Forestry Commission England

East England

Brandon & Elveden

Thetford Forest

Forest Plan

2017 — 2027

Contents

PROTECTING
AND EXPANDING
ENGLAND'S FORESTS
AND WOODLANDS,
AND INCREASING THEIR VALUE TO SOCIETY
AND THE ENVIRONMENT.

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1. What are Forest Plans?

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

- To provide descriptions of the woodlands we manage.
- To explain the process we go through in deciding what is best for the woodlands' long term future.
- To show what we intend the woodlands to look like in the future.
- To outline our management proposals, in detail, for the first ten years so we can seek approval from the statutory regulators.

Our aim is to produce a plan that meets your needs for the woodland; meets the needs of the plants and animals that live there and meets our needs as managers.

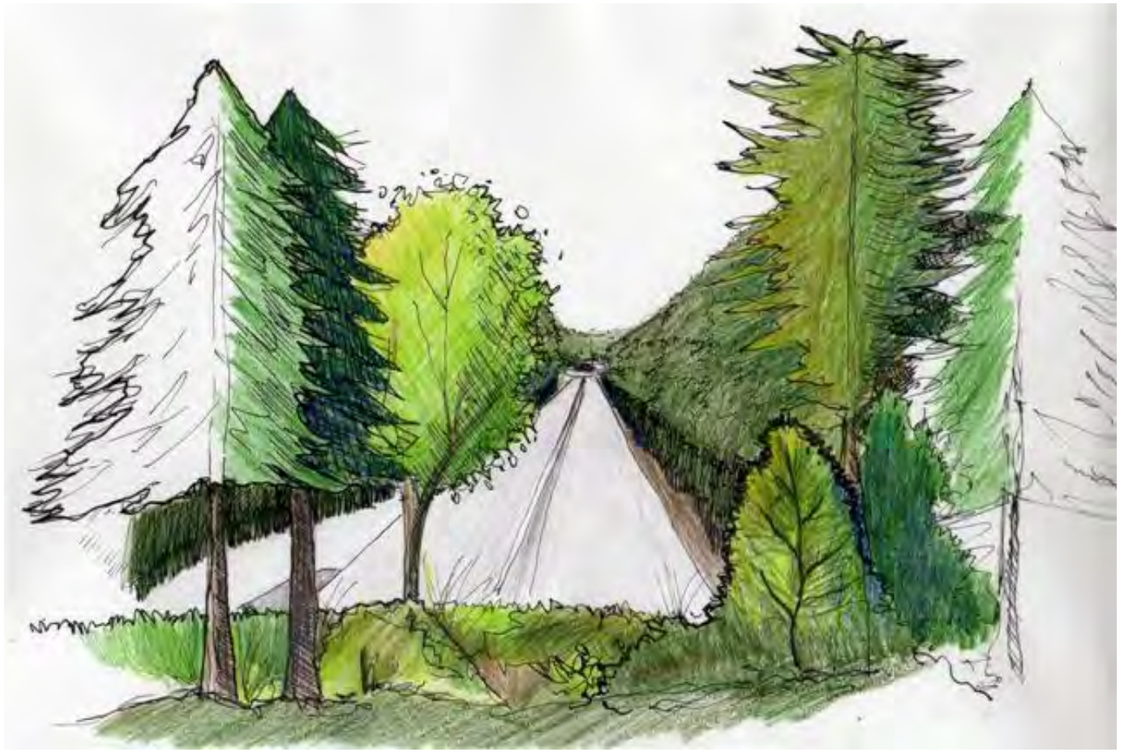
We have produced this draft plan to illustrate our management proposals thereby creating an opportunity for you to comment on the plan, whether you are a user, a neighbour or a member of one of the many stakeholder groups that have an interest in the woodlands. Information on how to get your comments to us is on the webpage.

This plan does not set out the detailed yearly management operations for each small piece of a wood, known as a coupe*. It is not possible to say which year a particular operation will take place, but we can say in which five-year period it should happen.

All tree felling in the UK is regulated and a licence is required before trees can be felled; the scale of tree felling across England's public forest estate is such that the Forest Plan is the best mechanism for applying for this licence.

Responsibility for checking that the plan meets all the relevant standards and statutes lies with another part of the FC (Forest Services). If all the criteria are met, full approval is given for the management operations in the first ten years (2017 - 2027) and outline approval for the medium term vision (2027 - 2086). The plan will be reviewed after the first five years (2022) to assess if the objectives are being achieved. Natural England will approve management proposals for the Sites of Special Scientific Interest (SSSIs) which lie within our woods. Historic England will approve management proposals for Scheduled Monuments (SM).

We use some technical words and phrases in the text because they best describe what we are doing. There is a glossary at the back of the plan with some commonly used technical forestry terms and abbreviations these technical words are identified with an *.



2. Standard Practices and Guidance

Underpinning the management proposals in Forest Plans is a suite of standard practices and guidance described briefly below. Some of these practices are strategic national policy, whilst others are local expressions of national policy to reflect the particular conditions found in East England - the policy level is indicated in brackets.

The UK Forestry Standard* (national)

The UKFS sets out standards for the sustainable management of all forests and woodlands in the UK and describes, in outline, good forest practice.

The UK Woodland Assurance Standard* (national)

The UKWAS certification standard sets out the requirements which woodland owners, managers and forest certification bodies can use to certify their woodland and forests as sustainably managed. It is the document which guides all of our management, and against which the FC is certified by outside consultants to ensure our compliance. The most current edition at this time is the third edition.

Deadwood (national and local)

Deadwood is important in the forest as a habitat for birds, invertebrates and some primitive plants. Guidance is given on how to provide deadwood in the forest of different sorts and sizes and how this will be distributed.

Natural reserves (national and local)

Natural reserves are areas of the forest where little or no active management takes place thereby creating a very different and special habitat in our otherwise actively managed forests.

Sites of Special Scientific Interest* (national)

Within the UK sites that are nationally important for plants, animals or geological or physiographical features are protected by law as Sites of Special Scientific Interest (SSSIs).

Other Designations

The FC landholding in England has a wide range of European and national designations placed upon it in various locations across the country, such as;

- National Park
- Area of Outstanding Natural Beauty (AONB)
- Special Protection Area* (SPA)
- Special Area of Conservation (SAC)
- Sites of Special Scientific Interest* (SSSI)
- Scheduled Monuments (SM's)
- County Wildlife Sites*
- European Protected Species

Along with the standard guidance documents, we have individual plans for our designated sites; these describe work required to maintain and enhance the protected features. We will gradually integrate these into our Forest Plans where appropriate.

In addition, the Forestry Commission has a number of practice guides and specialist bulletins which further inform our management, some of these are available to download from our website https://www.forestry.gov.uk/england-policypractice

3. Introduction

This Forest Plan covers 1,430 hectares of Forestry Commission land which is part of Thetford Forest in the county of Suffolk. The plan area shown on page 6 totals 1,656 ha. However, 226 ha will be removed from the Forestry Commission's landholding following a Highways England project to mitigate for Stone curlew habitat, due to the dualling of the A11 from Mildenhall to Thetford. The plan covers this in more detail on page 10.

We are guided and directed by the policies and strategies detailed below:

The Governments Priorities

The Government forestry policy is set out in Defra's and Forestry Commission England's Forestry and Woodland policy statement. This policy was published in 2013 during the Conservative and Liberal Democrat coalition government.

The Forestry Commissions Priorities

At a national and regional level the Strategic Plan for the Public Forest Estate in England and Corporate plan 2015-2016 define our strategic direction. At a district level the East England Forest District Strategic Plan 2016-2021 sets our objectives to meet the 3 drivers of sustainable forest management:

- An Estate that delivers for Environment, Nature and History
- An Estate that delivers for Economic Growth
- An Estate that delivers for People

Our vision and overall goal is "To secure and grow the economic and natural capital value of the English Public Forest Estate".

General Description of Plan Area

The plan area is situated south west of Brandon and north of Elveden, along the B1106. For management purposes the block is comprised of two forest areas including Brandon and Elveden. Brandon forest holds recreation facilities including a visitor centre, car park, walking and cycling trails whilst Elveden forest has no public access.

The area is bordered by Lakenheath Warren and Center Parcs to the south and RAF Lakenheath and Wangford Warren and Carr to the west. The rest of the plan area is surrounded by intensively managed arable and animal production units. There is a significant proportion of non-Forestry Commission woodland in the landscape, linked with hedgerow trees.

