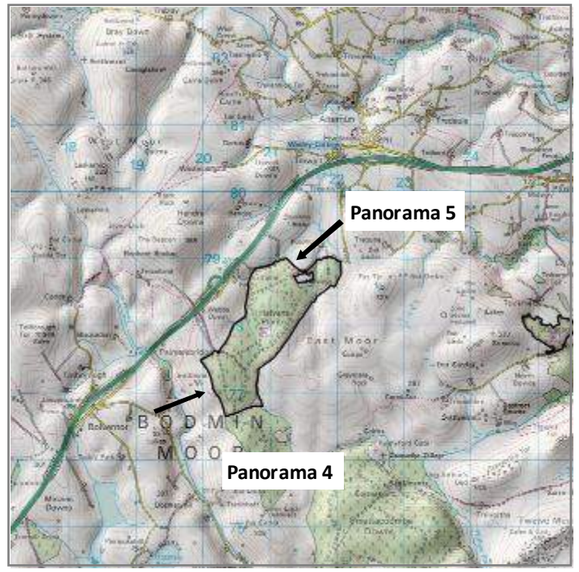
The proposed felling and restocking of coupes has been analysed from a number of significant viewpoints. These viewpoints have been identified because of the amount of foot and vehicle traffic they experience and the influence the forest has at these locations. Given the nature of the landscape around the Plan area, there are minimal settlements from which the Forest Plan area can be seen. The majority landscape analyses have been done along highpoints of these roads.

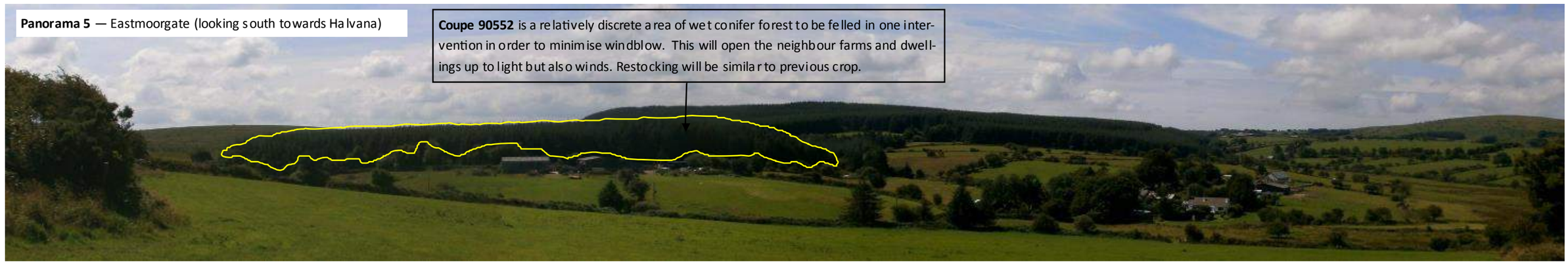







Panorama 4 — Halvanna View (looking north towards Halvana)
Coupe 90727 is the last remaining original planting, is mature and beginning to blow over. The coupe is robust and will deliver high landscape value. The felling will adjoin a neighbouring forest landholding who are to be consulted.


Panorama 5
Panorama 4
BODMIN MOOR


Panorama 5 — Eastmoorgate (looking south towards Halvana)
Coupe 90552 is a relatively discrete area of wet conifer forest to be felled in one intervention in order to minimise windblow. This will open the neighbour farms and dwellings up to light but also winds. Restocking will be similar to previous crop.

Water & Riparian Management

Riparian Management

All watercourses and riverine areas will be management sensitively to protect and enhance water and soil quality in line with best practice. The 'riparian zones' (18ha) identified will be developed to create and maintain areas of up to 50% continuous forest cover through gradual regeneration or enrichment with site appropriate tree species, such as *Alnus, Salix* and *Ulmus* spp. A gradual change to this type of wet woodland habitat at the time of intervention (usually clearfell), will create a environment of dappled shade with good light penetration and aeration as well as buffer the riverine systems from forestry operations.

Clearfells within the area have been designed and phased to minimise surface water runoff and soil erosion ensuring the riverine systems and SSSI are protected and improved into the future. All felling and restocking operations will work within the guidelines set out in UKFS, Forests and Water with the aim of developing further riparian areas at the time of intervention to stimulate native species regeneration.

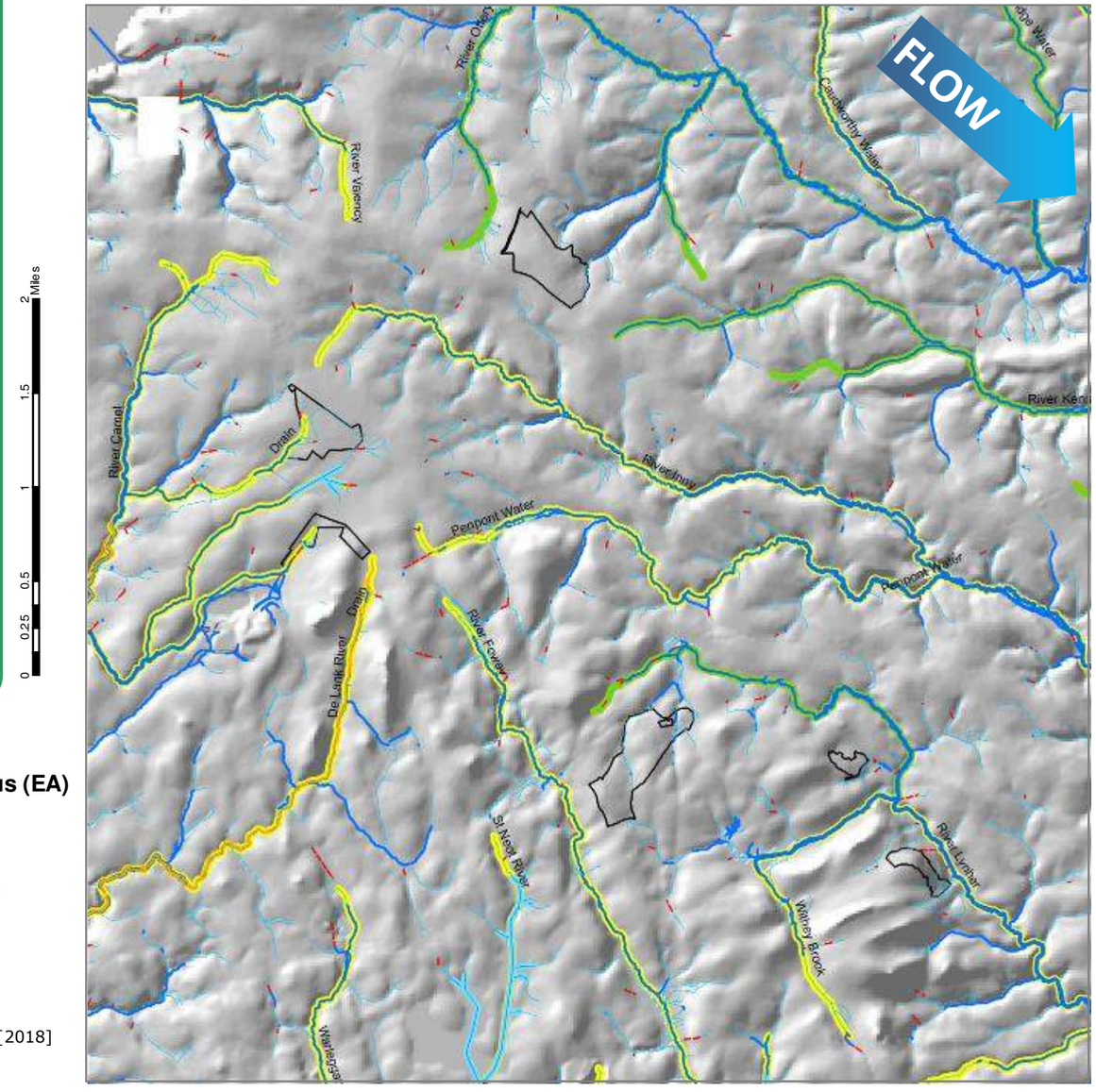
The Bodmin Plan area are a component of flood alleviation for the North Cornwall catchment through soil stabilisation and surface runoff, retaining forest cover and a move towards continuous cover systems together with maintained drains and water storage will ensure this continues to slow down peak flows into the future.

South West Catchment District

Just over 3 million people live in the South West River Basin District. The economy is dominated by the service sector, and each year millions of visitors to the district make a vital contribution to the economy. However, the resulting seasonal fluctuations in population bring challenges for protecting the water environment, especially in coastal areas.

The district has a huge network of internationally, nationally and locally recognised wildlife sites, from the uplands of Dartmoor and Exmoor and outstanding rivers such as the Camel and Hampshire Avon, to the fantastic estuaries and coastline. There are two national parks, and the Jurassic Coast in Devon and Dorset is the only natural world heritage site in England.

