

Sand Hutton Forest Plan FP 55

2023

Yorkshire Forest District



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



Forestry England - Property

Forest District:	Yorkshire
Woodland or property name:	Sand Hutton
Nearest town, village or locality:	Sand Hutton
OS Grid reference:	SE 680 585
Local Authority district/unitary Authority:	North Yorkshire/City of York

Areas for approval

	Conifer	Broadleaf	Open
Felling	1.42		
Lower Impact Silvicultural Systems regeneration felling	11.00		
Restocking	15.71		

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

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Sand Hutton

134.02 Hectares (Ha)

Period of Plan: 2023 - 2033

1. Background

Sand Hutton woodlands straddle the A64 - York to Scarborough Road, on the north-east edge of the City of York. They comprise of several blocks ranging between 3 and 57 hectares that lie between Strensall Common SSSI and Sand Hutton Village. The surrounding land is mainly arable farmland, with the Food and Environment Research Agency facility located centrally between the blocks.

2. Describing the Site

2.1 Geology and Soils (FP Map 01)

The majority of the Sand Hutton woods are growing above a complex of Alluvial Warp and Lacustrine Clays with sand and gravel deposits. Soils are predominantly sand in texture giving rise to a typical podzol soil type. These have characteristically low nutrient and moisture status, restricting the range of tree species where timber production is an objective. Some local variation occurs where higher silt content leads to areas of podzolic brown earth, increasing fertility and broadening the range of tree species suitable for timber production.

2.2 Tree Species (FP Map - 02)

Over the past 11 years more notable changes are disposals of Grange Wood and Scrogs Wood. Based on 2017 figures, Larch is no longer present in the woods we manage, Pine has reduced by 8% and 'OTHER i.e. open, felled' as an overall percentage has increased.

As to be expected with the associated soil types, Pines (Scots, Corsican, Lodgepole and Macedonian) are the main conifer species comprising 55.3% of the overall area, with Scots pine accounting for the majority. Other conifer species include but are not limited to Fir, Spruce and Cypress.

Over the last Design Plan period and accounting for disposals, broadleaf species have fallen by 1% of the overall area, with birch forming the main component. Other broadleaves include but are not limited to Sycamore, Oak, Beech.

Species Composition	2011		2017 (post disposal)		2022	
	Ha	%	Ha	%	Ha	%
MB	30.74	17%	24.38	18%	22.3	17%
Pine	105.72	60%	66.58	50%	55.3	42%
Larch	6.73	4%	0	0%	0	0%
Other conifer	9.49	5%	22.35	17%	23.4	18%
Other i.e. Open, Felled	8.55	5%	5.64	4%	19.1	15%
Lowland heath	15.03	9%	15.03	11%	9.5	7%

2.3 Wind Damage

Sand Hutton woods fall within Windthrow Hazard Class 2, providing good windfirm conditions which on the whole do not restrict thinning operations. Subsequently, many stands can be managed on extended rotations and provide opportunities for Lower Impact Silvicultural Systems (LISS).

Since the previous plan, opportunities have been taken to carry out 52.4ha of thinning associated with LISS, extended rotation silviculture and to mitigate against *Dothistroma* infected Corsican pine.

2.4 Landscape (Photographic montage)

Sand Hutton sits within the Vale of York where the landform is flat. The block is located within a medium-scale arable landscape of largely geometric field patterns, but which are open and more irregular to the north. Tree cover can restrict views and in places gives a sense of enclosure.

Since the previous plan the forest has seen an increase in its overall species and structural diversity, mainly through species diverse conifer restocking coupled with naturally regenerating conifer and broadleaf species across previously felled sites, including strip felling. This is contributing to a more diverse forest composition and has created more irregular boundaries that respond well when seen from different locations.

Fixed-point photographs of both external and internal views demonstrate the changing structure across the forest and how this is providing a more positive contribution to the overall landscape.

2.5 People and Community (FP Map - 04)

Sand Hutton woods are leasehold woodlands where the owner has retained sporting rights and exercise these through several shooting syndicates.

A bridleway runs through White Sike Plantation. The woods have no designated footpaths within or adjacent to the plantations and due to their leasehold nature are not registered as open access under CROW legislation.

Because of the terms of the lease, potential for an increase in recreational use and facilities is limited. Access is likely to remain on an informal basis - mostly by local resident accessing White Syke plantation.

2.6 Natural Heritage (FP Map - 04)

The woods are predominantly secondary plantation conifer/broadleaf.

Following conversion from secondary plantation conifer to wooded heath under previous plans, the land at Worlds End Plantation (adjacent Strensall Common SAC/SSSI) continues to receive appropriate management to maintain the condition of this valued habitat. The area continues to develop ecological interest with a complex habitat mosaic of remnant lowland heath, mixed woodland and wooded heath, and more open areas under FE management.

Some areas felled as part of this previous programme have subsequently regenerated with a mixture of predominantly birch with Scots pine, creating a mosaic of developing mixed woodland and open woodland habitat with varying elements of open ground supporting remnant wooded heath ground flora communities. The mosaic of habitats developing across this area provides opportunities to manage mixed woodland with variable proportions of open space.

Nightjar have been recorded breeding on Strensall Common adjacent to Sand Hutton Woods and have been recorded foraging in Worlds End plantation. This is a red status species that benefits from temporary open space to nest and breed as created by recently felled conifer plantations.

The wooded heath is an important habitat for reptiles, with both adder and common lizard frequenting the sites, and for Lepidoptera and Odonata.

Other priority species as shown in Appendix 1 are noted within or adjacent to Sand Hutton woods.

2.7 Cultural Heritage

There are no known archaeological features at Sand Hutton.

3. Describing the Project

3.1 Project Brief

- Increase the diversity of the age structure and improve landscape impact by maintaining current felling patterns. Enhance external and internal landscape edges, using appropriate silvicultural systems, including LISS
- Consider the selection of alternative main tree species that will contribute towards a greater range of species diversity, to maintain or increase timber productivity and increase resilience to plant health and biosecurity threats
- Manage stands of productive mixed conifer and broadleaf, looking to retain existing conifer stands where appropriate and manage through LISS
- Maintain and manage a mosaic of open and wooded heath at Worlds End Plantation, maintaining its current condition

3.2 Objectives

Nature

- Improve the resilience of the natural environment to pests, diseases and wildfires and realise the potential of these woods for nature and wildlife, to be measured by Natural England and FC systems.
- Maintain the ecological heritage value of these woods, to be measured by Natural England and FE systems
- Maintain and manage a mosaic of open and wooded heath at Worlds End Plantation, maintaining its current condition - to be monitored through the sub-compartment database.

Economy

- All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC-C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard, as independently assessed by annual independent surveillance audits.
- Maximise and maintain a sustainable supply of timber from a diverse range of site-appropriate conifer and broadleaf species, to be measured by FC systems.

People

- Maintain the woodlands contribution to the landscape character (NCA 28 - Vale of York). To be monitored through fixed-point photography.

3.3 Opportunities & Constraints

- Identify where LISS management through the application of the Strip and Irregular shelterwood systems can be applied across suitable wind-firm conifer crops and managed as productive mixed conifer stands.
- Terms of the lease restricts the development and provision for formal public recreation
- Small scale nature of the woodland blocks contributes to the lack of habitat connectivity in the surrounding, predominantly agricultural landscape
- Site limiting factors (low nutrient and moisture regime/invasive species such as rhododendron)
- Potential impact of proposed A64 Hopgrove Road Improvement Scheme by NY Highways
- Dothistroma needle blight

3.4 Implementation

3.4.1 Conservation

Protect and, where appropriate, enhance all known sites of archaeological and ecological importance:

Archaeological sites

All sites, regardless of their designation, will receive the same level of care during the planning and execution of forest operations. The operational planning system will ensure they are recognised and the proper measures for their protection are in place before work begins. This planning system also ensures that, where possible, opportunities to enhance the condition of archaeological interest are taken during routine forest work. There are currently no known heritage features across this property.