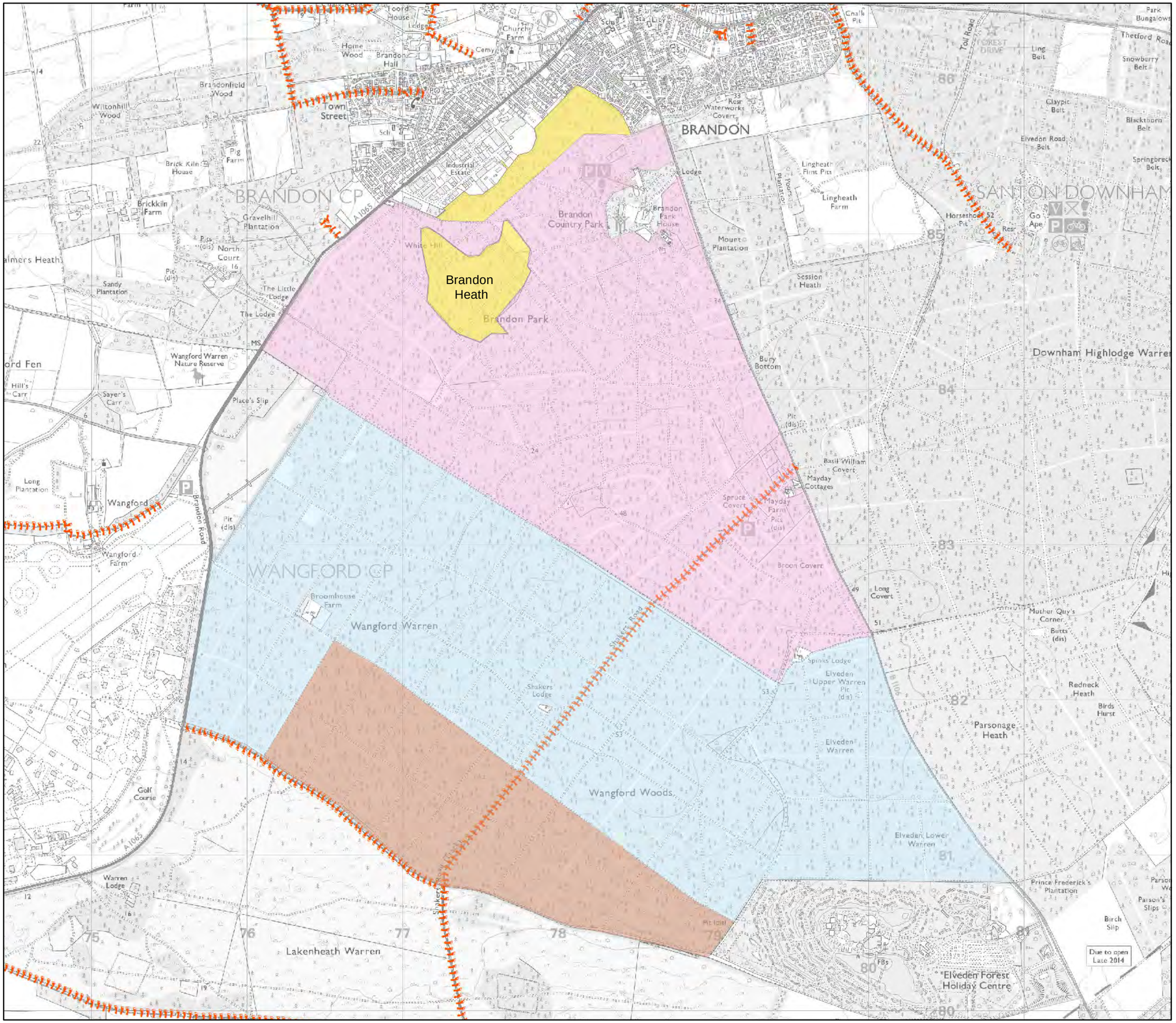
The whole plan area lies in the county of Suffolk, and is within the administrative boundary of Forest Heath District Council. It falls within the three parishes of Brandon, Elveden and Wangford.

The majority of the Brandon area is held as freehold, acquired by the Forestry Commission in the 1920s and 30s, this land is open access. Elveden (972ha) is leasehold land from Elveden Estate and public access is not authorised (see plan area and landholding status map on page 6).

The strategic priorities of the Government and Forestry Commission set the direction for the future management of the woodland. These along with the East England Forest District Strategic Plan and local knowledge are used to prepare a design brief for the area. The plan is then subject to a consultation where subsequent changes may be applied before being finalised.

The whole plan is arranged around the three themes of sustainable forest management:

- Nature
- Economy
- People



Forestry Commission England

East England Forest District

Brandon & Elveden

Scale: 1:23,000

Plan area and landholding status

Legend

- Brandon forest freehold woodland
  Public right of access
- Brandon forest freehold woodland
  Permissive access
- Elveden forest leasehold woodland
  No public access
- Elveden forest leasehold woodland
  Removal from FC landholding in 2019
  No publlc access
- Public rights of way

Produced by the planning team
August 2017

N W E S

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PEFC PEFC/19-40-1002 Promoting Sustainable Forest Management www.pefc.org

4. Design Brief

Nature

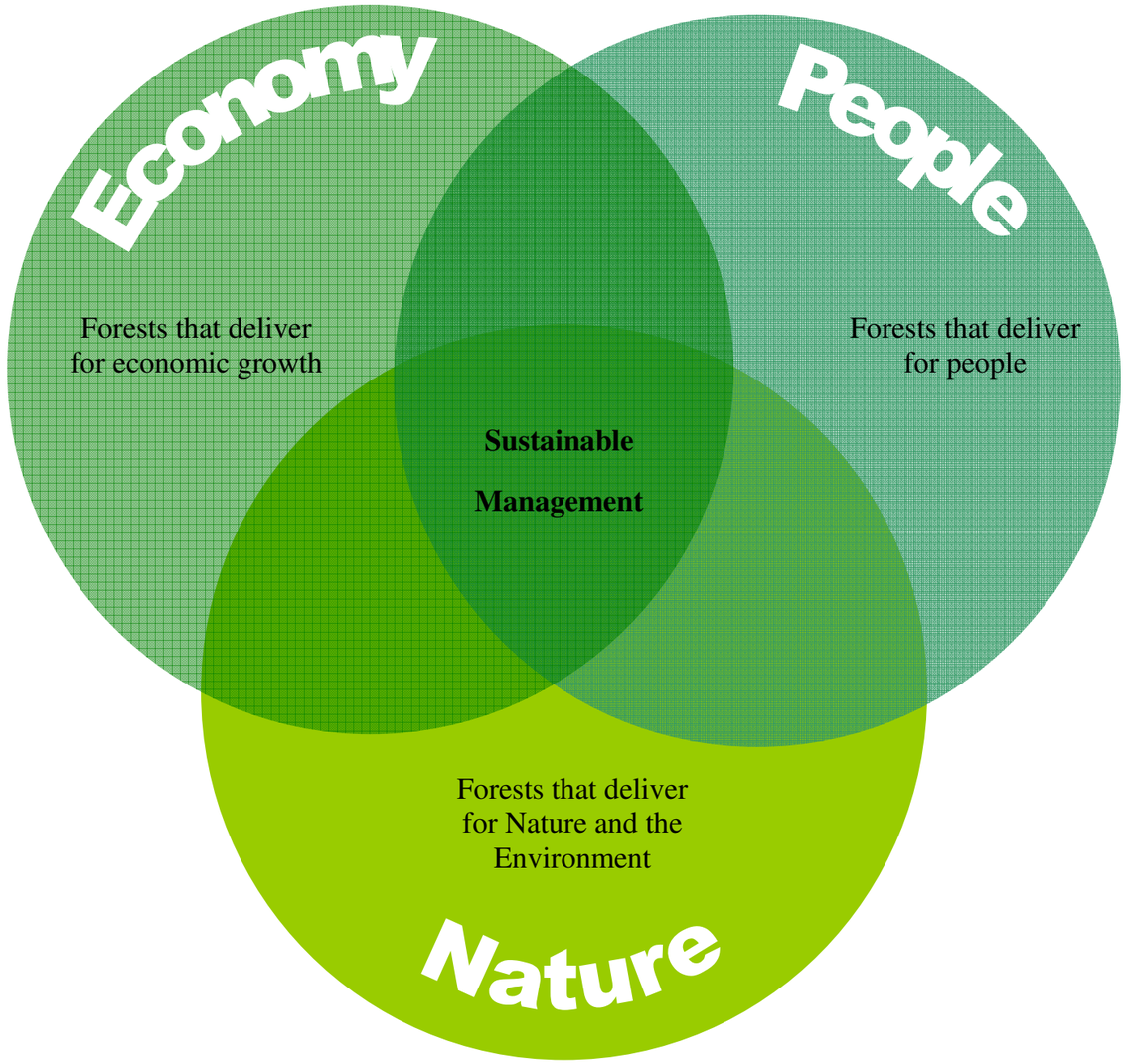
- The felling plans should aim for an even distribution of felled area for Woodlark/ Nightjar nesting habitat and contribute to maintaining a minimum area of 12,757 ha in cyclic clearfell. There should be no more than 10% of coupes* <5ha as required under the SPA* designation.
- In accordance with the tolerance table on page 27, incorporate open space networks as detailed in the Thetford Open Habitat Plan (appendix 1), connecting up with external designated sites and encouraging distribution of designated rare flora and fauna.
- Agree scheduled monument (SM) management plan for White Hill (appendix 2) with Historic England.
- Maintain and improve cultural and heritage value of the land by protecting sensitive heritage features highlighted through the OSA* process.

People

- Create a pleasant natural environment for the public to enjoy outdoor recreation in a rural woodland setting.
- Manage an area around Brandon Country Park as continuous cover* for amenity and conservation value.
- Maintain recreational facilities to a high standard through inspection processes and partnership working with Timber, Friends of Thetford Forest and Brandon Country Park.

Economy

- Maintain the land within our stewardship under UKWAS* certification by meeting standards detailed in UKWAS third edition.
- Improve economic resilience of our forests by increasing species diversity through restock programmes to protect future timber supplies and biomass.
- Assess the threat posed by Dothistroma Needle Blight (DNB) in Corsican pine plantations under 40 years old, through survey work. Identify suitable silvicultural practices including underplanting for areas of high infection to maintain economic viability.
- The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments.