The farming and land management sector has a big role in looking after and improving the quality of the rural environment. Agriculture accounts for approximately three quarters of the land area in the South West River Basin District.



Legend

- River Camel SAC
- Primary River
- Secondary River
- Tertiary River (MasterMap single line)
- Lake / Reservoir
- Extended Culvert (greater than 50m)
- Floodzone

Current Status (EA)

- High
- Good
- Moderate
- Bad
- Poor

North Cornwall, Seaton, Looe and Fowey Basin

This catchment is characterised by its spectacular rocky coastline and rural character, ranging from open moorland to intensive horticultural use. Major towns include Bodmin, Newquay, Wadebridge and Bude. Bodmin and Newquay have been identified as potential growth points with Newquay recently receiving new growth point funding.

This area is the focus for much of Cornwall's tourist industry. A number of fishing ports still exist here, but the pleasure boat industry has become more significant in recent years. The River Camel is an ecologically important river designated as a Special Area of Conservation. There is no heavy industry in the catchment, but there is a legacy of historic mining activity.

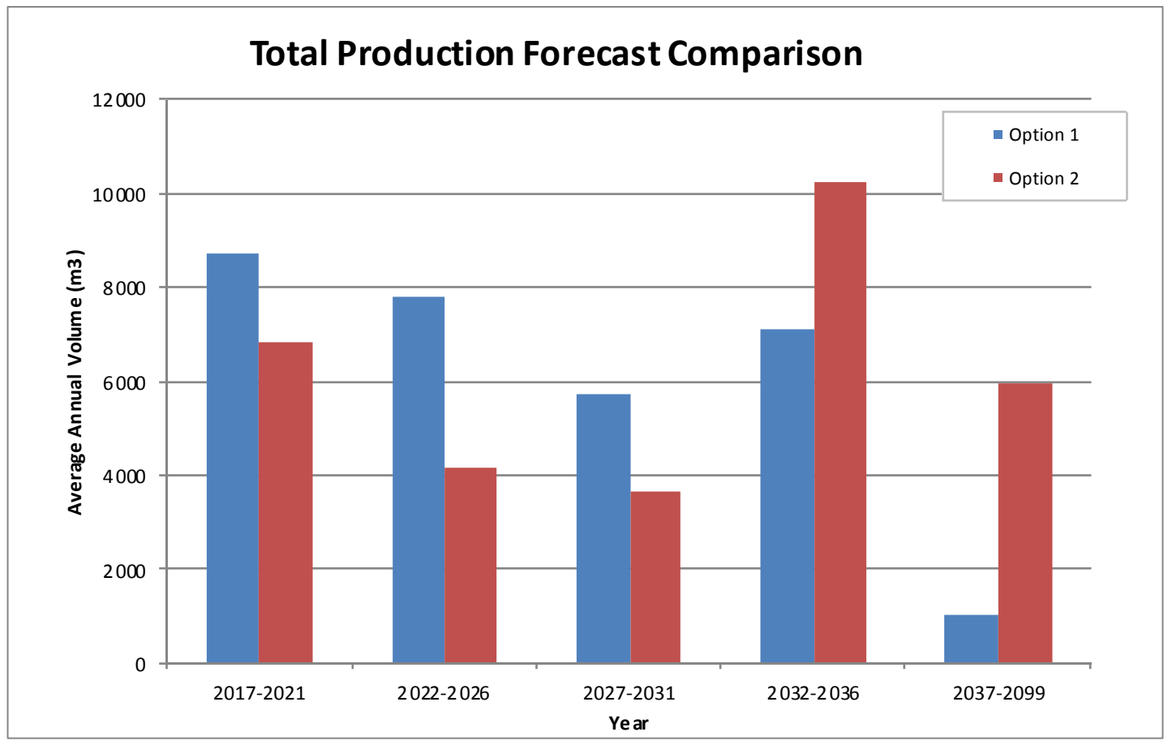
There are 99 river water bodies in the catchment, with a combined length of almost 600 km, and four lakes. Currently, 36 per cent of these waters (219 km or 37 per cent of river length, but none of the lakes) achieve good or better ecological status/potential. Rivers at good status include the upper Fowey and large parts of the River Camel. 58 per cent of surface waters assessed for biology are at good or high biological status now.

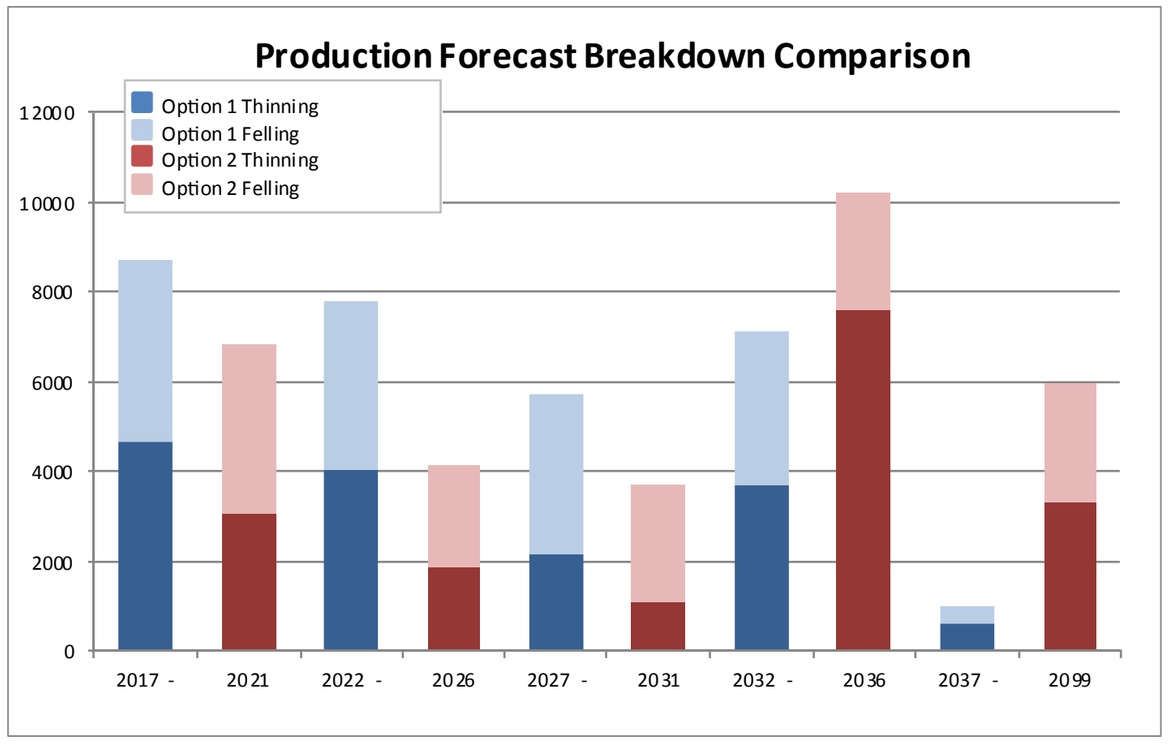
The main reasons for less than good status are, in order, impacted fish communities, physical modifications, and high levels of copper, phosphate and zinc.

By 2015, 16 per cent of surface waters in this catchment will improve for at least one element of good status. Nine river water bodies will improve to good status, including six that currently fail because of impacts on the fish population. These are the River Neet (Middle) and Week St Mary Stream, Jacob Stream, Upper River Amble, Issey Brook (Camel) and the Warleggan River. As a result of these improvements, 44 per cent of surface water bodies will achieve good ecological status by 2015, an increase of 9 per cent.

APPENDIX 2 - Option Testing

Option 1 – Current Forest Plan (Master)	Option 2 – Proposed Forest Plan (Scenario)
The continued production of sustainable and marketable woodland products.	
The Plan delivers a consistent amount of volume in the next twenty years with a significant drop following. This is typical of limited-thin rotation forestry.	The Plan attempts to spread the production over a longer period by extending rotations where possible.
The diversification of woodland species and structure for greater ecological and economic resilience	
The Plan makes little attempt to diversify woodland species composition and structure.	The Plan directly confronts and addresses the issues around establishment and monocultural single structured species reliance.
To protect and enhance areas of Ancient Semi-natural Woodland and restore areas of PAWs in line with 'Keepers of Time'.	
Minimal acknowledgement is made of the need or process to restore ancient woodland within Trebartha. Restoration would be achieved through unsuitable clear felling and restocking through natural regeneration over a short period.	A clear strategy for PAWS restoration through thinning together with native species enhancement will ensure proactive restoration of ancient woodland will occur over time.
To conserve, maintain and enhance cultural and heritage assets.	
The makes minimal reference to location and importance of cultural landscape and heritage assets.	The Plan looks to integrate both scheduled and unscheduled heritage assets as well as considering the cultural significance of the landscape and forests role within this.
Deliver well-designed forests that both protect and enhance the internal and external landscape in keeping with the local landscape character	
The proposals make appropriate acknowledgement but do not demonstrate provision to deliver high quality, well design forests both internally and externally.	The majority of coupes have been retained. Where appropriate these have been altered in an attempt to extend rotations and address wind issues. This has then been modelled to ensure proposals contribute to a high value landscape.
Protect and enhance woodland and open habitats and their associated species.	
The Plan makes appropriate provision for future open space deliver at the time of restocking, particularly along riparian areas and ride sides within Halvana.	The proposals go beyond the original Plan and seizes upon opportunities to buffer and enhance areas, and particularly neighbouring SSSIs and SACs.
The provision and maintenance of recreation facilities.	
The Plan acknowledges the role of informal recreation and public rights of way.	The Plan acknowledges the role of informal recreation and public rights of way as well as the role tourism has in the wider area.