Ecological sites

All work sites are surveyed prior to any operations being carried out, both to audit the accuracy of information already held on record and to identify opportunities to further improve the ecological value of the woodlands. For Sand Hutton this will include:

- Managing Wooded Heath as set out in - ‘Heathland on the Forestry Commission Estate in England (March 2005)’
- Increase and improve the deadwood resource as set out in - ‘Deadwood - Policy, Procedures, Guidance (PPG) 51 (March 2022)’. Areas of high ecological value across which deadwood resources could be encouraged include Ancient Woodland, riparian zones, Long Term Retention sites and areas of broadleaf woodland.
- ‘FC - Managing England’s woodlands in a climate emergency’ provides guidance to implement adaptation actions including the acceptance of naturalised species and assisted migration.
- Increase the diversity of tree species and age structure that will maintain and improve favourable conditions for target species and identified habitats.

3.4.2 Invasive species

Rhododendron ponticum is recorded across several sites in the forest. A programme of vegetation management will be carried out over the duration of this plan where this is likely to impact on high value conservation sites.

3.4.2 Timber Harvesting

We will continue to sustainably harvest timber from clearfelling, LISS and thinning’s. Where appropriate we will develop broadleaf stands to increase their contribution to timber production. These operations will be planned and controlled to ensure due regard for all other objectives of management at Sand Hutton.

3.4.3 Landscape

The woods at Sand Hutton do not lie within a designated landscape, views are limited to edges and internal landscapes

Clearfell and shelterwood areas are designed so that their scale and shape are in keeping with the scale of the woodland blocks and the surrounding landscape. The resulting diversity in age and height that these systems produce will enhance both external and internal views of the woodlands.

LISS with associated smaller-scale felling will continue to contribute toward a varied and intimate internal forest landscape, where simple and complex stand structures create a diverse visitor experience within the forest.

Appropriate scale felling across the forest will continue the process of restructuring, moving away from even-aged, single species stands to a more mixed conifer/broadleaf woodland linking with other associated habitats.

The adoption of appropriate silvicultural systems, including LISS will contribute toward the creation and retention of species and structurally diverse woodlands within the landscape.

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

3.5 Plan (FP Map 05)

The design concept map shows the key factors we need to address. These are taken forward and used to form the basis of a practical plan set out in the fell and restock maps.

3.6 Areas (FP Maps 06 and 07)

3.6.1 Breakdown of felling areas within the period of the plan.

A map showing the location of felling sites can be found in the Forest Plan folder.

Felling	Area - hectares	% of total area (excl. SSSI)	Projected volume (m ³)
Clearfell	1.42	1	550
LISS regeneration felling*	11.0	9	5500

* 107.65ha of Sand Hutton will be managed utilising LISS through Strip and Irregular Shelterwood silvicultural systems. During the plan period, it is proposed that areas of LISS where crops are over 25 years old will receive a silvicultural intervention (thinning/regeneration felling). As a result of this intervention, the above area of woodland cover will be regenerated through a combination of restocking and natural regeneration. See Appendix 2 - LISS justification. The above area of woodland cover will be regenerated through a combination of restocking and natural regeneration, removing no more than 30% of the stems within any single compartment over the plan period.

3.6.2 Breakdown of constituent areas.

A Future Habitat and Species map showing the location and detail of the constituent areas can be found in the Forest Plan folder.

Habitat type (based on principle species planted)	Area - hectares			% of total area		
	2023	2032	2052	2023	2032	2052
Broadleaved; mixed/yew woodlands	11.9	22.65	31.45	9%	16%	21%
Coniferous woodlands	101.55	91.1	83.9	76%	68%	63%
Lowland wooded heath*	17.27	17.07	17.27	13%	13%	13%
Lowland Mixed Deciduous Woodland	3.3	3.2	1.4	3%	3%	3%

* This accounts for the whole area referenced as ‘Lowland wooded heath’ throughout this document, including areas of open, mixed broadleaf and pine, hence the difference to referenced Lowland heath as set out in section 2.2.

3.7 Methods / Forest Operations

3.7.1 Planning

Before any major forest operations are undertaken an “Operational Site Assessment” is completed. This document details the proposed work and outlines all known environmental, social and operational considerations. The “Operational Site Assessment” then becomes an important reference document during the planning phase, at the pre commencement meeting before scheduled works begin and for supervisory visits during the operation. The “Operational Site Assessment” is kept along with other documents relating to the operation in the main office.

For routine maintenance operations (e.g. fencing, ride mowing, survey work etc.) the Yorkshire District policy on timing of operations to minimise wildlife disturbance will be followed.

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

3.7.2 Standards

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

- U.K. Woodland Assurance Standard
- U.K Forestry Standard (published 2017).

3.7.3 Harvesting

See 3.4.2. Forestry Commission staff will monitor work through regular site visits to ensure all guidelines and contract conditions are adhered to.

All plans are required to consider LISS in windfirm conifer plantations as opposed to traditional clearfell systems. This decision is based upon the methodology provided in FC Information Note 40 - 'Transforming Even-aged Conifer Stands to Continuous Cover Management'. Where existing coupes are not identified for LISS management, we may consider managing these on an extended rotation basis to be thinned and monitored for future consideration for conversion to LISS.

Using the FC Forest Research Agency, Ecological Site Classification system (ESC), a range of conifer species are considered 'optimum' to 'unsuitable' for LISS where timber production is considered as an objective.

Through this plan the area to be managed under LISS is 107.65ha. See Appendix 2 - LISS Justification.

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

3.7.4 Haulage

As in our other woodland blocks we will continue discussions with the relevant Highways Authority to agree haulage routes and discuss annual tonnages.

All timber traffic will be managed in line with the Road Haulage of Round Timber Code of Practice, Fifth Edition (2020), which aims to improve the safety and environmental standards of the timber haulage industry.

3.7.5 Restocking

Conifer

The areas of strip and irregular shelterwood felling carried out as part of management by LISS and clear felling will be established through a combination of restocking using

¹ Forest Research - Forest Development Types: A guide to the design and management of site-adapted resilient mixed forest stands in Britain

alternative productive conifer species, diversifying age structure and species to continue to provide a sustainable timber resource, whilst mindful of the projected impacts of climate change. The FC Forest Research Agency, Ecological Site Classification system (ESC) will aid species choice and selection. A range of timber producing conifer species as set out in Appendix 2 and Appendix 3 'Species by soil type' will help inform restocking options.

In addition to replanting, areas of LISS and clearfelling will be managed to encourage natural regeneration of conifer and broadleaf species, although it is accepted that replanting will be required to maintain and further diversify the current range of species.

Reference to Predominantly Mixed Conifer on the Future Habitat & Species Map (FP Map 07) will be used to describe those areas where a range of species will be planted and/or regenerated, where conifer species have a target composition of at least 80% of the component mix. Appropriate levels of suitable broadleaf natural regeneration may be accepted. As indicated at 3.7.1, the Operational Site Assessment will provide site-specific data on soils and other site factors that will help inform the correct choice of species on a site-by-site basis.

All sites will achieve at least conifer 2500 stems per hectare through planting, natural regeneration, or a combination of both.

Broadleaf

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

Targeted enrichment planting will be considered across sites that fail to develop sufficient natural regeneration of broadleaf species.

The majority of sites will achieve at least 1100 broadleaf stems per hectare through natural regeneration, planting or a combination of both.

Wooded heath

The mosaic of open remnant lowland heath and wooded heath at Worlds End will continue to receive appropriate management interventions throughout the plan period to maintain its current condition, incorporating natural succession of heathland communities, whilst working towards 20% tree cover of native broadleaf species and Scots pine.

The development of these sites will be beneficial for a range of heathland and woodland species.

3.7.6 Wildlife Management

The successful establishment of future restocking sites through planting and/or natural regeneration will require effective control of crop damaging mammals. Although Roe deer are present within the forest and surrounding farmland, good levels of natural regeneration indicate browsing pressure is low. Damage levels will continue to be monitored and will be managed in line with the Yorkshire Forest District Deer Management Strategy.

4. Monitoring

See Appendix 4 - Monitoring Plan

4.1 Forest Plan

All forest plans are formally reviewed as part of a “5-year mid-term review” and the plan’s aims and objectives and its success at achieving those aims and objectives. This plan will be formally reviewed in 2028 with the opportunity to share information where requested. This time period can be shortened if circumstances change significantly or if parts of the plan prove detrimental to the overall aims and objectives.