Forestry Commission

East England Forest District

Brandon & Elveden Forest

Design Concept Map

Access and recreation facilities

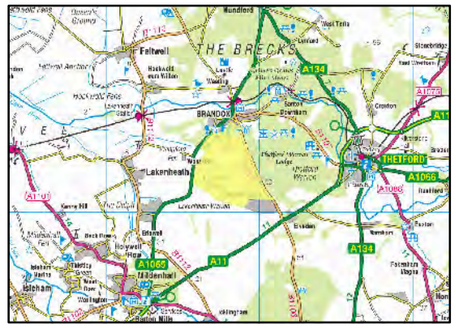
- Freehold woodland — Public right of access
- Leasehold woodland — No public access
- Stone curlew mitigation area — No public access
- Settlements
- House
- Roads
- Forest access barrier
- Mayday Car Park
- Brandon Country Park
- Plane spotters viewpoint
- Poacher cycle trail
- Walking trails
- Running route
- Public Right of Way

Environment

- SSSI & SPA
- FC Conservation Sites
- Surrounding SSSI sites to plan area
- Veteran & character trees
- Scheduled Monument (White Hill)
- Proposed Open Habitat plan network

Location & Context

Forest Plan area highilighted in yellow



Design Brief

Nature

- Evenly distribute clearfell areas for Woodlark/Nightjar habitat as required under the SPA designation.
- Implement Open Habitat Plan where possible encouraging distribution of rare flora and fauna.
- Agree scheduled monument (SM) management plan (appendix 2) with Historic England.
- Maintain, manage and protect sensitive heritage features using the OSA* process.

People

- Create a pleasant natural environment for the public.
- Manage an area around Brandon Country Park as continuous cover*.
- Maintain recreational facilities through inspections process and partnership working with Timber, Friends of Thetford Forest and Brandon Country Park.

Economy

- Maintain FC land under UKWAS* certification.
- Increase species diversity through restock programmes.
- Identify suitable management for areas of high DNB infection.
- Smooth crop production to meet market commitments.

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

N

Scale:1:28,500

5. Nature

Site Characteristics

Brandon and Elveden Forest lies within the Brecks in the heart of East Anglia. It is among one of the warmest and driest parts of the UK with relatively low rainfall of less than 600mm/year. East Anglia is generally flat with an undulating landscape and big open skies. Large commercial conifer plantations bordered by broadleaf belts, form the forest landscape, a distinctive characteristic of lowland England. Heathland and agricultural land surrounds the plan area, often defined by scots pine and mixed broadleaf belts on the edge of the forest.

A distinctive feature of the Brecks is the thin mantle of sandy soil which covers the underlying chalk bedrock caused as a result of glaciations and the freeze-thaw conditions, which occurred in the final stages of the last Ice Age. The chalk solid geology lies close to the surface and is covered by deposits of sand and flint. The last ice age produced the intricate ground patterns containing large patches of calcium-rich soils interspersed with acidic conditions, that are present across the forest today. These chalky soils support a limited range of tree species but a great diversity of plants, invertebrates and breeding birds adapted to live in forestry and arable habitats.

Wooded Habitats

Coniferous Forest

Most of the wooded area of the plan is conifer forest, with Pine being the predominant species. The mature forest areas are used as breeding habitat by several different species of raptor including Hobby and Goshawk and other Schedule 1 birds such as Firecrest. Many continuous cover areas* in the plan provide habitat for these species (see management map page 15).

Deadwood

The OSA* process is used to consider opportunities to provide deadwood habitat. A proportion of dead trees are left standing after clearfelling, providing they are regarded as safe; these become important standing deadwood habitat. A lot of fallen trees are left to rot down where they fall, it is important not to 'tidy up' these fallen trees from a biodiversity point of view as shaded rotting wood is important habitat for invertebrates.

The largest amounts of deadwood can be found in areas of long term retention and continuous cover forest where ecological processes such as vegetation succession, natural regeneration and windthrow increase biodiversity and conservational value of the area.

The maintenance and enhancement of biodiversity value is a key aim of the Strategic Plan for the district. The existence of various species of rare and protected bird, flora, lepidoptera and mammals within certain parts of the plan area help define the management and felling regimes that need to be imposed to ensure habitats are both maintained and enhanced.

Protected Sites

Breckland Forest SSSI* designated in 2000 totals 18,126ha and covers most of Thetford Forest (*www.sssi.naturalengland.org.uk/citation/citation_photo/2000443.pdf*). Effectively the whole plan area is designated under the Breckland Forest SSSI (see design & concept map page 8). The features of conservation interest include: the invertebrate communities of the open grassland areas and bare ground; 20 species of rare plants found in grassland and disturbed areas; 2 species of bird; Woodlark (Lullula arborea) and Nightjar (Caprimulgus europaeus). These birds nest on open ground and rely on the clearfell tree harvesting system to generate suitable nesting habitat.

Breckland Forest SSSI forms part of the Breckland SPA* designated under the European Birds Directive. The SPA designation supports populations of Woodlark and Nightjar, by protecting their breeding habitat (restocked forest areas) and therefore impacts on the clearfell programme across Thetford Forest. The revision of the forest plan will try to smooth the 'supply' of breeding habitat over time by amending the felling dates of the clearfell coupes to produce an annual area of clearfell close to the sustainable mean for the forest. This is illustrated in a bar graph in the plan appraisal on page 18.

There are three SSSI's which adjoin the plan area including Lakenheath warren, Wangford warren and Carr and RAF Lakenheath (design concept map page 8).

5. Nature

Ponds, watercourses and wetlands

There are several small fluctuating ponds within the plan area providing breeding ground for smooth newts. These are a species generally found in damp meadows, field edges, parks, gardens, woods and stone piles. The ponds are situated in a large meadow managed as open space and surrounded by woodland. There are also small man made fluctuating ponds across the plan area known as fire ponds previously used as a water source for putting out fires. These support a range of species including amphibians and dragonflies and are an important source of water for birds in dry weather.

There is a bat hibernaculum present in a disused well. The plan area is important for bats with a long term project in place since 1975 and still going today. Studies show proximity to good feeding habitat including mixed conifer/broadleave canopies and wide grassy rides is essential for bat populations. Areas which are warm, heat retaining and out of the wind also provide ideal conditions. In addition to the well there are bat boxes present across the plan area to provide extra roosting and breeding sites in conifer plantations. The majority of these areas are managed through continuous cover* to avoid moving the boxes.

An area known as the Fishing Ponds located on the Wangford/Brandon border was previously a site of a mere/pond. This area is now dry and a crescent-shaped depression can be seen on the ground. Trees were originally planted over this area and failed due to frost damage. However, due to its history this area has now been identified as an archaeological feature and will be left as open space.

Fire pond

Open Space

The UK Forestry Standard and UKWAS requires a minimum 10% of the forest area to be managed as open space for biodiversity, cultural and recreational purposes. The existing open space within this plan is made up of recreation areas including a car park, Brandon heath, Elms plantation and the network of forest rides.

Brandon Heath is part of the Breckland Heathland project formed in 2002 to restore existing heaths and re-create 300ha of new heathland in the Brecks. The heathland is managed by the Norfolk Wildlife Trust and provides the best example of heather heathland in the area. The recent creation of small north and south facing ridges provides habitat for solitary bees, wasps and basking spots for Adders, whilst also encouraging rabbits to use them as barrows to provide natural ground disturbance across the heathland. Brandon heath provides essential habitat for Breckland SSSI species and is currently managed through grazing.

Elveden forest supports a variety of nationally rare fauna and flora including the grayling butterfly, Sickle medick, Tower mustard, Red tipped cudweed, Sheeps fescue, Mossy stonecrop, Kidney vetch and Fire-leaved sandwort. It is recognised that widening and linking rides to surrounding open habitat within this plan will increase biodiversity for the priority habitats of lowland dry acid and calcareous grassland, whilst improving species distribution. The restock map on page 17 shows the proposed network of 40m wide rides for the area. An assessment to determine the suitability of the proposed ride locations will be carried out along with an OSA* before committing these areas to open habitat.

As well as conservation value and timber extraction routes, these wide rides act as fire breaks helping to prevent fires spreading during a wildfire incident, and providing good access for the emergency services. They are also important for wildlife management providing good feeding areas for deer. Open habitat outside of Brandon Heath is managed through mowing, discing, ground disturbance and forage harvesting practices.

The Thetford Open Habitat Plan identifies priority habitats and aims to integrate 10% open space across 12 Thetford Forest plans (appendix 1), creating ecological corridors, benefiting the SSSI designated features and the wider Breckland landscape, helping to connect the adjoining SSSIs. Kings Forest will be the trial site for this project which will run from 2017-2020. Future funding availability and requirement for open space across the district will be assessed and determine further implementation across the rest of Thetford Forest. More information on this proposed plan can be found at: www.forestry.gov.uk/forestry/INFD-9P7JCF.

During the recent dualling of the A11 between Mildenhall and Thetford an area of land designated for Stone curlew, within the Breckland SPA, was lost or made unsuitable. Highways England, are working with the Forestry Commission and others to mitigate for this and an area of land within the Elveden forest area has been identified to re-create habitat for Stone curlew, Woodlark & Nightjar species (see Design and Concept map on page 8). This area adjoins the existing Lakenheath Warren SSSI, is close to another area managed for Stone curlew and as leasehold land has no public access, making it an ideal location.

5. Nature

Clear felling in this area began in January 2017 and will be completed by January 2019, at which point the land will be surrendered back to the lessor, Elveden Estate, to manage as heathland. This project has been carefully assessed under the Habitat Regulations and Environmental Impact legislation and is not part of the forest plan consultation. As this area will no longer be part of the Forestry Commission landholding it has been removed from the restock map shown on page 17. The public rights of way which run through this area will be unaffected by these changes.