Fell 2018 - 2021

Fell 2022 - 2026

Fell 2027 - 2028

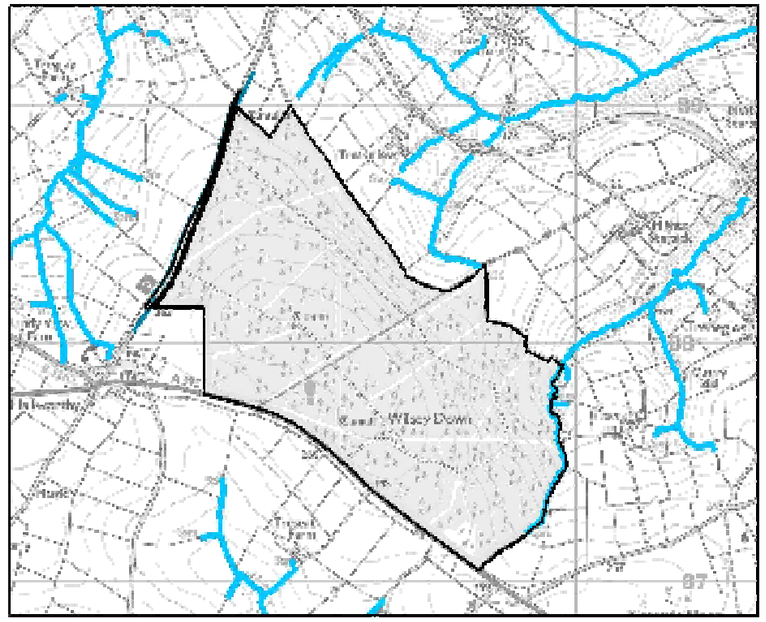
Coupe Prescriptions

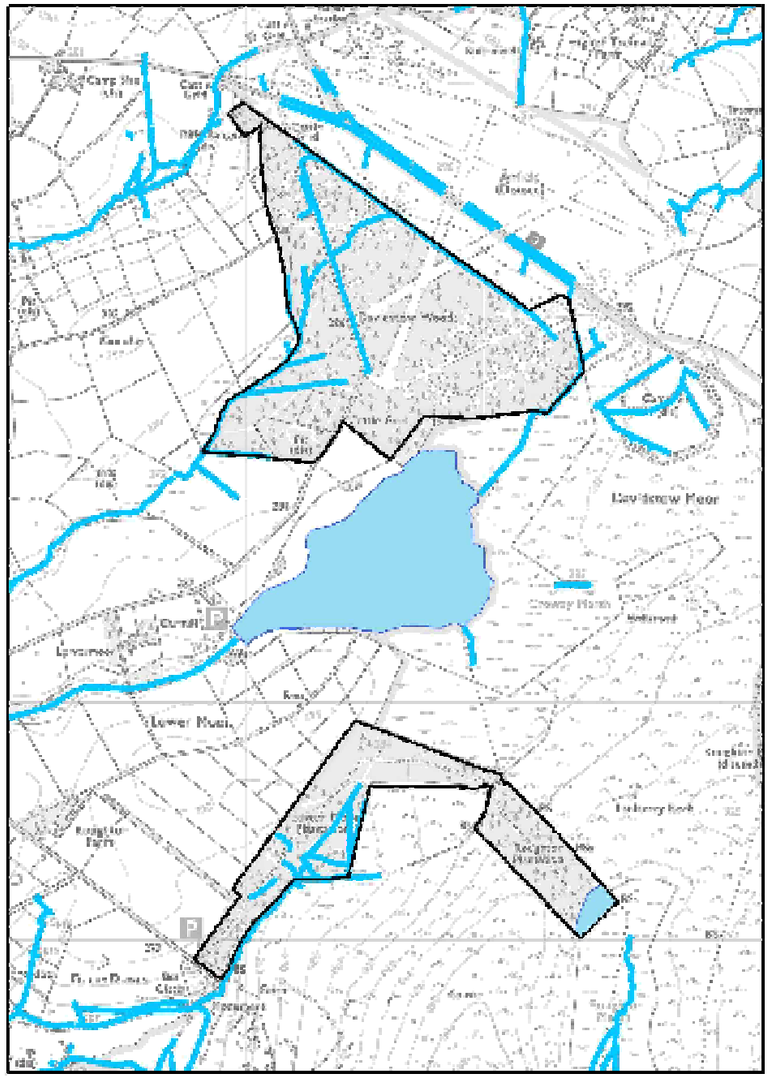
Bodmin

	Coupe	Area (ha)	Existing Crop	Rationale/Prescription	Restock	Area (ha)	Restock Proportion	Rationale/Prescription
Wilsey	**90411**	1.08	p.2001 JL p.95 SS	Removal of small area surrounding scheduled monument will be to enhance the setting both now and as the trees grow larger and more imposing.	**90411a**	1.08	100% Open	Area will be maintained as open, same as surround monument management as outlined in the Scheduled Monument Plan, Appendix 5.
Davidstow	**90022**	9.17	p.86 SS	Area of semi-mature conifer is adjacent to Crowdy Marsh SAC and much is situated on deep peat. Drain blocking within neighbouring land could threaten the long term viability of the crop. Felling to hard, remnant taxiway is appropriate given windthrow concern.	**90022a**	9.17	50% N. Broadleaf 50% Open	Mire Restoration As part of felling operation opportunities to block drains should be taken to restore 'natural hydrology' as best as possible. With this in place the site will be allowed to re-assert with broadleaf scrub and marshy open areas. No prescriptions will be applied apart from conifer regeneration will be removed.
	90122	3.43	p.78 SS	Site is considerably windblown and within discrete area. Clearance and felling to hard, remnant taxiway is appropriate.	**90122a**	3.43	100% Ev. Conifer	Site is wet and relatively rich with gleyed brown earth, complicated by the material left from the time the site was an airfield. Site is exposed, with a high public road frontage so should be robust but amenity minded. Consider Sitka spruce, Scots pine, Macedonian pine or alder.
	90030	9.34	p.53-65 SS p.61 LP p.94 NS	Site is very wet to boggy with this hampering yield in places. Removal of mature crop and prospective civic Christmas trees will ensure greatest economic value is achieved. As much of crop as possible should be retrieved as is safe to do so and leaving areas of considerable windblow/breakdown which is feeding the pet bog conditions.	**90030**	9.34	80% Ev. conifer 10% N. broadleaf 10% Open	Site is very wet to boggy in places with areas of deep peat found in the west of the coupe. Restocking should be sympathetic to the hydrology and soil condition, with robust and productively minded planting where appropriate. Consider Sitka spruce, Swamp cypress or Scots pine. Where planting does not occur most notably in the west of the coupe, areas should be allowed to re-assert with broadleaf scrub and open bog.
	90017	4.76	p.52 JL p.52 SS	Crop has reached economic maturity and is over due for felling. The coupe is wind stable and therefore not necessarily a priority but should be completed to continue to ensure that the productive land is managed effectively and efficiently.	**90017a**	4.76	80% Ev. Conifer 20% Open	Site is moist and relatively rich with gleyed brown earth, complicated by the material left from the time the site was an airfield. Site is exposed, with a high public road frontage so should be robust but amenity minded with some allowance for open space and graded edge. Consider Sitka spruce, Scots pine or Noble fir.
	90767	6.46	p.51 SS	Site is very wet to boggy with this cause windblow in places. Removal of mature crop will ensure economic value is achieved. As much of crop as possible should be retrieved as is safe to do so and leaving areas of considerable windblow/breakdown which is feeding the pet bog conditions.	**90767a**	6.46	80% Ev. Conifer 10% N. Broadleaf 10% Open	Site is very wet to boggy in places with deep peat found throughout the coupe. Restocking should be sympathetic to the hydrology and soil condition, with robust and productively minded planting where appropriate. Consider Sitka spruce, Swamp cypress or Scots pine. Where planting does not occur most notably in the south-west of the coupe, areas should be allowed to re-assert with broadleaf scrub and open bog.
Roughtor	**90529**	11.13	p.62 SS	Site is mature and exposed, and therefore at risk to windthrow. Coupe is overdue, unsuitable for further thinning and felling is robust and fits will into the landscape.	**90529a**	8.37	100% Ev. Conifer	Site is exposed at high evelations with soils moist and relatively rich as gleyed brown earth. Restocking should be sympathetic to the hydrology and soil condition (hence 90529b), with robust and productively minded planting where appropriate. Consider Sitka spruce or Scots pine.
					90529b	2.76	100% N. Broadleaf	Site is very wet to boggy in places with deep peat found throughout this part of the coupe. Re-asserting broadleaf scrub will be allowed to regenerate to complement the soil and hydrology as well as soften the geometric landscape impact.
Halvana	**90272**	5.91	p.41 SS	Stand is mature and last remaining original planting crop. It is showing signs of windthrow, unsuitable for further thinning and felling will ensure greatest economic value is achieved. Neighbouring crop to the south is outside landholding, and is not to be felled within next 10 years, Contact will be made with landowner.	**90272a**	5.91	100% Ev. Conifer	Site is poor and relatively well drained, despite ironpan soils, but mildly exposed to the south. Productive planting of conifers will be pursued given previous yields realised on the site. Consider utilising any remnant Sitka spruce natural regeneration and enrich further with planted Sitka spruce and Coast redwood.
	90425	8.03	p.83-85 SS	Area of semi-mature conifer is adjacent to East Moor. Removal of the crop is slightly pre-emptive to start the coupe sequence programme and inject transient open habitat provision.	**90425a**	8.03	80% Ev. Conifer 20% Open	Site is moist and poor with loamy ironpan soils. Site is exposed to the east, with a moorland frontage so should be robust but amenity minded with some allowance for open space and graded edge. Consider Sitka spruce, Serbian spruce, Scots pine or Noble fir.
	90552	11.66	p.82-94 SS	Eastmoorgate is relatively popular standalone plantation which is showing limited signs of yield. Felling could be limited to n/s ride through the middle, however windthrow risk and landscape implications mean that the whole coupe is appropriate.	**90552a**	11.66	100% Ev. Conifer	Site is wet and very poor ironpan soils. Site is exposed on three sides, with a moorland and improved grassland frontages so should be robust but amenity minded. Consider Sitka spruce, Oriental spruce or Scots pine .
Stonaford	**90180**	6.56	p.64 DF	Site is showing signs of windblow following recent SPHN felling. Coupe and felling approval is pre-emptive of further windthrow so may not be carried out.	**90180a**	6.56	100% Ev. Conifer	Site is relatively rich and well drained loamy brown earths. The site is sheltered despite recent felling. Planting should be productive conifer to complement the surrounding crops and landscape. Consider Douglas fir, western red cedar or Wellingtonia.
North Hill	**90928**	2.15	p.63 DF p.68 SS	Crop is experiencing significant windblow and poses a risk to the integrity of the crop and the road side edge. Clearfelling to a suitable boundary is to be undertaken. If windblow continues to occur this will be managed in line with CSM6 Tolerance Table.	**90928**	2.15	100% N. Broadleaf	Site is relatively rich and well drained loamy brown earths given its location at the bottom of the slope. Site is an ancient woodland and therefore must be restocked with native species. Site will naturally regenerate sufficiently and therefore planting should be used to enrich and build resilience. Consider Pedunculate oak in clusters.