Where an amendment to the Forest Plan is required, the Forestry Commission Practice Delivery Note 01 - Tolerance Table will be applied as set out in Appendix 5.

4.2 UKWAS Compliance Table

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

	Forest Plan Area (ha)	Forest Plan Percentage	Forest District Area (ha)	Forest District Percentage
Total Area	134	100	20,971	100
Total Wooded area	134	86	18,594	85
Natural Reserves - Plantation (1%)	Nil	Nil	294	1.7
Natural Reserves - Semi-natural (5%)	Nil	Nil	101	5.6
Long-term Retentions and Low Impact Silvicultural Systems (>1%)	107.7	80.3	9,346	45
Area of conservation Value (15%) including designations; SSSI, PAWS, ASNW, NR, LTR, LISS	107.7	80.3	9,346	45

5. Determination of Impact Significance and Mitigation

5.1 Native Woodland

Threats to our native woodlands can be immediate and absolute (e.g. loss to infrastructure or development) or slower and subtler (e.g. shading from conifer species or invasive species such as Rhododendron). There are also more widespread environmental changes, such as diffuse pollution and climate change, which may threaten in the long term.

[Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

Major threats to native woodland are:

- Climate change and fragmentation
- Excessive browsing and grazing by deer, livestock and grey squirrels
- Inadequate or inappropriate management
- Invasive and non-native plant species
- Diffuse pollution
- Pests and diseases
- Inappropriate recreational use
- Development and boundary incursions.

Through this plan, we will continue to apply local and national policy and best practice guidance for the management and development of our existing and new native woodlands.

5.2 Flora

Heathland is a UKBAP Priority Habitat

Within woods, concentrate on open space habitat expansion and management, developing heathland, neutral grassland and acid mires.

(G. Peterken - Native Woodland Development in the North York Moors and Howardian Hills)

This plan, while not creating new areas of lowland heath, will continue the management and development of wooded heath created under the previous design plans. It will consider the development of habitat networks including wooded heath, with reference to Natural England's 'Historic Heathland site' document.

5.3 Other Objectives

Concentrate on developing habitat-rich riparian corridors with marshes, meadows, woodlands, trees in farmlands. These would pass through both woodland and farmland.

(G. Peterken - Native Woodland Development in the North York Moors and Howardian Hills)

There are no riparian corridors across Sand Hutton.

Continuing development of both species and structural diversity will benefit habitats for priority woodland bird species throughout the woodland (Appendix 2 - Priority species).

Appendix 1 - Priority species

Bird Species ¹	Forest location	Habitat enhancement
Woodcock, Dunnock	Developed shrub layer	Continue selective thinning and regeneration felling as part of LISS management, this will allow the development of shrub layer structure and increased structural and species diversity. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Tree pipit Wood warbler Willow warbler Garden warbler Spotted flycatcher Willow tit Marsh tit Lesser redpoll Lesser spotted woodpecker Song Thrush Redstart	Woodland edge, ride, glade	Continue selective thinning and regeneration felling as part of LISS management, this will create increased structural and species diversity. Expand road and ride margins to extend herb and invertebrate rich roadside verges, increase habitat connectivity and edge habitat. Create and maintain successional woodland (birch and oak)/scrub habitat and standing deadwood.
Woodlark Nightjar	Open habitat/ wooded heath	Maintain a mosaic of open structure woodland/wooded heath with areas of open habitat with short grass/heath for feeding and denser vegetation for nesting through woodland management and grazing as appropriate.
Reptile ²	Forest location	Habitat enhancement
Adder Common Lizard	Heathland/verges	Maintain the known sites in suitable condition through vegetation management. Plan operations to minimise damage to known hibernacula sites. Maintain a mosaic of open structure woodland/wooded heath, wide rides and forest road verges.
Invertebrates ³	Forest location	Habitat enhancement
Willow emerald damselfly, Red eyed damselfly and hairy dragonfly	Pond area	Maintain ponds in favourable condition retaining some willow scrub around the edges for egg laying.
Labyrinth Spider	Rough grassland and low scrub	Maintain mosaic of habitats with open rough grassland and taller heather and gorse. Expand road and ride margins to extend herb and invertebrate rich roadside verges and increase habitat connectivity

¹ Source - BTO Bird Atlas and Breeding Bird Survey data and surveys undertaken by the Forest bird study group.

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

²Amphibian and Reptile Group

³FE Wildlife monitoring volunteers

Appendix 2 - LISS justification

Site Appraisal

Site Factor	Suitability Score	Comment
<p>Wind Hazard Classification:</p> <p>Majority of the forest is WHC range 1 - 2</p>	1	ESC indicates rooting depth ranges between 60 cm to 80 cm.
<p>Soil fertility:</p> <p>Very Poor</p> <p>Typical Ground-Water Gley</p> <p>Argillic Brown Earth/Typical Brown Earth</p>	1 2	<p>Isolated areas of medium fertility</p> <p>Competing ground vegetation is generally that associated with poor sites although localised areas of bramble indicate increased fertility.</p> <p>More fertile conditions can lead to issues with competing vegetation. Apply appropriate vegetation management and/or manipulate upper canopy to reduce light levels reach forest floor.</p>
<p>Current species suitability:</p> <p>CP, SS, NS, HL, EL, JL, Beech, Ash, Oak, Sycamore, Alder,</p>	1 or 2 Suitable	Advanced natural regeneration already occurs across a range of conifer and broadleaf species, either as developing understorey where light levels are favourable or across clear fell sites.

With a combined score ranging between 3 and 4, initial analysis indicates significant parts of Sand Hutton achieve a Good site ranking for transformation to LISS. Remaining areas achieve Medium ranking with a score of 5.

Stand Appraisal

Stand form - Overall stand form across the majority of conifer species is good and developing but more variable across broadleaf species.

Thinning history - Historically Thinning did not follow a regular cycle to help develop crowns that can act as potential seed bearers. During the period of the last plan, regular thinning has been carried out across the majority of conifer stands where threshold basal area has been reached, providing opportunities for subsequent selective thinning to improve crown development. The majority of 1st rotation broadleaf stands have been thinned. Currently there is good evidence that a range of conifer and broadleaf species are capable of developing through natural regeneration across sites.

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

Access - This is not a limiting factor as good infrastructure exists across the majority of the forest areas.

On the basis of the above information, where this does not compromise the provision of temporary open space for breeding Nightjar, we will consider LISS across conifer, broadleaf and mixed species stands with the aim of increasing species diversity through the establishment of natural regeneration and

enrichment planting using a wide-range of species identified as Very Suitable/Suitable on the site suitability reports overleaf, aiming initially for a simple stand structure.

We will adopt a Strip Shelterwood system across conifer and mixed species stands, where strips will aim to be between 20 to 25 m wide and a Group Shelterwood system across broadleaf stands.

Some areas of high forest/clearfell coupes will be managed on an extended rotation basis and will be monitored for development of natural regeneration. Where appropriate these will be considered for developing toward LISS management as set out above.

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

The Forest Research ESC table below supports the range of target species considered for natural regeneration and those identified as very suitable (dark green) and suitable (light green) where enrichment planting will increase species diversity. For Sand Hutton, enrichment planting could consider the introduction of Macedonian pine, Coast Redwood and Western red cedar across areas to be managed as productive, conifer dominant woodland and Hornbeam and Pedunculate Oak for productive broadleaf dominant areas.