The project covers an area of 226 ha shown on the bar graph in the plan appraisal on page 18. As this area is not part of the forest plan consultation and will be removed from Forestry Commission landholding in 2019, it has been separated out from the rest of the plan area. The forest plan is therefore based on the future area of 1,430 ha, not the current area of 1,656 ha.


Brandon Heath


Mossy Stone Crop


Tower Mustard


Adder


Grayling

5. Nature *cont.*

Safeguarding our Heritage

The Forestry Commission acquired Elveden forest in the 1930's with a small number of early woodland blocks in existence before this time. Historically the majority of the area was heathland with a small number of other areas managed for arable crops. As part of the Breaking New Ground (BNG) Landscape Partnership Scheme, the landscape revolution project explores the changing landscape of the Brecks from 1700-1930. More information on this can be found at: www.breakingnewground.org.uk/our-projects/a-window-into-the-past/landscape-revolution/

There is one Scheduled Monument in the plan area known as White Hill. This is a bell barrow, a funerary monument dating back to the early and middle bronze age. White Hill is of an extraordinary size and of national importance for providing information about the character, developments and density of the prehistoric population in this area. Scheduled monuments are managed through strimming vegetation, tree removal where necessary and monitoring of mammal and public damage in order to keep them clear and maintained. White Hill is fenced to keep out grazing animals which have caused significant damage forming a track through the centre of the mound (see photo opposite). The management plan shown in appendix 2 will be agreed with Historic England and does not form part of the consultation process.

As part of the BNG Landscape Partnership Scheme, the Forestry Commission and Forest Research carried out a LiDAR* survey covering 150km^2 of Thetford Forest in the Brecks to reveal hidden ground features providing new information on previous land use. The LiDAR image opposite shows Elms Plantation, the site where over 150 pits were mined for flint to make gunflint for the British Army in the 18th & 19th centuries. Brandon flintmasters secured the contract to supply the British Army during the Napoleonic wars (1799-1815). The mining and knapping of flint for use in firearms was an important source of livelihood in Brandon for over 150 years. This can be seen in the flint buildings that remain in Brandon today and the pits which remain from former flint mines across the forest. Elms Plantation is managed as temporary open space as natural regeneration* is present across the site. This management avoids damage to the area. Through the BNG partnership, a project led by The Breckland Society was carried out to research and record the history and distribution of flint mines in the Brecks. More information on this can be found at: www.breakingnewground.org.uk/our-projects/a-window-into-the-past/flint-in-the-brecks/

In 1820 Edward Bliss, a wealthy industrialist from selling gun flint to the army during the Napoleonic war selected Brandon Hall to create a parkland. During this period it was seen as a way of expressing wealth and importance. When the war ended and the gun flint industry began to decline Bliss was able to deploy his men to plant over 8 million trees, most of which were plantations and shelterbelts of Scots pine and Larch. An arboretum of exotic trees from around the world including Blue atlas cedar, giant redwoods and monkey puzzle was also created and some of these species can be seen around Brandon Country Park today. Following his death in 1845 the park remained in Bliss family ownership until 1903 and eventually sold by a private owner to the Forestry Commission in 1936. The need for self-sufficiency in timber following the economic disaster of the first world war led to the creation of Thetford Forest. There is a large area of mixed broadleave and conifer species surrounding Brandon Country Park, which is maintained as continuous cover and provides important habitat for firecrest and bats.

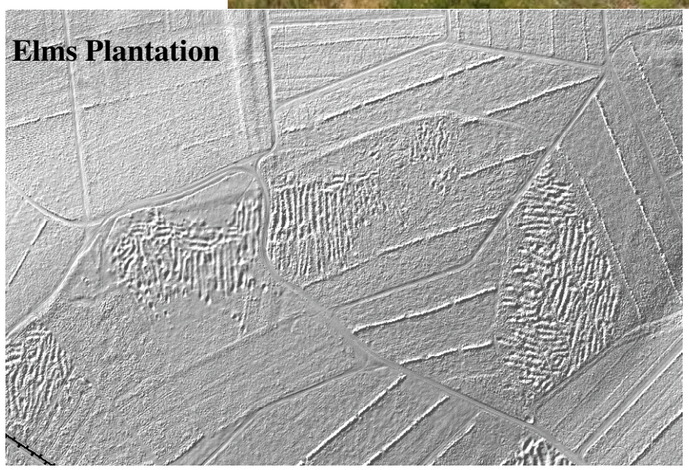
From the 13th to the 19th centuries, rabbits were high class luxury items farmed for their meat and fur in enclosed areas known as warrens. There were 26 warrens in the Brecks established by monasteries or wealthy landowners. There are partially surviving double, triple and quadruple linear earthwork banks which define the boundary of Wangford Rabbit Warren. Brandon and Elveden warren banks also exist within the plan area.

In common with much of Thetford Forest, the plan area has good survival of features associated with previous land use history including prehistoric worked flint, transport routes, building remains and warren banks.

Site specific heritage features are considered as part of an OSA* process before work commences. A handbook guide to protecting heritage assets has also been produced for forest workers and referred to during operations to increase understanding and protection of heritage features.

White Hill

Elms Plantation



6. People

Access and Recreation

The plan area provides 621 ha of unrestricted public access on foot (see plan area map on page 6). The main users of the area include walkers, cyclists, sled dog trainers and horse riders.

Brandon Country Park located on the northern edge of the plan area and run by Suffolk County Council is a popular visitor destination attracting 175,000 visitors per year. The visitor centre provides a network of waymarked trails including the 1 mile Redwood trail, 6 mile Firecrest trail and 3.5 mile Forest & Heath trail, an orienteering course, a small play area and a tea room. A popular Park Run event, organised by local volunteers also runs from the park weekly all year round. For more information on Brandon Country Park please visit www.brandoncountrypark.org.uk.

High Lodge Forest Centre run by the Forestry Commission oversees recreation within the Brandon forest area and directly manages the waymarked Poacher cycle trail, wild trails and the Goshawk walk, as well as the small car park near Mayday Farm (see design & concept map page 8). These trails are inspected regularly by volunteers including Timber and Friends of Thetford Forest. High Lodge also manage permissions for events held within the Brandon forest area. There are currently no future recreation developments planned for this area. The Thetford Forest Recreation team manage permissions for events held in the Elveden forest area and husky training permissions in the Brandon forest area. Sled dog training is permitted mornings to 10:30am and from 4:00pm. Signs are in place across the Brandon forest area to warn forest users of this activity (see plan area map on page 7).

There are several gateways around the forest boundary which although not encouraged are often used for parking. The forest road entrance opposite RAF Lakenheath is often used by plane spotters. There are public rights of way along the southern boundary of the plan area and along Shakers Road. The Brecks trail, led by Suffolk County Council through the Breaking New Ground project, is a waymarked route from West Stow to Brandon Country Park. This route runs through the plan area along Shakers Road, then follows the Poacher trail through to Brandon Country Park (see design & concept map page 8).

A recent Europe wide study has shown that people who visit forests prefer to see stands of large mature trees, both of broadleaves and conifers. This study confirms our own management policy of retaining some over-mature trees and managing them under a long term retention* or continuous cover system*, thereby contributing to providing a more aesthetic environment.

The Forestry Commission manages a recreation webpage for High Lodge to provide information and gather feedback from visitors. This can be found at www.forestry.gov.uk/highlodge. There is also a High Lodge and Thetford Forest Facebook page.

Community

There are private houses within the plan area, mostly within the Elveden block. Isolated houses and farming units border the plan area along with Brandon town, Brandon Country Park, RAF Lakenheath and Center Parcs holiday village.

The surrounding villages of Lakenheath has a population of 4,500 and Elveden a population of 270. The nearest town to the plan area is Brandon with a population of approximately 9,000.

Forest plans are revised every 10 years and plans for the East England Forest District are accessible from the Forest Plans webpages at www.forestry.gov.uk/forestry/INFD-9PFDDY. Details of current forest operations in the area are also available on these pages.

Landscape

For nearly a century the landscape of Thetford Forest has been ever-changing; from the 1920's onwards tree planting on a huge scale created one of England's largest lowland forests and from the 1970's, when the trees started to reach maturity, the timber from the forest has been harvested. The present day landscape of Thetford Forest is a patchwork of trees of different ages intermingled with wide rides and open spaces.

As the age structure of the forest has altered it has been possible to assess the visual effect of the larger clearfells of the 1970's and 80's. These early clearfells were 25 – 30 hectares in size and can dominate the landscape. It is now agreed that a fell area of around 15 hectares fits better into the landscape, providing visual diversity while retaining the economies of scale for our forest operations.

Forest Plans have been used in Thetford Forest for more than 20 years; leading to a change from rectilinear felling shapes to more 'organic' shapes that follow natural or historic boundaries resulting in more of the forest becoming a mosaic of organic shapes composed of trees of different ages and species. There are just a few large rectilinear areas left to 'redesign' but most of the Thetford Forest is well on the way to becoming a well balanced and sustainable multi-purpose forest.