NB. Whilst 'Restock Proportion' is often prescribed at 100% Evergreen Conifer the use of suitable broadleaves to build in resilience and utilise site conditions is anticipated and in places is proposed.

Utilities

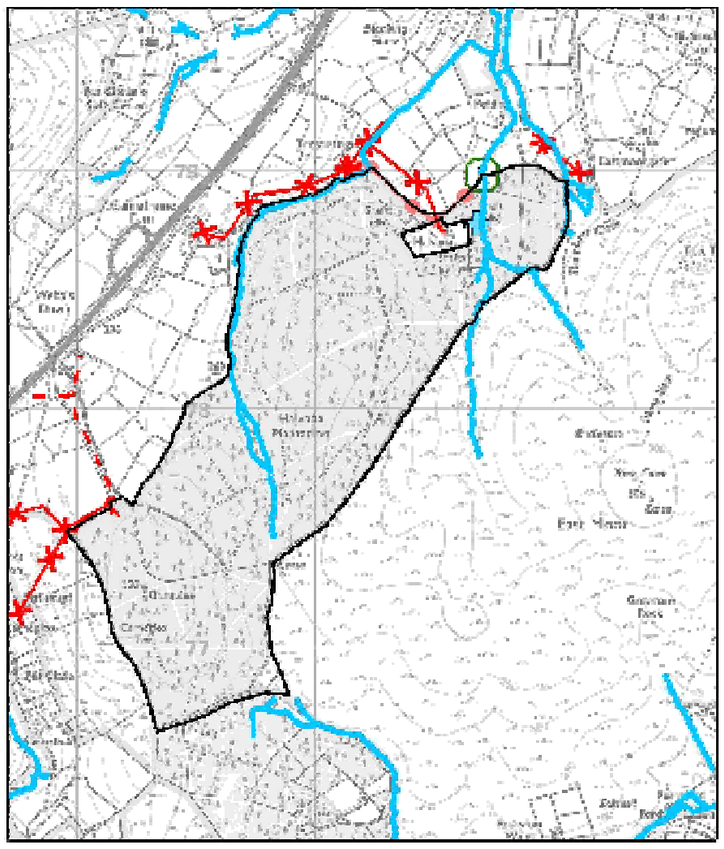


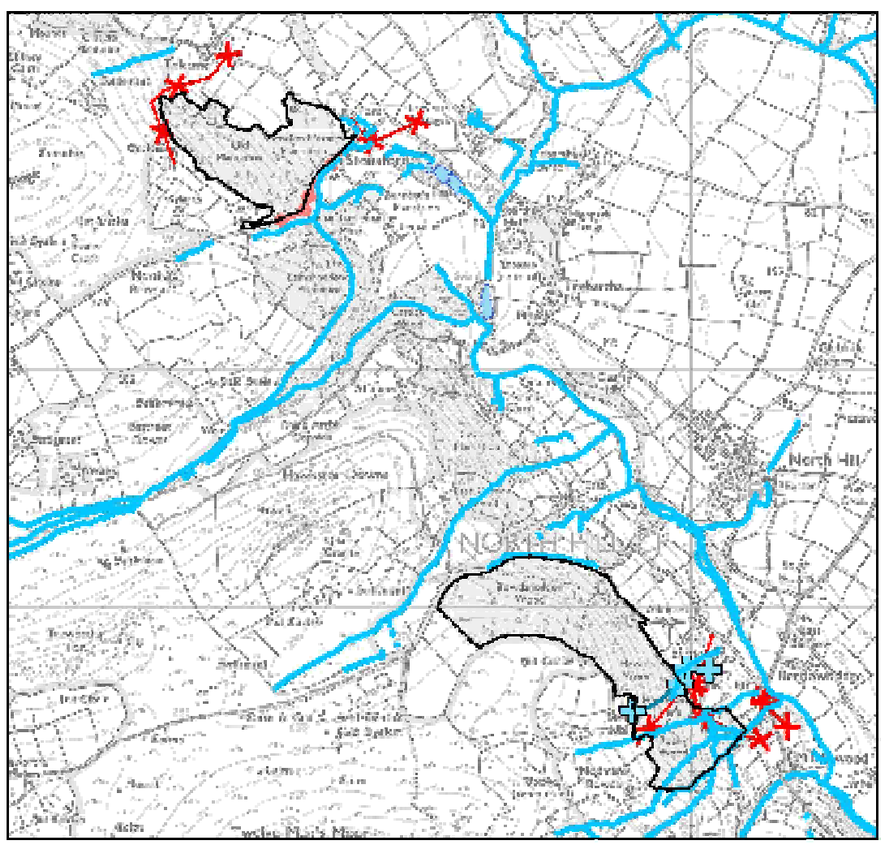


Legend

- Reservoirs
- Quarries
- Dams
- Bridges
- Drain
- Water courses
- Water supply point
- Water pipeline
- Open water
- Powerline Overhead
- Powerline Underground
- Gas Pipeline
- Telephone Line Underground
- Telephone Line Overhead
- Class A/B Roads
- Class C Roads
- Legal access/Unclassified
- Classification unassigned
- Loading/transfer point