466690	458613	8E666596	Medium-High 2080 (A1b/3g2) A1VC method	Very warm - Moderately exposed - Slightly dry	Conifers only	Brash present aged less than 18 months	No drainage installed	Mixture applied				
Site Description and Variables												
The site has a very warm, moderately exposed and slightly dry climate. The soils are very moist moisture status and rich nutrient status. Coarse branching and poor stem form may affect certain pine species and birch due to the presence of rich soils. The analysis assumes that site management (e.g. CCF), the use of deep rooting species and/or soil properties will help mitigate climatic moisture deficits. Brash will be redistributed evenly across the site to provide nutrients and avoid uneven growth. Nutrient deficiencies are primarily due to nitrogen availability, and will be ameliorated through planting target species in an intimate mixture with one or more of Scots pine, Alaskan Lodgepole pine, Larch, Birch or Alder. Tree species recommendations in ESC do not take account of each country's regulatory approval process, so prior to including species in a forest plan advice should be sought from relevant forestry authorities.												
Modifications	AT	CT	DAMS	MD	SMR	SNR						
Default	2726.0	9.0	12.0	247.0	3.0(Very moist)	4.0(Rich)						
Brash						0.0						
Nursing mixture						0.0						
Final	2726.0	9.0	12.0	247.0	3.0(Very moist)	4.0(Rich)						
Species	Abbr.	Suit(Eco)	Suit(Timber)	Yield	Limiting	AT	CT	DAMS	MD	SMR	SNR	Version
Corsican pine	CP	●	●	15	SMR	●	●	●	●	●	●	3.3(A)
Lodgepole pine	LP	●	●	10	ATS	●	●	●	●	●	●	3.1(A)
Macedonian pine	MCP	●	●	12	ATS	●	●	●	●	●	●	3.1(C)
Maritime pine	MAP	▲	▲	5	SMR	●	●	●	●	▲	●	3.1(C)
Monterey/Radiata pine	RAP	●	●	11	SMR	●	●	●	●	●	●	3(C)
Scots pine	SP	●	●	9	SMR	●	●	●	●	●	●	3.3(A)
Weymouth pine	WEP	●	●	0	SMR	●	●	●	●	●	●	3(C)
Norway spruce	NS	●	▲	11	ATS	●	●	●	●	●	●	3.3(A)
Oriental spruce	ORS	●	●	13	SMR	●	●	●	●	●	●	3(C)
Serbian spruce	OMS	●	●	12	ATS	●	●	●	●	●	●	3(B)
Sitka spruce	SS	▲	●	8	MD	●	●	●	▲	●	●	3.4(A)
Sitka spruce (Imp.)	Imp.SS	▲	●	9	MD	●	●	●	▲	●	●	3.4(A)
Douglas fir	DF	●	●	0	SMR	●	●	●	●	●	●	3.1(A)
Hybrid larch	HL	●	●	0	ATS	●	●	●	●	●	●	3(A)
Japanese larch	JL	●	●	0	ATS	●	●	●	●	●	●	3(A)
European larch	EL	●	●	2	SMR	●	●	●	●	●	●	3(A)
Western red cedar	RC	●	●	20	DAMS	●	●	●	●	●	●	3.1(A)
Japanese red cedar	JCR	▲	▲	8	MD	●	●	●	▲	●	●	3(B)
European silver fir	ESF	●	▲	9	MD	●	●	●	●	●	●	3(B)

Appendix 3 - Restock species by soil type

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

BOLD CAPITAL (Y)/BOLD INFILL COLOUR	Cat A Major species - currently widely used with no supply problems and should continue to play an important role
Bold, lower case italics (y), pastel infill colour	Cat B Minor species - Species that either currently play a minor role but have demonstrated their suitability being part of a species range to diversify our forests. Climate change may increase or reduce their use
Normal lower case (y), pastel infill colour	Cat C Secondary species - Species with little information on forest performance but possible choice based on Arboreta. Use on small-scale experimental basis for now but may increase if favourable results

[source data](http://www.forestry.gov.uk/fr/treespecies) http://www.forestry.gov.uk/fr/treespecies

Refer to cell comments for specific species notes

No planting where >0.5m peat depth

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

Appendix 4 - Sand Hut

Objective	Method
People	
Maintain the woodlands contribution to the landscape character (NCA 28 - Vale of York).	Fixed-point photography
Nature	
Improve the resilience of the natural environment to pests, diseases and wildfires and realise the potential of these woods for nature and wildlife.	Update Forester Web GIS; subcompartment database, Conservation module.
	Review sample of Operational Site Assessments.
Maintain the ecological heritage value of these woods.	Monitor Priority habitat condition by visual assessment.
	Review sample of Operational Site Assessments.
Maintain and manage a mosaic of open and wooded heath at Worlds End Plantation, maintaining its current condition	Measured by by visual assessment and the sub-compartment database.

Economy	
All of our forests and woodlands are certified to the Forest Stewardship Council®(FSC®) licence code FSC C123214 and the Programme for the Endorsement of Forest Certification (PEFC) licence code PEFC/16-40-1001 standards. We will maintain the land within our stewardship certified against the UK Woodland Assurance Standard.	Independent surveillance audit across the organisation.
	Independent surveillance audit across the District.
Maximise and maintain a sustainable supply of timber from a diverse range of site-appropriate conifer and broadleaf species	Update Forester Web GIS; subcompartment database, Operational Thinning Layer, Management Coupe Layer.
Site-specific	
Clearfell coupes - ensure boundaries are accurately reproduced and within agreed tolerances as set out in Forestry Commission Practice Delivery Note 01 (FC PDN 01).	GPS unit or equivalent data recorders.
Restock & Future Habitat Coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by planting and natural regeneration by year 5 since date of initial planting (allowing 2 years fallow for <i>hylobius</i>).	On-site stocking density plot surveys.

Restock & Future Habitat Coupes - Mixed broadleaf habitat. Establish at least 1100 broadleaf stems per ha through natural regeneration by year 10 since date of felling.	On-site stocking density plot surveys.
LISS coupes - Productive mixed conifer sites. Establish at least 2500 conifer stems per ha by year 10 after final removal overstorey.	On-site stocking density plot surveys.
Wildlife management - Identify problem sites where mammal damage is affecting crop establishment or degrading woodland flora.	On-site stocking density plot surveys. Damage, Impact and Activity Assessments as set out in YFD Deer Management Strategy.
Plan specific	
Forest Plan mid-term review. Review the plan's aims and objectives and the progress of their implementation.	Apply a variety of measures as described in the above table.

ton Forest Monitoring Plan	
Frequency/Timings	Actions
Year 0 baseline, 5-year review, 10-year review.	Review visual impact of coupes within the landscape and adjust future coupe shape if necessary.
As recordable changes occur within the forest environment. At time of Year 0 plan renewal, 5-year review, 10-year review.	Measure changes in diversity across species, age structure, conservation sitings/records and broad habitat types; conifer, broadleaf, open. Ensure positive change through increasing diversity occurs over the lifetime of the plan.
Annually	Provide feedback where management is not compliant with recommendations.
5 years	Provide feedback where habitat is not in favourable condition and recommend programme of works to achieve favourable status.
Annually	Provide feedback where management is not compliant with recommendations.
5 years	Provide feedback where management is not compliant with recommendations.

Annually	Implement corrective actions as required.
As per audit sample.	Implement corrective actions as required.
As recordable changes occur within the forest environment and End Of Year updates. Year 0 plan renewal, 5-year review, 10-year review.	Review long-term changes in productive capacity through the Production Forecast at the point of plan renewal and across the wider District.
Upon completion of all harvesting activity.	If significant coupe variation, apply for appropriate ammendment to FC as required as per FC PDN 01 prior to felling. Update Forester Web for completed clearfells.
Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out beating up where stocking density falls below prescribed number of trees/ha to achieve full stocking.

Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
Beat-up surveys between years 1 to 4. Year 5 stocking assessment, internal guidance OGB4.	Carry out enrichment planting where stocking density falls below prescribed number of trees/ha to achieve full stocking.
To be informed from results of beat-up surveys between years 1 to 4 and year 5 stocking assessment, internal guidance OGB4.	Target deer control in line with District strategy.
2028	Modify the plans aims and/or objectives where these are no longer compatible with National or District Policy. Significant plan changes will require consultation and formal amendment from the Forestry Commission.