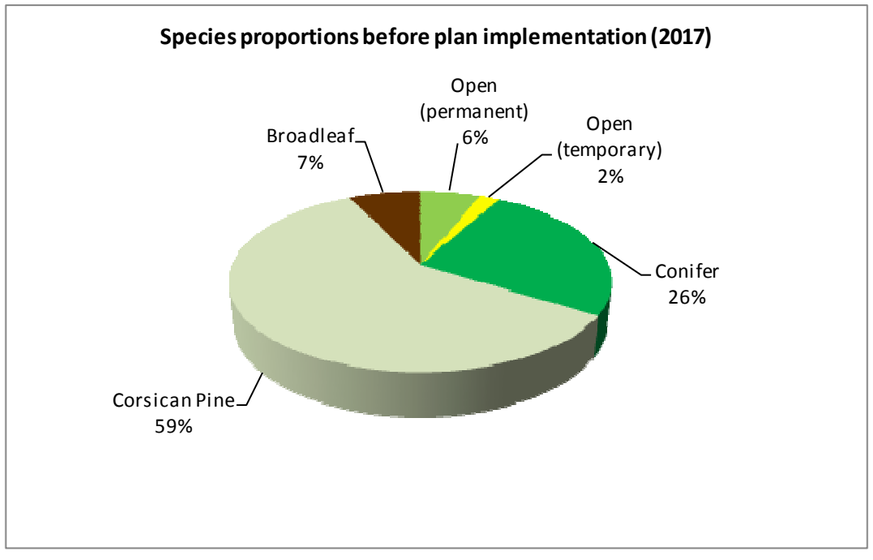
7. Economy

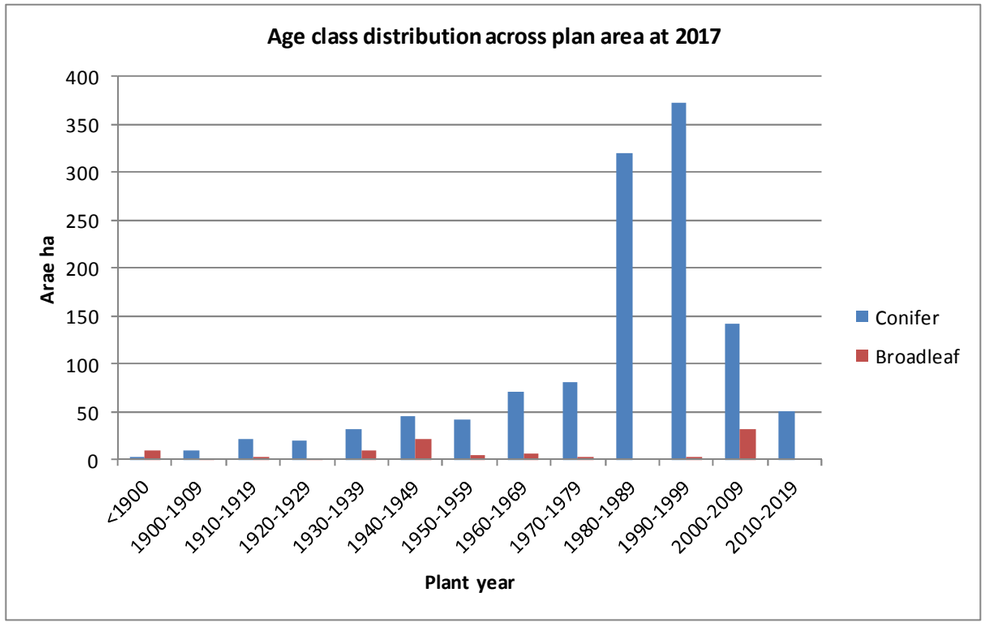
Tree Species

Thetford Forest is predominantly a pine forest; this genus was chosen as both Scots and Corsican pine are particularly well suited to the soils and climate in Breckland; growing fast and producing good quality timber. The heavy reliance on pine, particularly Corsican pine, has its downside as Dothistroma Needle Blight (aka Red Band Needle Blight) has now spread across the forest; Corsican pine is particularly susceptible to this disease; Scots pine is also affected but to a lesser extent. The effect of Dothistroma Needle Blight is to reduce the number of needles held on the tree and also to reduce the efficiency with which the remaining needles photosynthesize, leading to poor growth and in the worst cases killing the tree. Ongoing research is guiding our future silvicultural decisions. Within the plan area there are 5 ha of longstanding research plots looking into the effects of current thinning practices on Dothistroma Needle Blight and running species trials.

In 2016, a survey of Corsican pine <40 yrs old highlighted areas of high-extreme infection, requiring intervention to avoid mortality. These areas have been idenitified for underplanting*. An underplanting programme of 266 ha per year over a period of 30 years across the whole of Thetford Forest is planned from 2019. Areas selected for underplanting will be chosen based on their infection levels and operation programme closer to the time. Although this will result in coupes being felled later than originally planned this will maximise the economic output of timber in these infected coupes and diversify species across the forest, a key objective of the plan. Fencing of these areas will be required to reduce mammal damage.

Broadleaves make up 7% of the plan area, the majority are located close to Brandon Country Park whilst others occur in belts along the boundary and in small blocks throughout the forest. Open space including both permanent and temporary (e.g. recently felled areas) accounts for 8% of the plan area.





Age Classes

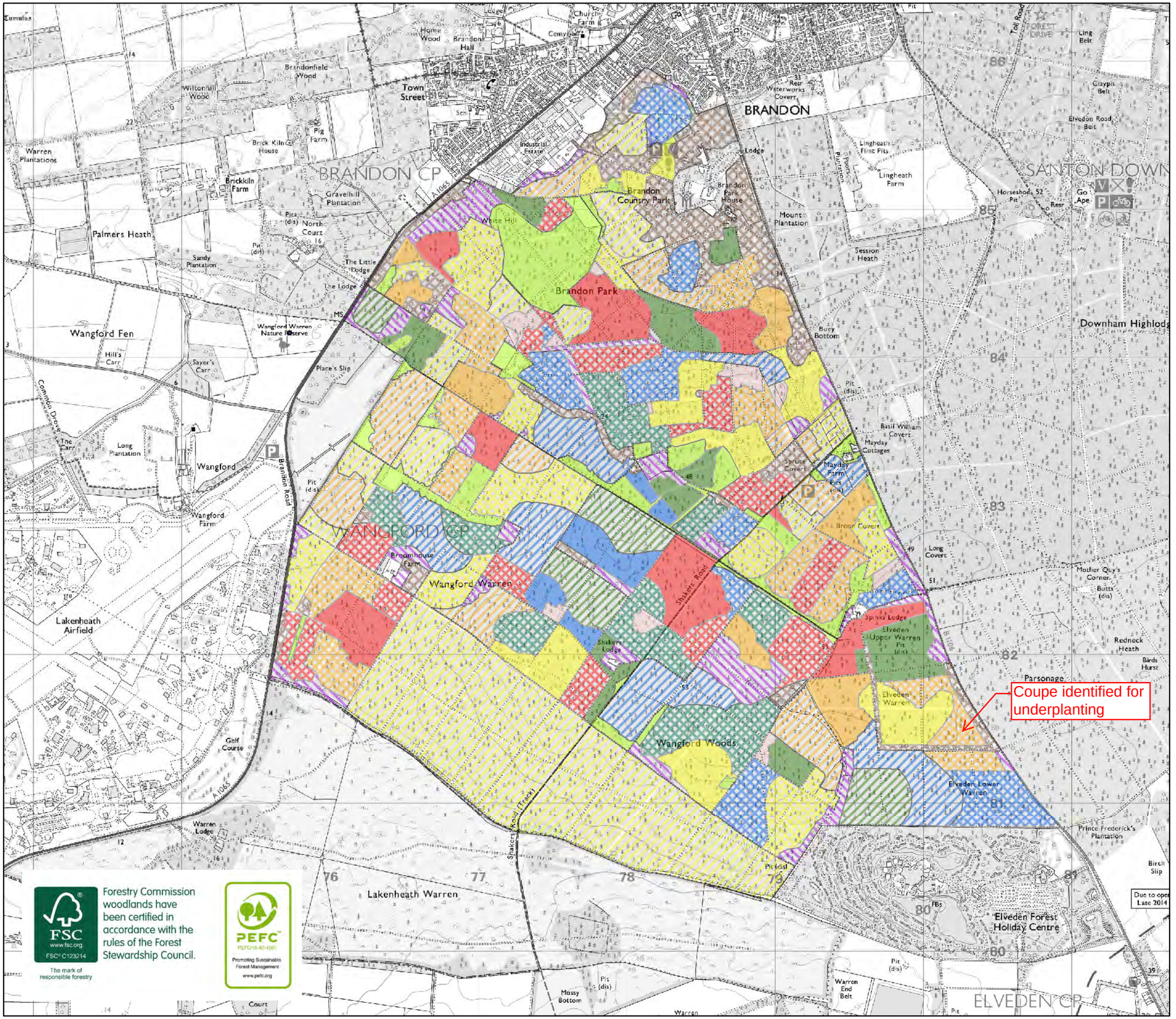
The bar chart above illustrates how past management of the woods has perpetuated the condensed initial establishment phase—resulting in the current limited spread of tree ages. Some of the original pine plantings and broadleaf belts remain.

The design brief is to 'smooth' the felling of the second rotation so that the age class distribution becomes more evenly spread over a period of 60 to 70 years. This equates, approximately, to a rotation* of trees and will move the forest forward on a more sustainable basis.

Forest resilience

The plan area is an established woodland with an even age structure and ride network throughout. Felling coupes will be designed to vary the age structure across the forest to improve future resilience, a key objective for the plan. Silvicultural systems currently used include thinning on a 5-7 year cycle in conifer plantations and a 10 year cycle for continuous cover areas to encourage natural re-generation.