0 0.05 0.1 0.2 0.3 0.4
Miles

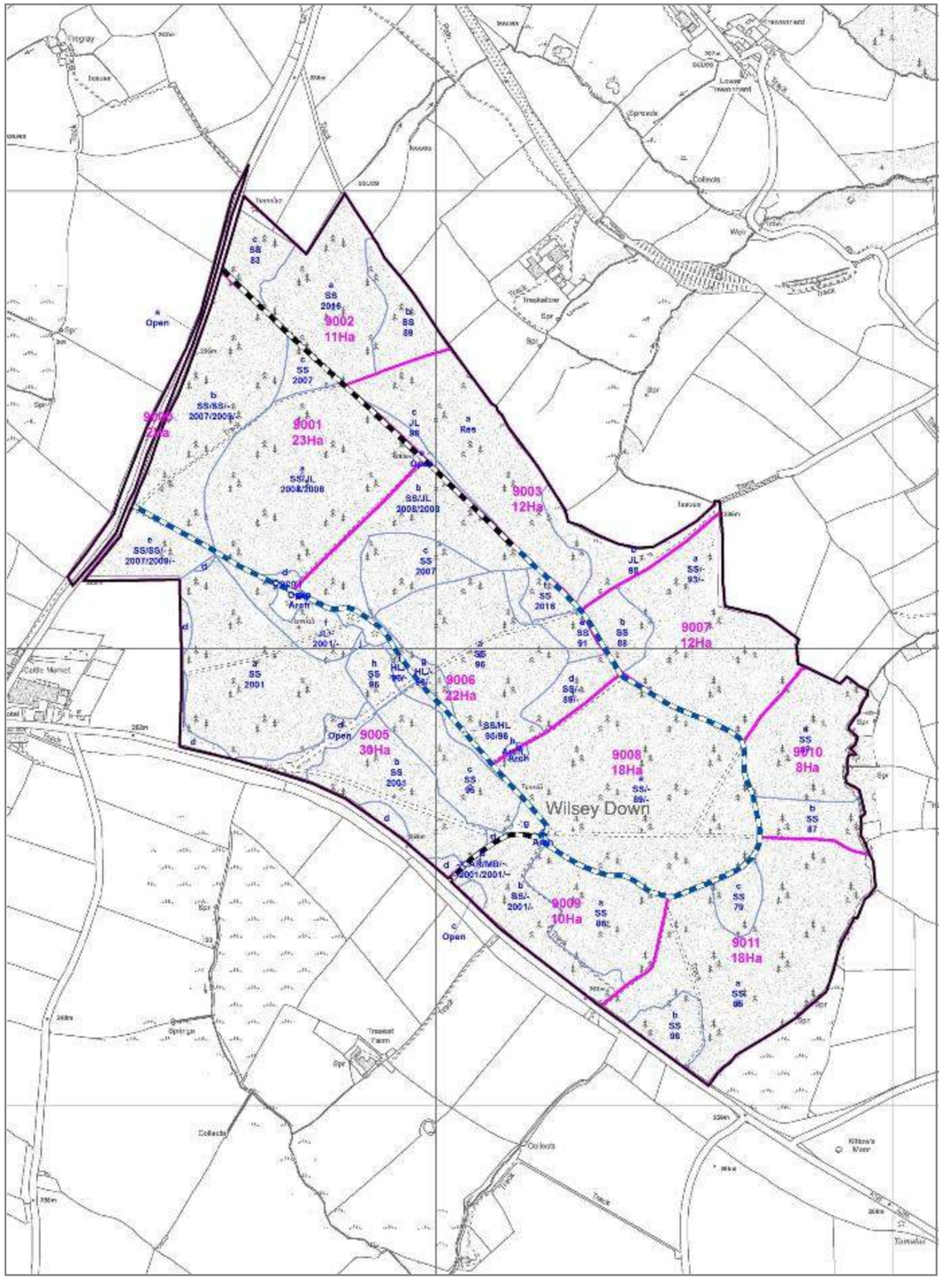


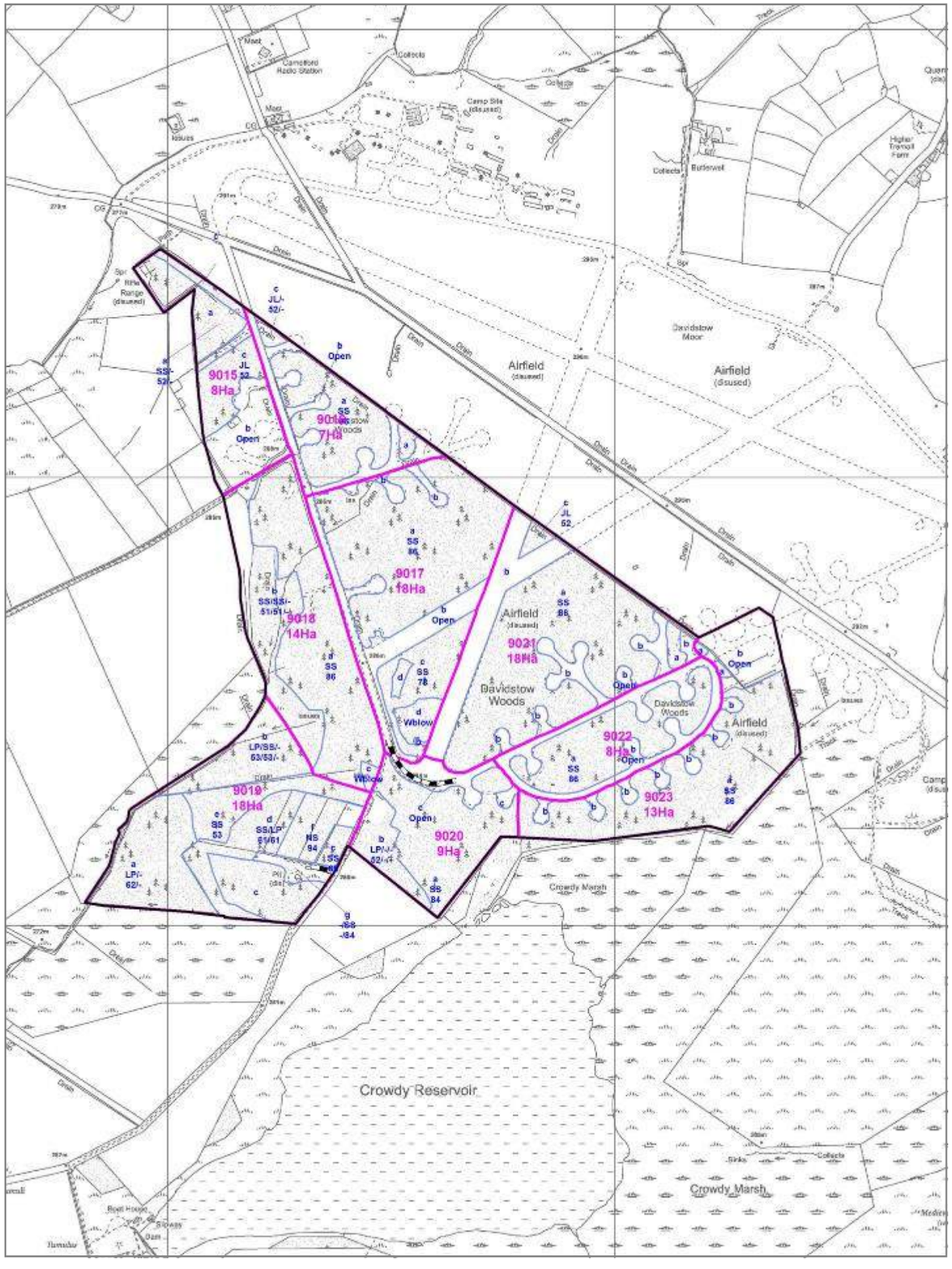


Stock Data
2017
Davidstow

0 0.05 0.1 0.2 0.3 0.4 Miles