Appendix 5 Agreed Tolerance table for Forestry England Yorkshire Forest District, England

	Adjustment to felling coupe boundaries	Swapping of felling coupes	Adjustment to felling operation	Clearance of standing trees associated with wind-blown areas ⁷	Delayed restocking - including natural regeneration	Species choice	Tree health
Formal assessment and approval by FC area team required	>25% of the coupe area	Where changes to the felling sequence is likely to result in a significant breach ¹ of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling such as: <ul style="list-style-type: none"> regeneration felling strip felling² clear felling and where ≥50% of standing tree volume is to be removed	Individual work area that is either: <ul style="list-style-type: none"> >5ha of standing trees associated with wind-blow areas or <ul style="list-style-type: none"> Proposals result in cumulative additional felling⁸ affecting >20% of the Forest Plan area⁹ 	N/A – dealt with via FC Area team approval (below)	From mixed, predominantly broadleaves to predominantly conifer	Where no SPHN is issued but felling of ≥65% standing tree volume is required in response to a plant health issue
Written approval only required from FC area team³	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach ⁴ of the UKFS adjacency rules	From unconditional felling (thinning or low-intervention management) to conditional felling where between 30%-50% of standing tree volume is to be removed such as: <ul style="list-style-type: none"> regeneration felling strip felling or <ul style="list-style-type: none"> From lower intensity regeneration felling to higher intensity regeneration felling, (as defined by the felling operation hierarchy⁵) where <50% of standing tree volume is to be removed 	Individual work area that meets both the criteria: <ul style="list-style-type: none"> 1-5ha of standing trees associated with wind-blow areas, (Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of ≥5ha of standing trees associated with wind-blow areas) <ul style="list-style-type: none"> and Proposals result in cumulative additional felling⁸ affecting <20% of the Forest Plan area⁹ 	Planting: <ul style="list-style-type: none"> Where this is ≥ 4 planting seasons from the date of felling. Natural regeneration: <ul style="list-style-type: none"> where necessary intervention to secure natural regen is not implemented within 4 full planting seasons from date of felling 	Deciduous conifers to predominantly evergreen conifers	Where no SPHN is issued but felling between ≥50% and < 65% of standing tree volume is required in response to a plant health issue
No formal or written approval by FC area team required⁶	< 10% of the coupe area	Where changes to the felling sequence does not result in a breach of the UKFS adjacency rules	Clear felling to strip felling, shelterwood or regenerative felling systems, or thinning <ul style="list-style-type: none"> or From more severe regeneration felling to less severe regeneration felling as defined by the regeneration felling hierarchy⁵ 	<1ha of standing trees associated with wind-blow areas <ul style="list-style-type: none"> (Where there is an <u>immediate</u> and <u>significant</u> risk to health and safety or access, felling of 1ha-5ha of standing trees associated with wind-blow areas) and Proposals result in cumulative additional felling⁸ affecting <10% of the Forest Plan area⁹ 	For any changes to the timing of restocking where this occurs <4 full planting seasons from the date of felling	Any other changes	Where an SPHN is issued <ul style="list-style-type: none"> Or Thinning / regenerative felling <50% of standing tree volume is required in response to a plant health issue

¹ Greater than 20% of the coupe boundary

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

³ Approval letter retained for compliance inspection purposes.

⁴ 20% or less of the coupe boundary

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

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

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

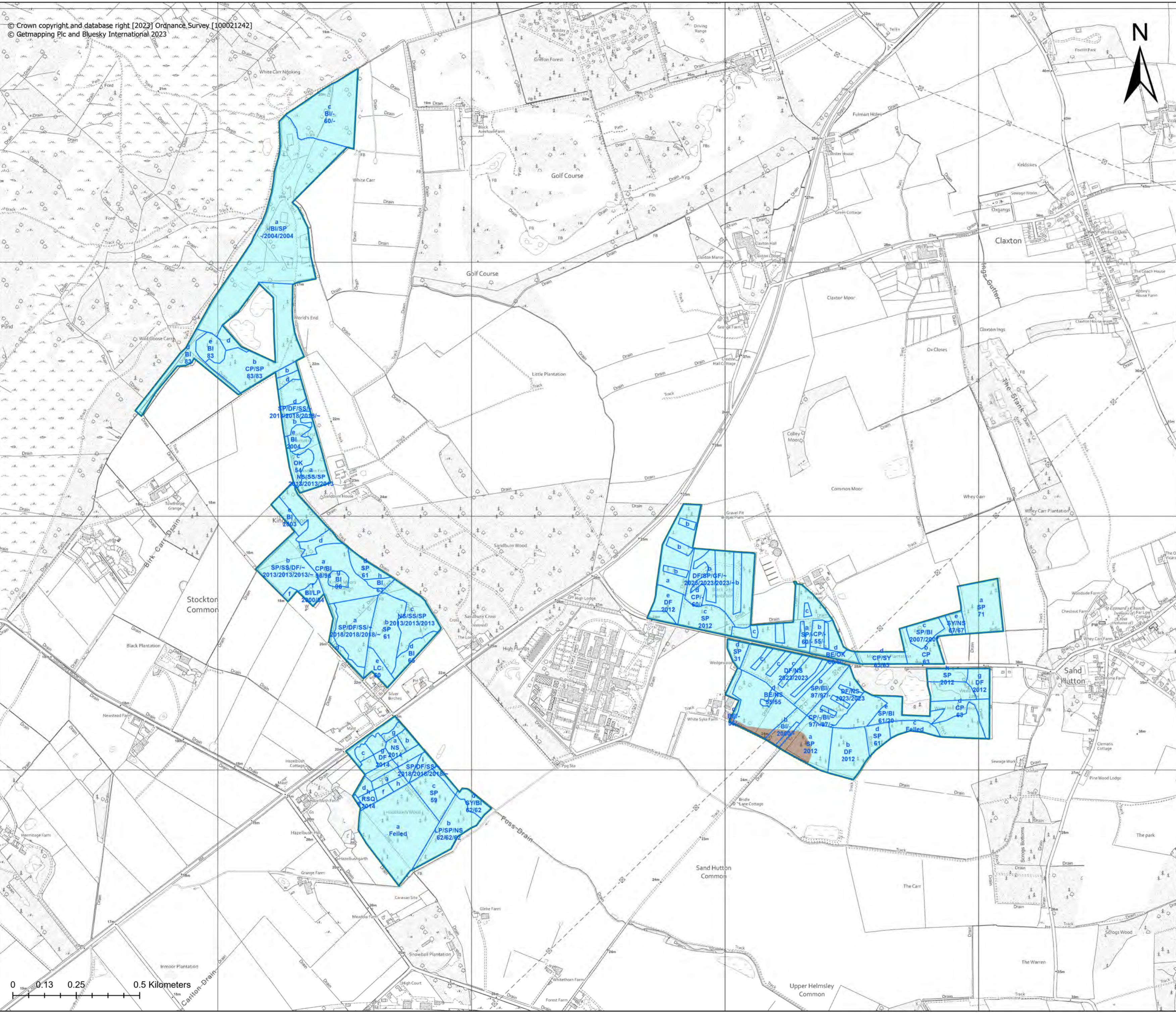
⁸ Cumulative additional felling = 5 year rolling total area of growing trees felled (excludes dead and completely windblown trees) that were not approved for felling within the relevant felling period, in the initial approved Forest Plan. This includes both FS approved amendments and felling below thresholds.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