To improve forest sustainability tree species and protection is considered as part of the restock programme taking into account soil type, diversification, climate resilient species, disease and pests. As a result of changing priorities restock species are decided closer to the time of felling. The split between conifer, broadleaf and open space are shown on the habitat and restock species map on page 17. For calcareous soils scots pine will be used as the restock species due to difficulties in establishing other species, at this time.



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

FSC www.fsc.org FSC® C123214 The mark of responsible forestry

PEFC PEFC/18-40-1061 Promoting Sustainable Forest Management www.pefc.org

Forestry Commission England

East England Forest District

Brandon & Elveden

Scale: 1:24,000

Management Area

Legend

- Clearfell 2017-2021
- Clearfell 2022-2026
- Clearfell 2027-2031
- Clearfell 2032-2036
- Clearfell 2037-2041
- Clearfell 2042-2046
- Clearfell 2047-2051
- Clearfell 2052-2056
- Clearfell 2057-2061
- Clearfell 2062-2066
- Clearfell 2067-2071
- Clearfell 2072-2076
- Clearfell 2077-2081
- Clearfell 2082-2086

Continuous Cover Forest

- CCF - Conifer
- CCF - Broadleaves
- Long term retention

Open/Other

- Open

Coupe identified for underplanting

Produced by the planning team
August 2017

N W E S

Forestry Commission
England

East England Forest District

Brandon & Elveden

Scale: 1:23,000

Management map for the 10 year approval period of the plan, showing clear fell, selective fell, open areas and recreation trails.

Legend

Management Area

Clear fell

- Clearfell 2017-2021
- Clearfell 2022-2026
- Clearfell 2027-2031
- Long term retention

Continuous Cover Forest (selective felling)

- CCF - Conifer
- CCF - Broadleaves

Open (managed through recreation, forage harvesting and discing practices)

- Open/Other

Recreation

- Poacher cycle trail
- Walking trails
- Running routes

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Produced by the planning team
August 2017

N W E S

Forestry Commission England

East England Forest District

Brandon & Elveden

Scale: 1:23,000

Habitat and restock species map

Legend

- Conifer
- Mixed Conifers
- Broadleaves
- Permanent Open Space
- Temporary Open Space

Produced by the planning team
August 2017

N W E S

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FSC www.fsc.org FSC® C123214 The mark of responsible forestry

PEFC PEFC/19-40-1002 Promoting Sustainable Forest Management www.pefc.org

8. Plan Appraisal

The appraisal of the revised plan is measured against the design brief on page 7, this has three separate sections and the appraisal relates to these sections:

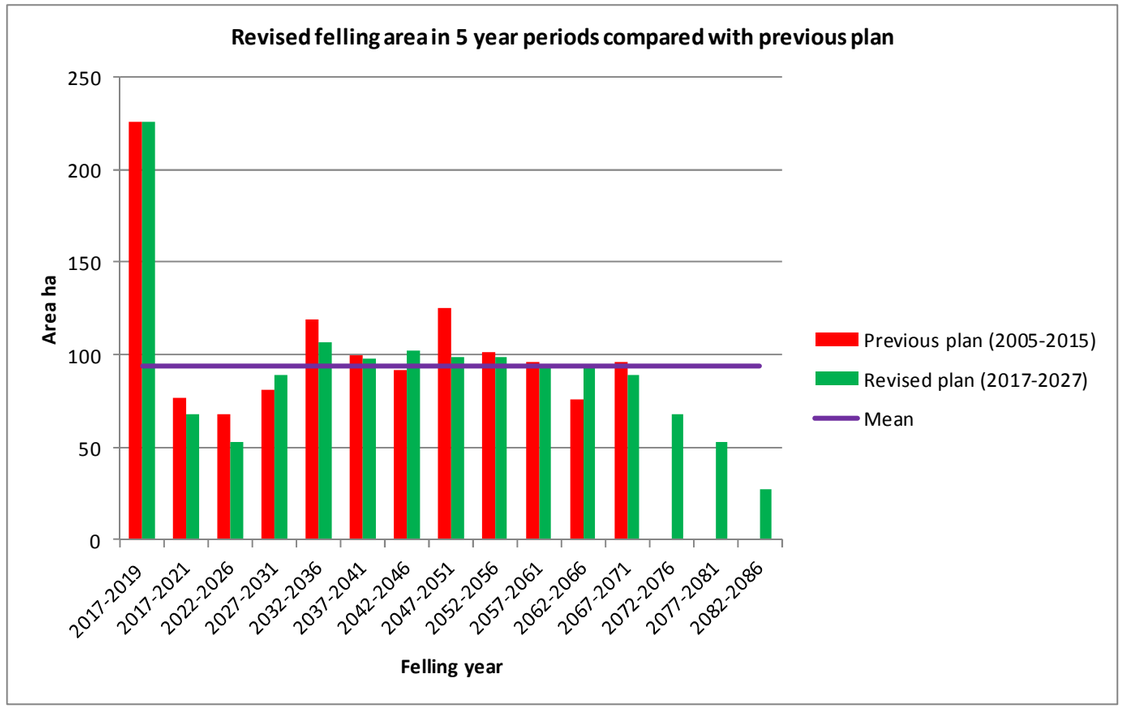
Nature

The felling comparison chart to the right shows how the revised plan has 'smoothed' the creation of felled area over the long term so that Woodlark and Nightjar habitat is more evenly distributed around the mean value. However, in the short term, complete smoothing has not been possible because there is insufficient mature timber to clear fell in this 10 year period (see age class chart on page 14). The A11 mitigation area discussed on page 10 is shown on the bar graph opposite between 2017-2019. As this area is currently in a transition stage and will not be in Forestry Commission landholding from 2019 it has not been included in the total plan area and consequently separated from the rest of the plan.

The size and shape of the coupes planned for felling can be seen on the management maps on pages 15-17; the average size of these coupes is 10ha. An SPA assessment has been carried out for this plan and agreed with Natural England.

The proportion of permanent open space within the plan has increased from 8% to 12% (including temporary open space) as shown on page 19. This is a direct result of incorporating the proposed Open Habitat route shown in the design concept map (page 8) and detailed in the habitat and restock map (page 17). It should be noted these areas are indicative of the key areas for increasing the open space network encouraging greater distribution of internationally important species, a key objective in the design brief. These areas will require ground truthing before implementation. Funding availability, archaeology and need for open space across the district will also be assessed through an OSA* process before implementation. Future plans for open space will see an increase/decrease in individual plans, as the 10% requirement is reallocated across Thetford Forest as a whole, using a network of rides in the most beneficial areas. The complete proposed network across Thetford Forest can be seen in appendix 1.

A management plan for the Scheduled Monument (White Hill) is shown in appendix 2 and has been agreed with Historic England. This plan is not part of the consultation process.



People

It is difficult to assess how pleasant a woodland environment is as this is subjective but maintaining areas of woodland under continuous cover systems, and keeping patches of mature trees in long term retentions should create a pleasing environment for forest users and passers by. The size and shape of the coupes planned for felling show the continued use of organic shapes blend well into the landscape.

Detailed management plans for recreation facilities including current management and future developments are produced and managed by the recreation team at High Lodge, through a Forest Centre master plan. The OSA* process is used before forest operations begin to assess impacts to waymarked and wild trails.

Many of the species to be planted in the underplanting programme discussed on page 14 are palatable to the local deer population. As a result it is necessary to fence underplanted areas in order to protect the newly planted crops until they are established. Unfortunately, this will affect public access in these areas. Signs will be placed on fences to inform the public. There is currently only 1 coupe identified for underplanting in the plan area shown on the management map on page 15. There is already a programme in motion to remove fences from around previous clear felled areas where trees are established and no longer require protection, opening up access to formerly closed areas, helping to counterbalance this project.

8. Plan Appraisal continued ...

Economy

The objective to smooth timber production while continuing to meet market commitments is very similar to the prior objective for the provision of SPA habitat and the same restriction of age class on clearfell area applies. Most of the stands in the plan are programmed for felling at their current optimum marketable age—between 50 and 70 years old. In the interim, the productive stands at Elveden are expected to yield good quality thinning material, and the average coupe size is large enough to allow efficient timber harvesting.

The pie chart shows projected habitat proportions by the end of the plan period, demonstrating a significant reduction in Corsican pine compared to the current species proportions (page 14). Due to poor soil quality and increases in disease and pests affecting tree health the selected tree species for restock are decided closer to the time of felling and therefore shown only as conifer in the chart. There are no plans to plant Corsican pine but a small proportion of mature trees will still remain in small patches within continuous cover and long term retention areas. The future diversity of conifer species to be expected across Thetford forest are explained in the underplanting section below and will make up the conifer element shown in the pie chart.

The percentage of broadleaf has remained at 7%. The conifer has decreased by 4% and the open space increased by 4% as a result of the proposed open habitat plan discussed on page 10 and shown on the habitat and restock map on page 17. Although, future funding availability and requirement for open space across the district will be assessed to determine implementation across Thetford Forest. The progress of this will be assessed at the mid term review.