Wilsey Down





Stock Data
2017
Halvana

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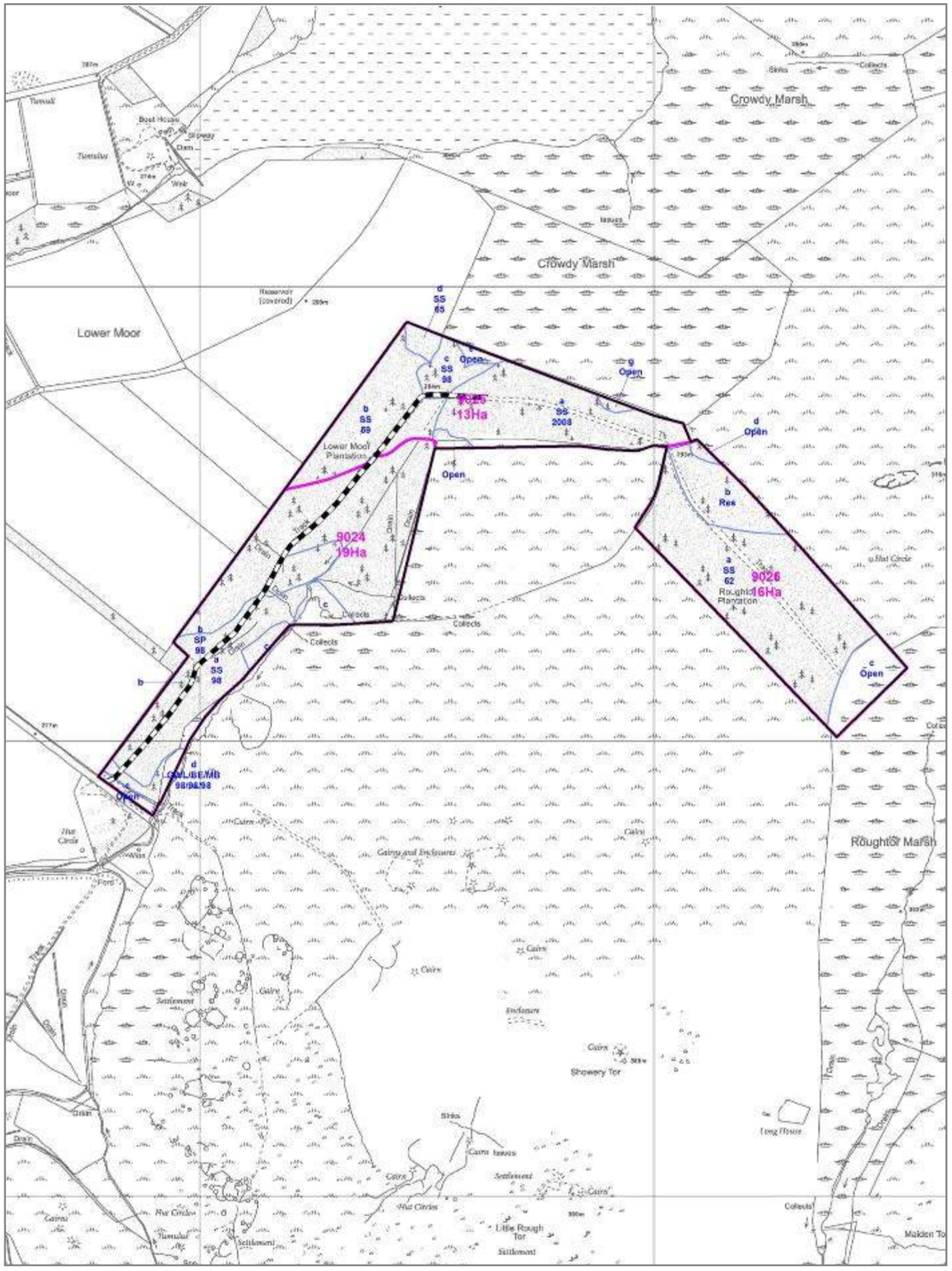
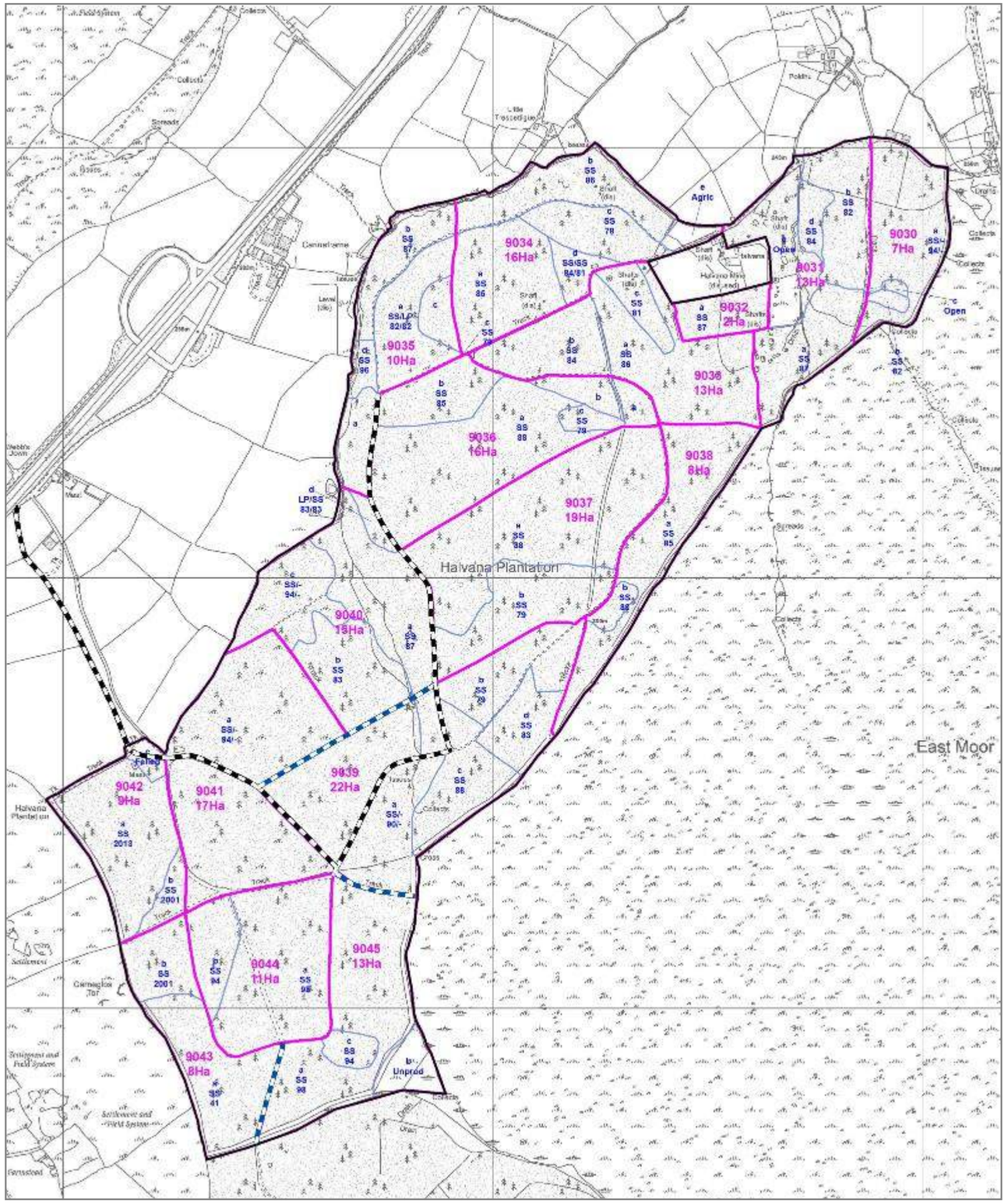
Roughtor