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



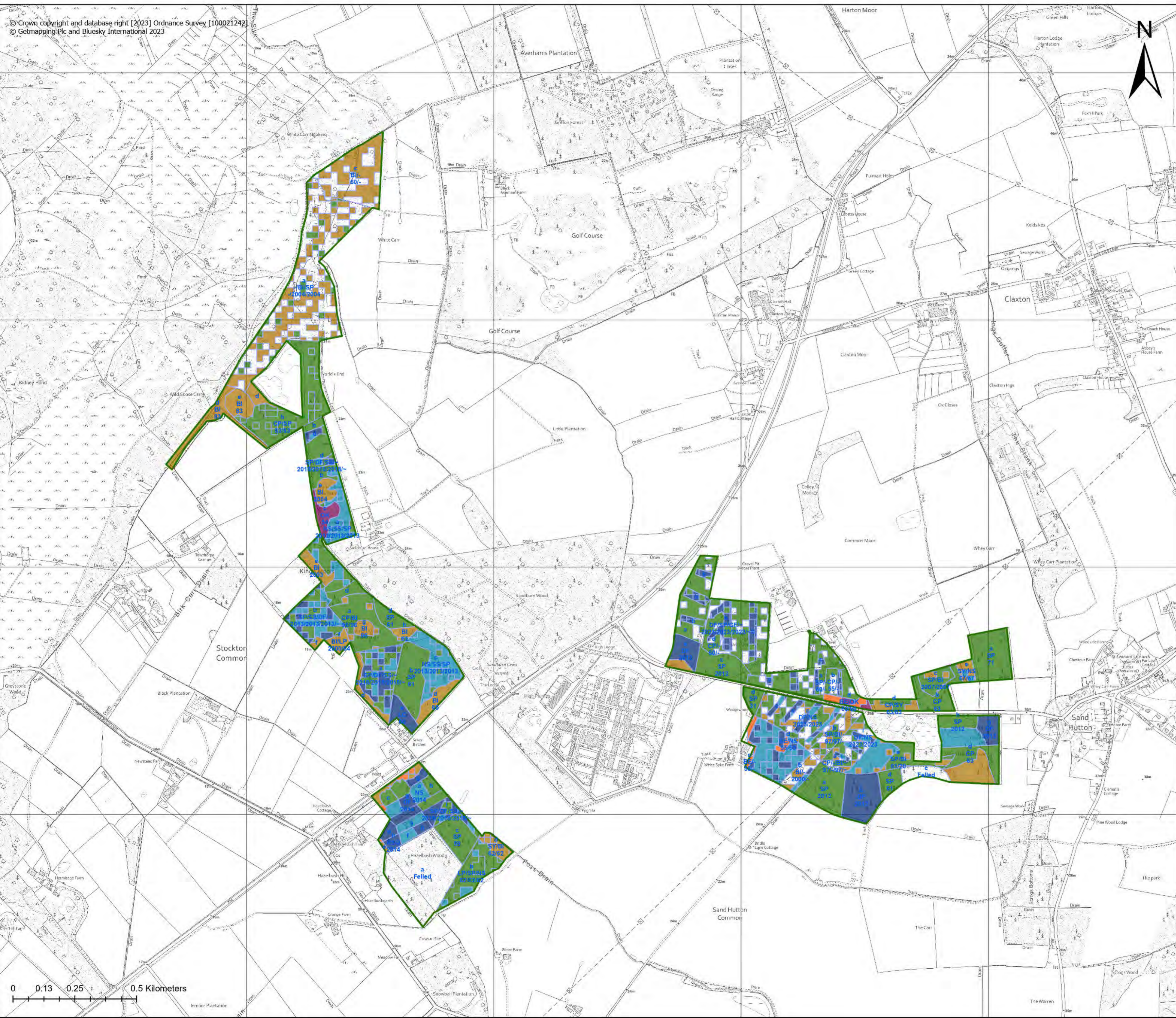
Sand Hutton Forest Plan
FP Map 01 - Soils
Scale: 1:10,000
When Printed @ A2
Created: June 2023

-  Typical Ground-Water Gley
-  Argillic Brown Earth



Sand Hutton Forest Plan
FP Map 02 - Current Species
Scale: 1:10,000
When Printed @ A2
Created: June 2023

- Beech
- Oak
- Other Broadleaves
- Other Conifers
- Pine
- Spruce
- Open, Felled etc



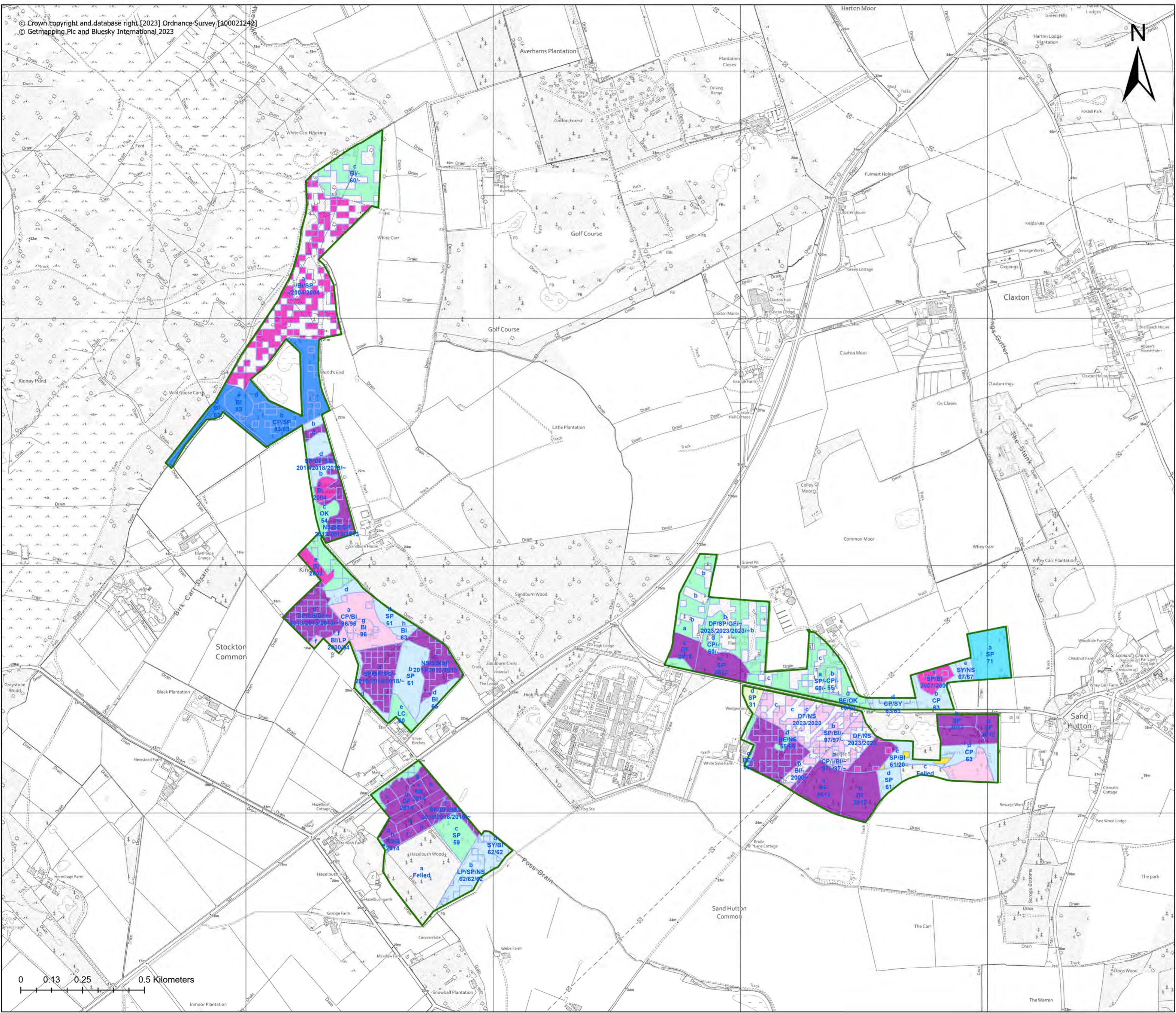
Sand Hutton Forest Plan

FP Map 03 - Age Class

Scale: 1:10,000
When Printed @ A2

Created: June 2023

- 1901 - 1920
- 1931 - 1940
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2010
- 2011 - Present



0 0.13 0.25 0.5 Kilometers



Sand Hutton Forest Plan
FP Map 04 - Natural Heritage
Scale: 1:10,000
When Printed @ A2
Created: June 2023

-  Masts/Aerials
-  Gas Pipelines
-  Overhead powerline
-  Underground powerline
-  Overhead telephone or fibreoptic
-  Underground telephone or fibreoptic
-  Sites of Special Scientific Interest
-  Watercourses

0 0.13 0.25 0.5 Kilometers

Land at Worlds End adjacent Strensall Common SSSI underwent conifer removal under the previous forest plan

- The area of mosaic open and wooded heath (yellow) will continue to be maintained in line with the existing management plan

The woods sit within an arable landscape. Tree cover can restrict views which are limited to edges and internal landscapes.

- Size and shape of clearfells will be in keeping with the surrounding landscape.
- Lower Impact Silvicultural Systems implemented across the woods will continue development of structurally diverse woods.
- Restocking will provide opportunities to improve and diversify road and ride side edges

Sustainable timber production remains a priority objective for these woods. Species selection will consider forest health issues and alternatives to main tree species.