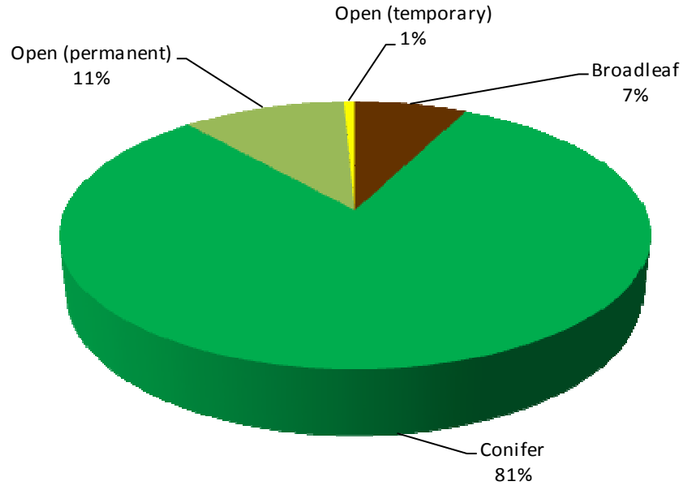
The increase in restock species diversity should increase the resilience of the forest to climate change and the threat from pests and diseases. The habitat and restock map on page 17 gives an indication of the split between conifer, broadleaf and open space. Restock species will be confirmed by a site assessment after felling— soil pits and vegetation surveys will be used to ascertain the optimum species for the coupe taking into account prevailing knowledge of species performance and pathology concerns. Currently 12 different conifer species are being trialled to find suitable restock species for the future.

The management map on page 15 shows areas planned for underplanting*. There is currently only one for this plan area which has been identified as suffering from high-extreme Dothistroma Needle Blight. From 2019 an underplanting programme of 266 ha p/a over a period of 30 years will commence across Thetford Forest. The operational programme and level of infection will dictate site selection and it is expected that more areas will be identified within the plan area but currently this is unknown. This programme will be covered under a separate felling license and is not part of the forest plan consultation. The mid term review will assess the progress of underplanted areas and future locations. Previous underplanting trials have successfully grown 7 shade tolerant species including European silver fir, Grand fir, Omorika spruce, Serbian spruce, Coast redwood, Western red cedar and Japanese cedar providing a proven record of delivering species diversity and a promising solution to replacing crops highly infected with Dothistroma Needle Blight.

Areas selected for underplanting will still remain in cyclic clear fell but will see an extension to their original clear fell year and a potential change in coupe shape. This will not affect clear fell coupes for the approved plan period (2017-2027). In previous plans where a greater number of underplanting locations have been identified this has shown a positive effect on the smoothing of essential clear fell habitat for Woodlark and Nightjar into the future. It also helps age class distribution to become more evenly spread creating a more sustainable future for the forest. This is particularly important in Elveden where age class distribution is currently very condensed (see age class graph on page 14).

It is envisaged that the majority of sites selected for underplanting will require fencing in order to ensure crops are given the best chance to survive. This is in addition to restocked clear fell areas which are also often fenced to protect growing crops. Alternative methods to fencing are being trialled using tree protection measures including tree guards and sheep's wool to protect the leader and deter mammals. Trials are also planned for restock coupes to fence half the area whilst the other half remains open. A mixture of 2-3 tree species would be planted to determine those most favourable to the mammals. These could provide a range of sacrificial species that could be planted within future restock coupes, reducing damage to the principal crop. These trials show potential to reduce fencing costs and increase tree survival rates which in turn will reduce restrictions on public access. The wildlife management and forest management teams are working together to progress these projects but they are subject to funding availability.

Species proportions following plan implementation (2017-2027)



9. Monitoring

FEE 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."

District Strategic Objective	Forest Plan Objective	Monitoring
Nature: "To increase the environmental contribution made by the Estate to the range of ecosystem services delivered and to protect and enhance its overall biodiversity and heritage value at both the landscape and local level"	• The felling plans should aim for an even distribution of felled area for Woodlark/Nightjar nesting habitat and contribute to maintaining a minimum area of 12,757 ha in cyclic clear fell. There should be no more than 10% of coupes* <5ha as required under the SPA* designation.	A Habitats Regulation Assessment has been carried out and agreed with Natural England. This shows the area in cyclic clear fell. There are 4% of coupes <5ha, well below the 10% threshold.
	• In accordance with the tolerance table on page 27, incorporate open space networks as detailed in the Thetford Open Habitat Plan (appendix 1), encouraging distribution of rare flora and fauna.	Mid term review (October 2022) will assess the progress of ground truthing proposed routes shown on the habitat and restock map (page 17) and implementation.
	• Agree Scheduled Monument (SM) management plans with Historic England.	See agreed SM plan in appendix 2.
	• Maintain and improve cultural and heritage value of the land by protecting sensitive heritage features highlighted through the OSA* process.	Archaeology will be monitored through the OSA* process.
People: "To expand opportunities for communities to become involved with the Estate and take part in activities that improve quality of life, health and learning"	• Create a pleasant natural environment for the public to enjoy outdoor recreation in a rural woodland setting.	As this is subjective it is difficult to monitor. However, feedback through the High Lodge webpage or stakeholders will be used to monitor success of this objective.
	• Manage an area around Brandon Country park as continuous cover* for amenity and conservation value.	As above.
	• Maintain recreational facilities to a high standard through inspection processes and partnership working with and Friends of Thetford Forest.	Inspections on cycling & walking trails are carried out in accordance with OGB 42 by FC staff, Friends of Thetford Forest and Timber volunteers. Electronic records are submitted to the High Lodge team and actions carried out accordingly dependant on the level of urgency identified.

District Strategic Objective	Forest Plan Objective	Monitoring
Economy: "To make a significant contribution to economic activity, woodland access, rural employment and green growth across East England using the assets and advantages of the estate"	• Maintain the land within our stewardship under UKWAS* certification by meeting standards detailed in UKWAS third edition.	UKWAS audits and UKWAS certification
	• Improve economic resilience of our forests by increasing species diversity through restock programmes to protect future timber supplies and biomass.	The sub-compartment* database is updated at replanting to show the newly planted species and their proportions. As part of this updating process the restocking information is compared with the habitat and restock plan to confirm compliance. The restocking area can vary slightly from the plan as physical features come to light only after felling. Most of these minor changes are within the tolerances agreed between Forest Enterprise and Forest Services – see Tolerance table on page 27. A felled coupe is usually restocked two years later, when all the ground preparation and weed control has been completed. To monitor timber sustainability, a stocking assessment is carried out to measure establishment success after five years. The sub-compartment* database will be used to monitor species diversity. In calcareous soils Scots pine will be the predominant species planted. In acidic soils other species will be identified based on their success from trials. The underplanting programme will also add species diversity.
	• Assess the threat posed by Dothistroma Needle Blight (DNB) in Corsican pine plantations under 40 years old, through survey work. Identify suitable silvicultural practices including underplanting for areas of high infection to maintain economic viability.	Mid term review (October 2022) will assess progress of underplanting in the areas identified in the management map on page 15. Future locations will also be assessed at this time and the plans updated to reflect any changes.
	• The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments.	A comparison between the production forecast of the previous plan (2005-2015) and the revised plan (2017-2027) was carried out to ensure no negative effect on market plan commitments and check smoothing of felling over the plan period. This has been checked with the programme manager. To monitor compliance with the felling plan, after a coupe is felled the shape is captured on the ground using a GPS* receiver and the data is uploaded into GIS*. The resulting point data is then compared to the original coupe shape to confirm that the felling coupe has been accurately laid out on the ground.

UKWAS Compliance table [1]

	Forest Plan Area (Ha) [2]	**Forest Plan %**	**Forest District Area (Ha)** [3]	**Forest District %**
Total area	1,430	100	34,662	100
Total wooded area	1,315	92	30,747	88
Natural reserve - Plantation (1%)	0	0	320	1
Natural reserves - Semi-natural (5%)	0	0	256	5
Long-term retentions	17	1	239	0.7
Area of conservation value (>15%) including designations: PAWS, ASNW, NR, SSSI	1,415	98	28,757	83

[1] Figures calculated 2nd August 2017 and correct at time of publication.

[2] Totals in this column exclude Elveden Stone curlew mitigation area as plan represents the future.

[3] Totals in this column include Elveden Stone curlew mitigation area to show totals at current point in time.

10. Application for Forest Design Plan

Forest Enterprise — Property

Forest District:	East England
Woodland or property name:	Elveden
Nearest town, village or locality:	Brandon
OS Grid reference:	TL772322
Local Authority district/unitary Au-	Forest Heath District Council

Areas for approval

	Conifer	Broadleaf
Felling	227	21
New planting (complete appendix 4)	N/A	N/A

1. I apply for Forest Design Plan approval*/~~amendment approval~~* for the property described above and in the enclosed Forest Design Plan.

2. ~~I apply for an opinion under the terms of the Environmental Impact Assessment (Forestry) (England & Wales) Regulations 1999 for afforestation*/deforestation*/roads*/quarries* as detailed in my application.~~

3. I confirm that the pre consultation, carried out and documented in the Consultation Record attached, incorporated those stakeholders which the FC 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.

4. I confirm that the proposals contained in this plan comply with the UK Forestry Standard.

5. I undertake to obtain any permissions necessary for the implementation of the approved Plan.

Signed

Forest Management Director

East England FD

Date: 11/09/2017

Signed: ..NC1.....

Area Director

East & East Midlands Area

Date of approval: 03/11/2017

Date approval ends: 03/11/2027

*delete as appropriate

I seek approval to clear fell and restock 210ha of the Public Forest Estate (this is the area in yellow, green and orange stripe fell periods—i.e. 2017-2027).

I also seek approval to selectively fell approximately 38ha within an area of 192 hectares (for the purpose of continuous cover forestry) during the period 1/10/2017 to 30/10/2027 as shown on the enclosed plans.