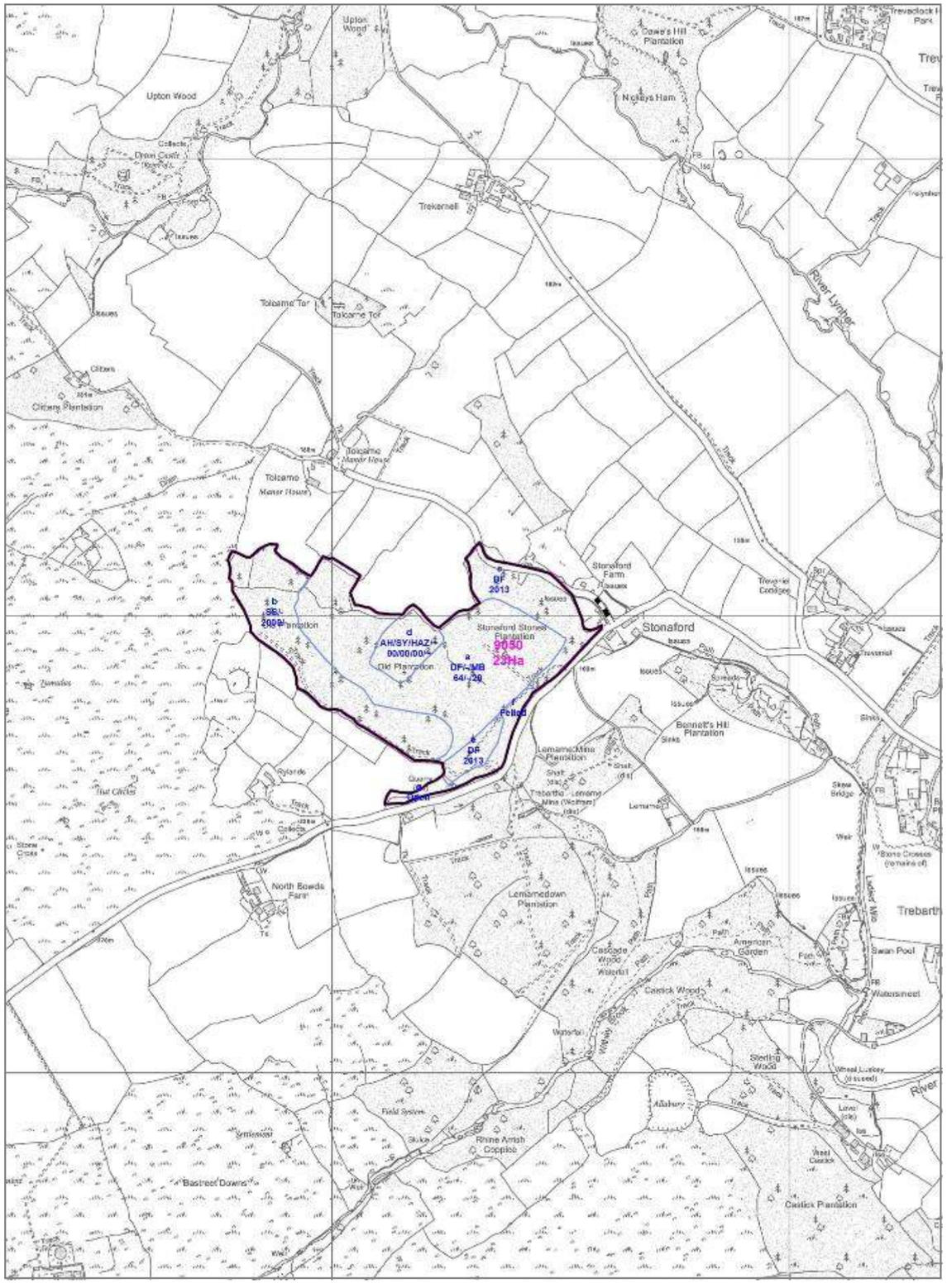


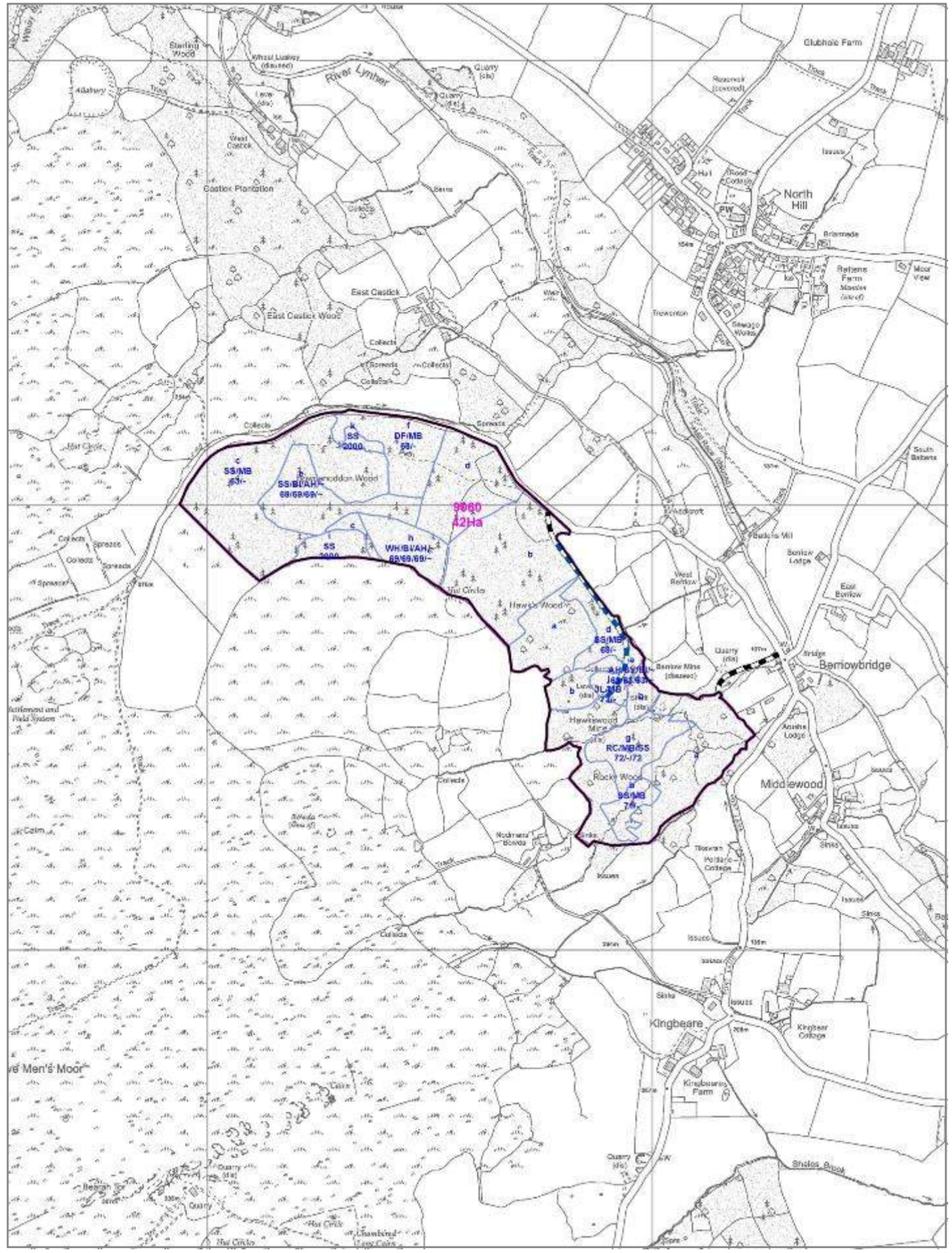


Stock Data
2017
North Hill

0 0.05 0.1 0.2 0.3 0.4 Miles

Stonaford





Pests & Diseases

Name: Dothistroma Needle Blight (DBN)

First appearance: mid 1990s

Attacks: Pine species

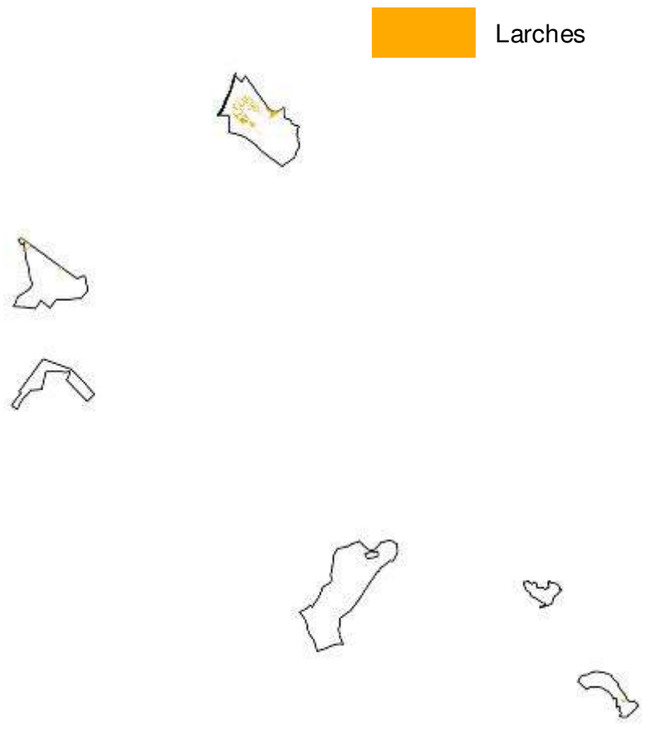
Often referred to as Red Band Needle Blight (RBN) and can reduce growth rates by between 70 and 90%. Effects of RBN are managed through thinning the wood more heavily than you would normally to introduce higher levels of air flow through the remaining crop. However, only Davidstow contains a relatively small component and therefore its impact has been fairly limited.

Name: *Phytophthora ramorum* (PR)

First appearance: 2009

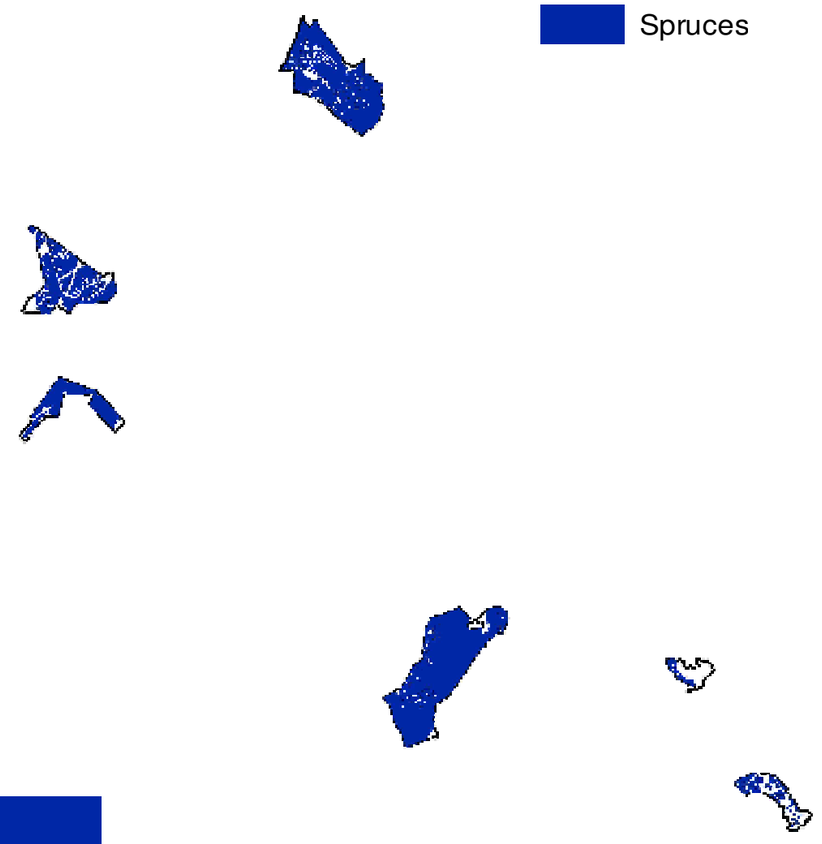
Attacks: Larches

P. ramorum was first found in the UK in 2002 and until 2009 in the woodland environment had largely been associated with rhododendron species acting as a host from which spores are produced. In August 2009 P. ramorum was found on a small number of dead and dying Japanese Larch in South West England, causing particular concern since some affected trees were not close to infected rhododendron and showing a significant change in the dynamics of the disease than experienced previously. Following this testing in Devon and west Somerset confirmed the presence of PR in mature Japanese larch as well as species in its under-storey, including sweet chestnut, beech, birch, oak, Douglas fir and Western hemlock. On some sites there is little or no rhododendron present. It is now known that Japanese larch can produce very high quantities of disease-carrying spores when actively growing in spring and summer, at much higher levels than those produced by rhododendron. These can be spread significant distances in moist air. PR is a notifiable disease dealt with by felling the infected area under a statutory plant health notice (SPHN) issued through FERA and the Forestry Commission.