- Corsican pine will not be planted due to Red Band Needle Blight.
- The continued introduction of alternative conifer species will be considered where these suit site conditions.
- Site improving broadleaf species may also be included as a component of productive mixed species

Wooded heath - Successional Open

Manage as predominantly mixed broadleaf

Manage as predominantly productive mixed conifer

Sub-compartments

Sub-compartments

Public Rights of Way (Eng.)

Public Rights of Way (Eng.)



Proposed Harvesting Map

The map shows how we intend to manage tree felling in Sand Hutton in order to meet the multiple objectives of management there.

Clearfells

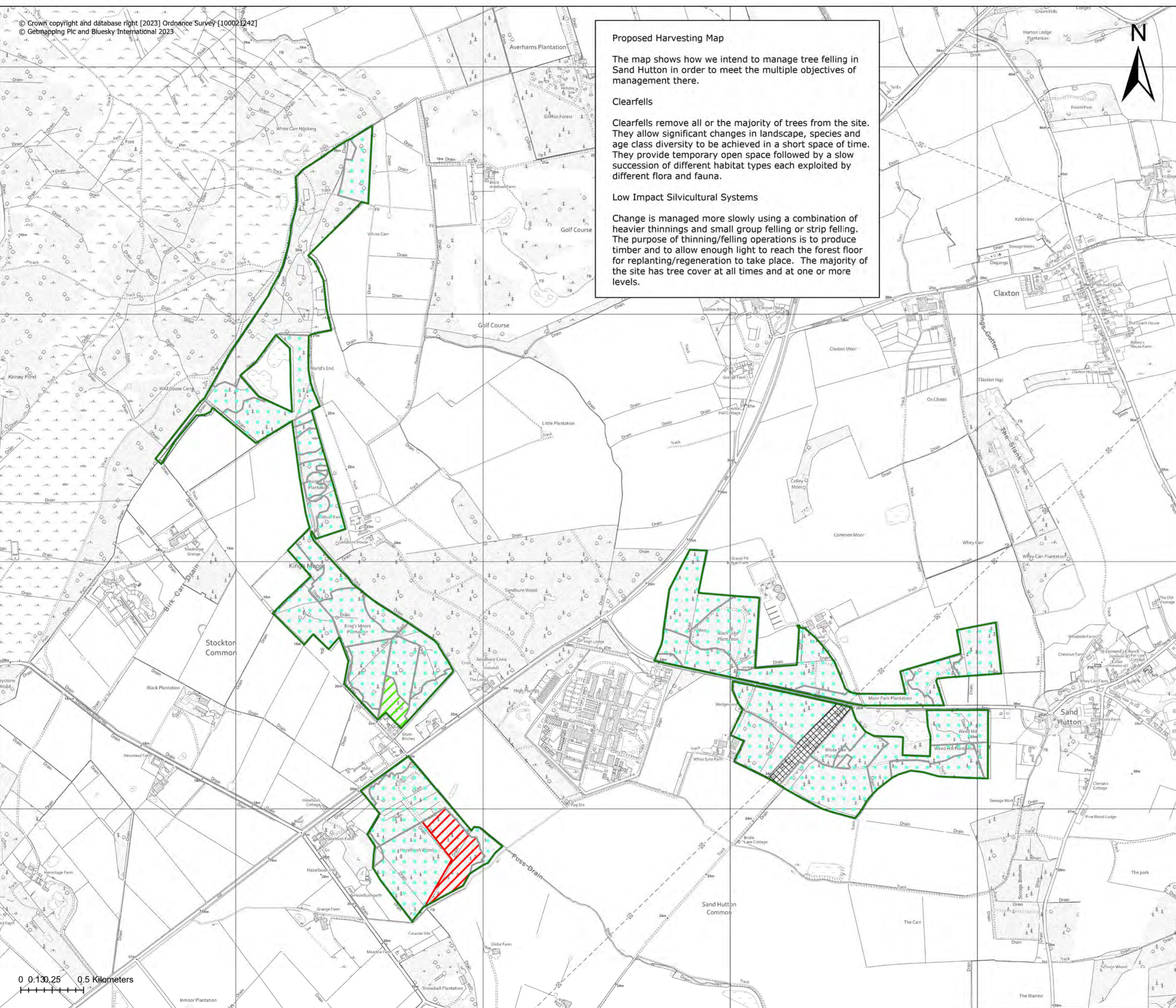
Clearfells remove all or the majority of trees from the site. They allow significant changes in landscape, species and age class diversity to be achieved in a short space of time. They provide temporary open space followed by a slow succession of different habitat types each exploited by different flora and fauna.

Low Impact Silvicultural Systems

Change is managed more slowly using a combination of heavier thinnings and small group felling or strip felling. The purpose of thinning/felling operations is to produce timber and to allow enough light to reach the forest floor for replanting/regeneration to take place. The majority of the site has tree cover at all times and at one or more levels.

Sand Hutton Forest Plan
 FP Map 06 - Management Coupe
 Scale: 1:10,000
 When Printed @ A2
 Created: June 2023

- 2023 - 2026
- 2027 - 2031
- 2032 - 2036
- 2037 - 2041
- Beyond 2042 or LISS
- Other / Open Land
- Long Term Retention



All timber arising from the Forestry England estate represents a negligible risk under the Timber and Timber Products Placing on the Market Regulations (UKTR) and UK FLEGT Regulations

Sand Hutton Forest Plan
FP Map 07 - Management Type
Scale: 1:10,000
When Printed @ A2
Created: June 2023

- Clearfell
- Strip shelterwood
- Group shelterwood
- Irregular shelterwood (general)
- Other/Open Land

0 0.130.25 0.5 Kilometers



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



The map shows the main species group that are to be used when restocking felled areas. Due to the constraints of map scale, unplanted areas are not shown unless they are greater than 0.5 hectares in size. This means that unplanted corridors such as along forest roads and rides will not be shown on this map.

Predominantly mixed conifer areas will be regenerated through a combination of planting and natural regeneration with appropriate species, dependent on the underlying site conditions such as soil and topography.

In addition, climate change projections and plant health issues indicate a reduction in the suitability of species such as Corsican Pine and Larch for restocking. Species showing drought tolerance and disease resistance characteristics such as Macedonian Pine, Oriental Spruce, European Silver Fir, Coast Redwood and Douglas Fir will be considered.

Predominantly mixed broadleaf areas will be restocked by natural regeneration primarily using site-native species. This will be predominantly Birch but other species such as Rowan, Holly and Oak are anticipated. We will also accept other species that are not site-native such as Beech and Sycamore where these meet management objectives. Enrichment planting may be used where there is insufficient regeneration or where we wish to further diversify the range of species present.



Sand Hutton Forest Plan
FP Map 08 - Future Habitat & Restock
Scale: 1:10,000
When Printed @ A2
Created: June 2023

- Predominantly Mixed Broadleaf
- Predominantly Mixed Conifer
- Open and Wooded Heath

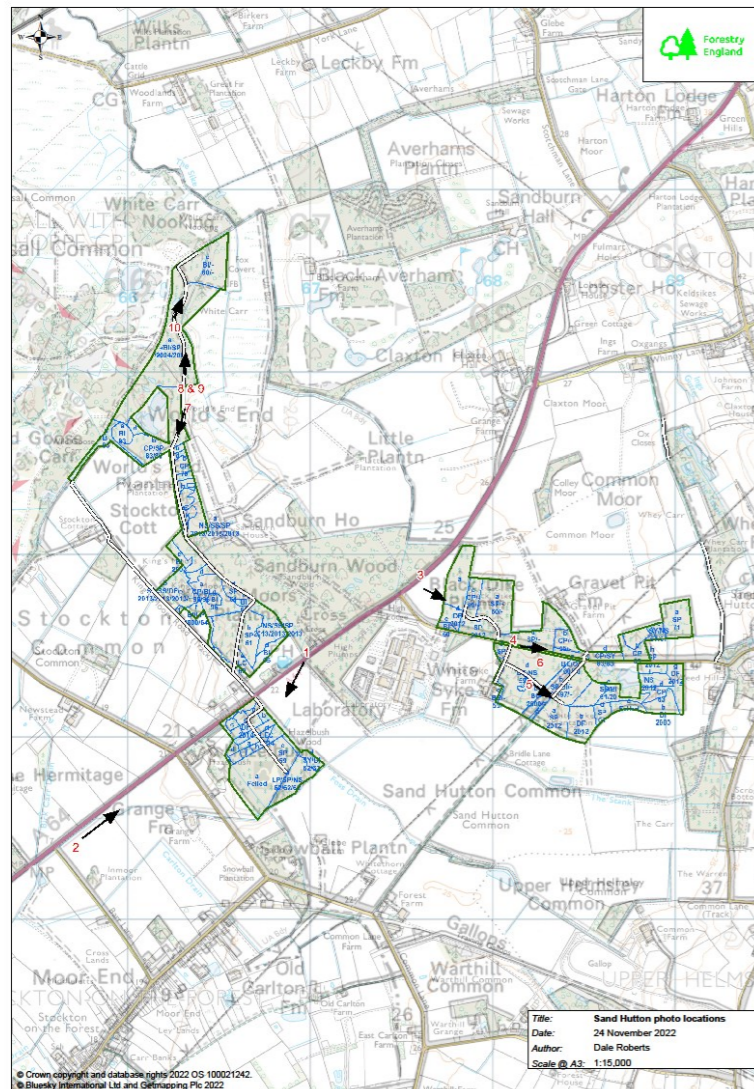
0 0.13025 0.5 Kilometers



Forest Design Plan

Sand Hutton

External Photographs



1— SE 6698 5843

North East edge of Hazel Bush as viewed from A64, showing a typical external view of the forest within the context of intensively managed agricultural fields in the foreground, with the forest in the background which directly abuts the forest boundary.



2 — SE 6568 5736

South West edge of Hazel Bush as viewed from A64/Barr Lane, showing a typical external view of the forest within the context of intensively managed agricultural fields in the foreground, with the forest in the background which directly abuts the forest boundary.



3— SE 6759 5883

Western edge of Black Dike plantation showing semi— natural boundary between intensive agricultural field and the forest.

4— SE 6811 5850 Showing council road between Moor park plantation and White Sike plantation, with a semi-natural boundary. This section provides a sense of enclosure before opening up to agricultural fields at the east-edge of the forest.



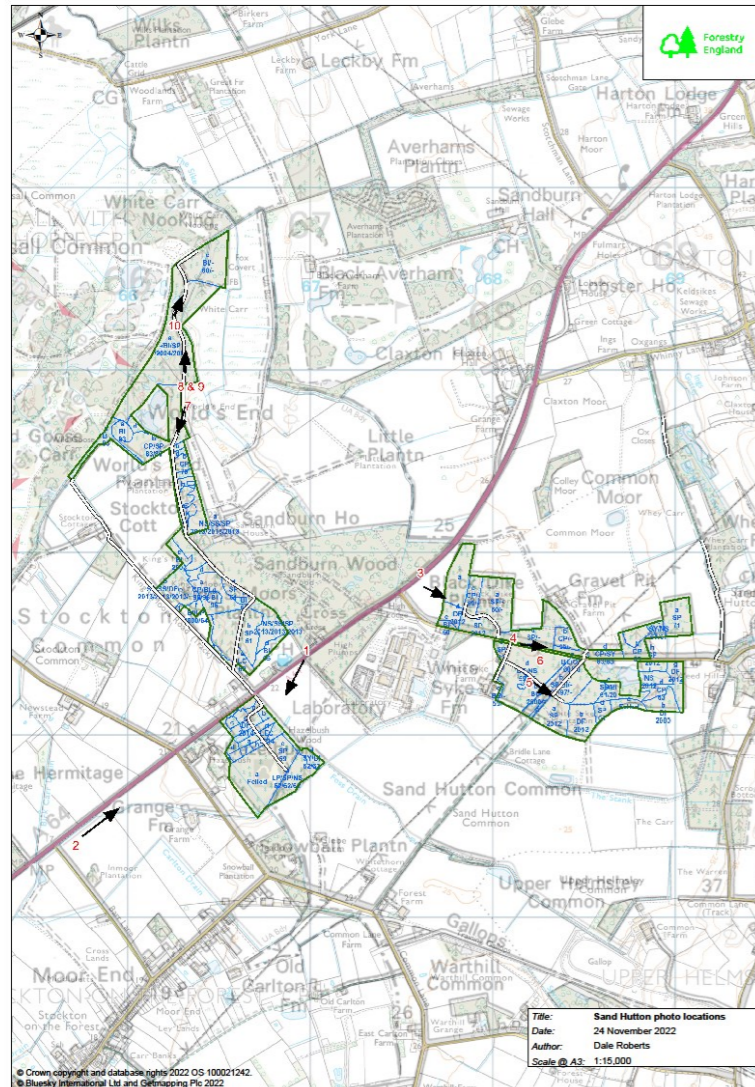
Forest Design Plan

Sand Hutton

Internal Photographs

5— SE 6820 5833

A typical internal view of White Sike Plantation demonstrating a sense of enclosure whilst illustrating species and structural diversity



6— SE 6824 5842

This image shows a typical application of strip felling implemented through the previous plan period and demonstrates a Lower Impact Silvicultural System (LISS) that will further structural diversity, whilst maintaining landscape sensitivity.

7—SE 6630 5975

Southerly view from World's End demonstrating how the block sits within the agricultural landscape as well as the views of the wider landscape that can be seen from within parts of the Sand Hutton block.



Forest Design Plan

Sand Hutton

Worlds End Wooded Heath Photographs

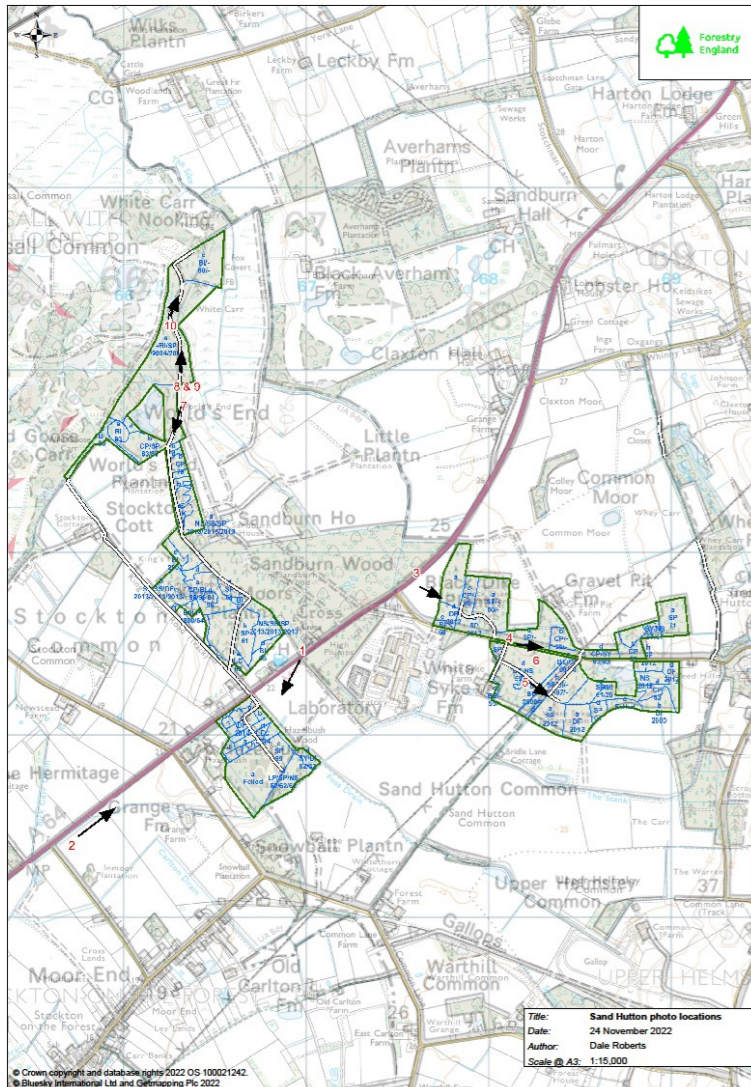
8—SE 6630 5992



9 — SE 6630 5998



10 — SE 6630 5998



Images 8, 9 and 10 are internal views of Worlds End. They demonstrate the diversity of open and wooded heath that is developing through current management approaches, inline with the implementation plan.