Dendochtronus micans

Also known as great spruce bark beetle, this pest is found throughout continental Europe and increasingly in west England, Wales and southern Scotland. It damages spruce trees by tunnelling into the bark of living trees to lay its eggs under the bark. The spread of *D micans* across west England has been unrelenting having developed a stronghold in north Devon and continues to move ever south and east wards, usually assisted by the wind. The beetle is particularly drawn to the smell of resin and thus fresh cut or broken timber. It prefers moist, warm and therefore unthinned stands of all types of spruce, but particularly Norway and Oriental although its ultimate destructive capability on Sitka is greater.



Factor	Increased risk of attack
Location	• Within 7km of infested stands • Close to public roads and forest roads leading from infested areas
Tree/stand age	• Mature and veteran trees
Climate	• Conditions giving rise to tree stress: Low rainfall, low soil moisture, exceptionally dry (or wet summers)
Windthrow	• High incidence of wind-related problems such as snapped top, windthrown trees and root disturbance.
Site	• Poorly suite to spruce growth • Previous management • Extraction damage, brashed trees • Soil compaction • Climber damage
Tree growth	• Poor growth. Malformed trees with multiple forks and other growth irregularities

The spread of *D micans* can be controlled by the release of *Rhizophagus grandis,* a natural predator in its native range.

The Plan area is at significant risk of infection from *Dendochtronus micans* not least because of the high proportion of spruce. Therefore steps need to be taken to diversify these crops where site conditions allow.

Minimising stress of the spruce through good planting and species choice as well as regular thinning can limit the susceptibility of the spread.

APPENDIX 3

Glossary

Term	Abbreviation	Description
Ancient Semi-Natural Woodland	ASNW	An ancient woodland site, where trees and other plant species appear to of established naturally rather than having been planted. Predominantly these sites will contain 80% or over of site native species or species native to the surrounding area.
Alternatives to Clearfell	ATC	Alternative to Clearfell is similar to CCF and refers to management systems where stands are regenerated without clearfelling.
Ancient Woodland Site	AWS	A site that has technically been wooded since 1600AD and is unlikely to have been converted to farmland in the last few centuries.
Continuous Cover Forestry	CCF	Continuous Cover Forestry is an approach to forest management that enables an owner of woodland to manage the woodland without the need for clearfelling. This enables tree cover to be maintained, usually with one or more levels and can be applied to both conifer or broadleaf stands. With Conifer it is possible to regenerate the crop a lot faster than in broadleaf crops, where the canopy is generally removed a lot slower and over a much longer time span. A decision to use CCF must be driven by management objectives and will have long-term vision often aimed at creating a more diverse forest, both structurally and in terms of species composition. There are no standard prescriptions meaning CCF is very flexible in ensuring opportunities can be taken advantage of as they arise. This development of a more diverse forest is a sensible way to reduce the risks posed by future changes in the climate and biotic threats.
Clearfell	C/F or CF	To cut and remove all trees from a certain area of woodland.
Crop		A stand of trees. Often associated with stands completely or partially managed for its timber. Just as farmers manage crops so does forestry the only difference is a farmers' rotation is shorter and often realised in 1 year. Trees are a much longer term crop with rotations varying from 6 years to 400 years. (also see definition for rotation)
Enrichment planting		Planting different species within areas of regen that helps diversify the range of species in a wood and in doing so can make it more resilient to future climate change and future threats from disease. Enrichment may be desirable in areas where success of regeneration is uneven, patchy or where a regen crop is limited by the number of species present.
Group felling / group planting		This is where small areas of woodland are felled hence the name "group felling" and then either allowed to develop through the use of nat-regen or in this case planted hence "group planting". These techniques can help to develop structure* within a wood over a given length of time and is often used in conjunction with continuous cover. *Either in terms of age or number of tree species present, since shelter and shade are provided by the remaining upper storey one can consider a larger number of tree species when deciding what to plant.
Hectare	Ha	Unit of area equating to 2.47 acres.
Native (and honorary native)		The trees making up the woodland are part of England's natural, or naturalised flora. Determined by whether the trees colonised Britain without assistance from humans since the last ice age (or in the case of 'honorary natives' were brought here by people but have naturalised in historic times); and whether they would naturally be found in this part of England.
Natural Regeneration	Regen or nat-regen	Trees growing on a site as a result of natural seed fall, and can be used as a management process and can allow cleared areas of woodland to germinate, grow and develop naturally. This process can happen anywhere and woods can be managed to encourage nat-regen although there is no guarantee of success. In these instances, or if nat-regen is unlikely for a variety of reasons, one can use enrichment planting or group planting to achieve the same affect. The process usually relies on an overstorey of "parent trees" being present or on parent trees being close by to provide the seed. These parent trees will usually of been thinned and managed with natural regeneration in mind. Existing areas of nat-regen are then usually developed through carefully thinning the surrounding woodland over a number of years, to give more light and space to ensure the young trees can establish themselves into larger trees eventually allowing them to be incorporated ('recruited') into the main crop for the next rotation at some point in the future. Usually done in small groups or in strips this system can allow a varied woodland structure to develop over time. Protection from competing plant species and mammal browsing might be required in the early stages by fencing or using tree shelters.

Rotation		Generally a commercial term used to describe the length of time an area of trees is growing for, from the time of planting to the time of felling. For broadleaves a rotation is generally a lot longer than that of conifer species* and can broadly speaking be anywhere between 80 years to 3-400 years, as opposed to conifer crops whose rotation is generally shorter but can vary from 20-25 years to 120 years plus. *The exception being that of coppice where rotation length can vary from 5 or 6 years up to 30 years plus depending on management objectives. "First rotation" would refer to an area of wood planted on open ground not previously wooded. And so "second rotation" is one where woodland has been cleared and replanted.
Shelterwood		A management system that is applicable to conifer or broadleaf, where tree canopy is maintained at one or more levels without the need to clear-fell the whole site. Felling can occur, but generally in small "groups" whose size shape and spatial distribution will vary depending on site conditions. The "groups" are then either: allowed to develop and establish by the use of natural regeneration, are planted or are established using a mixture of both techniques. This known as a "group shelterwood system" A variation on this is "Single tree selection". This variation removes individual trees of all size classes more or less uniformly throughout the stand to maintain an uneven-aged stand and achieve other stand structural objectives. While it is easier to apply such a system to a stand that is naturally close to the uneven-aged condition, single tree selection systems can be prescribed for even-aged stands, although numerous preparatory thinning interventions must be made to create a stand structure where the system can truly be applied.
Silviculture		A term coined during late 19th century from the Latin *silva meaning* 'wood' and the French *culture* meaning 'cultivation' and so Silviculture is the art and science of controlling the establishment, growth, composition, and quality of forest vegetation to achieve a full range of forest resource objectives.
Stand		A group or area of trees that are more or less homogeneous with regard to species composition, density, size, and sometimes habitat.
Thin	TH	Selective removal of trees from a wooded area, giving remaining trees more space to grow into larger trees. Thinning is done to: Improve the quality and vigour of remaining trees. Remove trees interfering with mature or veteran broadleaf trees. Give space for tops (or "crowns") of broadleaf trees to develop and potentially act as a future seed source. Give space for natural regeneration to grow and develop with the intention of recruiting these younger naturally grown trees as a part of the future woodland structure. Create gaps for group planting or enrichment. Remove species of tree that may compromise the intended management objective of the woodland eg: non-native or invasive species such as Sycamore, Western Hemlock or birch. Improve the economic value of a wood. Help realise opportunities to enhance ecological value. **NOTE:** This list is not in any order of priority and will vary depending on management objectives.
Yield Class	YC	A method of measuring the growth rate or "increment" of a crop of trees by age and height; measured in m3 per Ha per annum. E.g. A crop with a YC of 16 is one that has an annual increment of more than 16m3 but less than 17m3, although generally only even numbers are used when stating YC.

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