Date of commencement of the plan: **3rd November 2017**

Expiry Date: **3rd November 2027**

Mid-Term Review Date: **3rd November 2022**

11. Glossary of Terms

Biological Diversity

The richness and variety of wildlife and habitats.

Canopy

The mass of foliage and branches formed collectively by the crowns of trees.

Compartments

Permanent management units of land within a forest, further divided into sub-compartments. The compartment boundary usually coincides with a road or ride.

County Wildlife Sites (also SINC and LNR)

A non-statutory designation, recognising a site's local importance for nature conservation. These sites are identified by the Local Authority and should be taken account of in planning.

Coupes

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

Cubic metre

A standard forestry unit of timber volume. A cubic metre is roughly equivalent to a tonne of timber.

England Forestry Strategy (now England's Trees Woodlands and Forests)

Describes how the Government will deliver its forestry policies in England and sets out the Government's priorities for the next five to ten years.

Favourable condition

English Nature's definition for an SSSI in its intended state.

Forestry Commission Guidelines

Outline the principles and standards of good management practices in forests and woodlands to enable landowners, land managers and their advisors to satisfy Forestry Commission policy.

GIS

Geographic Information System - computer program that enables the FC to hold and display all the district's inventory, landholding and crop information. All the maps in this document have been produced using GIS.

GPS

Global Positioning System, which uses information from satellites to accurately locate a position on the Earth.

Habitat Action Plans

UK wide plans for priority habitats defined under the UK Biodiversity Action Plan. They contain quantitative targets for conserving, restoring and expanding the habitats.

Historic Environment

These are the physical remains of every period of human development from 1 million years ago and include artefacts, earthworks, buried remains, structures and buildings.

Historic Environment Action Plan (HEAP)

Sets out the requirements for the sustainable management of all historic environment sites.

Historic Environment Record (HER)

The definitive database of all known Historic Environment remains which is managed by the County Archaeology Service.

LiDAR

Light detection and ranging is a method of surveying landscapes. Flights over the landscape send down laser pulses to the ground and the time taken to reflect back builds a picture of the relative height of the land and vegetation. For more information visit www.breakingnewground.org.uk.

Native woodland

Woodland containing tree and shrub species which colonised Britain unaided by the influence of man after the last Ice Age.

Natural regeneration

The growth of trees from seed found in the soil or cast from adjacent trees and shrubs.

Non-native species

Trees and shrubs that have been introduced to the UK by the activities of man. Also used to describe species not native to the site and locality.

Operational Site Assessment (OSA)

Detailed site plans that are prepared in advance of all major forest operations and identify site constraints, opportunities and areas requiring special treatment or protection.

Red Data Book species

Species that are included on Red Data lists published by the Joint Nature Conservation Committee (JNCC). The lists are based on a global system developed by the International Union for Conservation of Nature and Natural resources (IUCN) for classifying species according to their extinction risk.

Restocking

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

Ride

Forestry term for unsurfaced roads, paths and tracks within a woodland.

Rotation

The period, in years, that a 'crop' of trees take to reach economic maturity e.g. Scots Pine may be grown on a 80 year rotation.

Scheduled Monuments

Nationally important archaeological sites which are protected under the Ancient Monuments and Archaeological Areas Act, 1979.

Semi-natural woodland

A woodland predominantly composed of trees and shrubs that are native to the site and are not obviously planted.

Species Action Plan

A conservation plan under the UK Biodiversity Action Plan for species based upon knowledge of its ecological and other requirements, which identifies the action needed to stabilise and improve its status.

SPA

Special Protection Area designated under the European Habitats Directive (Council Directive 92/43/EEC).

SSSI

Site of Special Scientific Interest—this designation is determined by Natural England and placed on areas of very high conservation value.

Sub-compartments

Areas of forest comprising a more or less homogeneous crop in terms of age, species composition and condition. Their boundaries may change as the forest develops after felling and restocking.

Strategic Plan

Serves as a guide to the management of woodlands within South East England Forest District. It divides the district into zones for the purpose of management and ensures that forestry activities reflect the local ecological, social and cultural individuality of woodland. Strategic objectives for each zone are presented within the context of the Government's strategic priorities for forestry in England (e.g. forestry for rural development; forestry for economic regeneration; forestry for recreation, access and tourism and forestry for the environment and conservation).

Succession

Applied to the natural sequence of species change on a site over time, or more simply, the following on of one thing after another. So successional open space is the open space and the plants associated with it, that persist for a short time after felling of trees.

Thinning

The removal of a proportion of the trees in a sub-compartment to improve the quality of the remaining trees, accelerate individual tree growth and provide income.

UK Biodiversity Action Plan

The UK government response to the Convention on Biological Diversity at Rio de Janeiro: includes actions to safeguard key habitats and species.

UK Forestry Standard

The Government's criteria and standards for the sustainable management of forests in the UK.

UK Woodland Assurance Scheme (UKWAS)

A voluntary scheme for the independent assessment of forest management in the UK. The Scheme has been developed by a partnership of forestry and environmental organisations in response to the growing consumer demand for timber products from sustainably managed forests. It has been designed to ensure that it reflects the requirements of both the Government's UK Forestry Standard - and through this the guidelines adopted by European Forestry Ministers at Helsinki in 1993 - and the Forest Stewardship Council's (FSC's) GB Standard.

Uniform Shelter wood System

A management system that allows young crops to become established under the overhead shelter of existing crops. The existing tree crop is evenly and gradually removed over time in successive regeneration fellings to bring about natural regeneration on the ground beneath.

Veteran tree

A tree that is of interest biologically, aesthetically or culturally because of its age, or a tree that is in the ancient stage of its life, or a tree that is old relative to others of the same species.

Windthrow (or sometimes windblow)

Uprooting or breakage of trees caused by strong winds.

Yield Class

Yield class is a measure of the growth rate of a tree crop and is the maximum average rate of volume increment (increase) that a particular crop can achieve. For example, a crop capable of a maximum annual increment of 14 m^3 per hectare has a yield class of 14.

12. Management Prescriptions

(Ref: Management Map)

Clearfelling

This is the main form of timber harvesting in Thetford Forest. All the trees are felled across the site or 'coupe' with the timber part of the tree extracted to the forest road where it is taken away by lorry. The smaller branches and tops are left on site where they may be chipped, mulched or raked in to rows so that enough bare ground is available to plant the next rotation of young trees. The creation of the bare planting ground is an important part of the management of the Breckland Forest SPA/SSSI, as it is this bare ground that is the nesting habitat for Woodlark and Nightjar.

Thinning

This is an important part of the management of Thetford Forest as nearly all the trees planted in the forest will require thinning at some point. Thinning performs three separate functions; removing small, dying or diseased trees; providing space for the dominant trees to continue growing; provide a small economic return in advance of clearfelling. Due to the size of Thetford Forest, thinning is a continual process that works around the forest on a five year cycle.

Long Term Retention

In some areas trees are retained beyond their normal clearfell age to provide non-timber benefits such as bat roosts, raptor nests and landscape interest. Generally, these are thinned to encourage large crowned stable trees.

Continuous Cover Forestry (CCF)

This is a general term for the management of trees without clearfelling them all. There are a number of CCF silvicultural systems but all of them are based on thinning the crop on a regular cycle and removing a proportion of the trees thereby making space for seeds to germinate and new saplings to grow and fill the resulting space.

CCF is often used in areas of high public access to maintain the visual impact of large mature trees as these trees are maintained for their aesthetic value. CCF is also used to manage most of the broadleaf crops in Thetford and all the mature conifer crops in areas of high conservation value as these trees often provide important nesting habitat e.g. Firecrest.

Open space

Temporary open space follows felling when coupes are prepared for planting or to encourage natural regeneration.

Permanent open space will be centred on conservation sites and the heritage sites—see open space on page 9.

Minimum Intervention & Natural Reserves

These two management types are similar in that they are areas where natural processes are left to progress unhindered unless there are tree safety issues e.g. a tree has died adjacent to a footpath and creates a hazard to the public. The natural reserve areas have been identified as a permanent feature in the plans where as minimum intervention is the current management type in these areas but could change in the future.

Underplanting

This system involves selectively felling strips currently between 1-2 rows of trees across the site or 'coupe'. These rows are then planted with young trees. The remaining older trees provide shade in summer and shelter from frost in winter giving an ideal climate for a larger variety of species to grow. The majority of tree species prefer this type of climate making this a useful management system for increasing species diversity and increasing success rates of restock.

13. Tolerance Table

	Adjustment to felling coupe boundaries	Swapping of felling coupes	Timing of Restocking	Changes to species	Windthrow & DNB clearance
FC Approval normally not required	< 10% of the coupe area	Where changes to the felling sequence does not result in a breach of the UKFS adjacency rules.	Up to 3 planting seasons after felling	Change within species group e.g. conifers; broadleaves	Up to 2ha
Approval by exchange of letters and map	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach[2] of the UKFS adjacency rules	Up to 4 planting seasons after felling	Change from other conifers to Corsican Pine	> 2ha to 10ha
Approval by formal plan amendment	> 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	Over 4 planting seasons after felling	Change from broadleaves to conifers	> 10a

[1] 21% or more of the coupe boundary

[2] 20% or less of the coupe boundary

Appendices:

1. **Thetford Forest Open Habitats Plan**
2. **Scheduled Monument plan for White Hill**

Legend

- FC open habitat with Compostite Network
- Thetford Forest Management Zone
- External open habitat

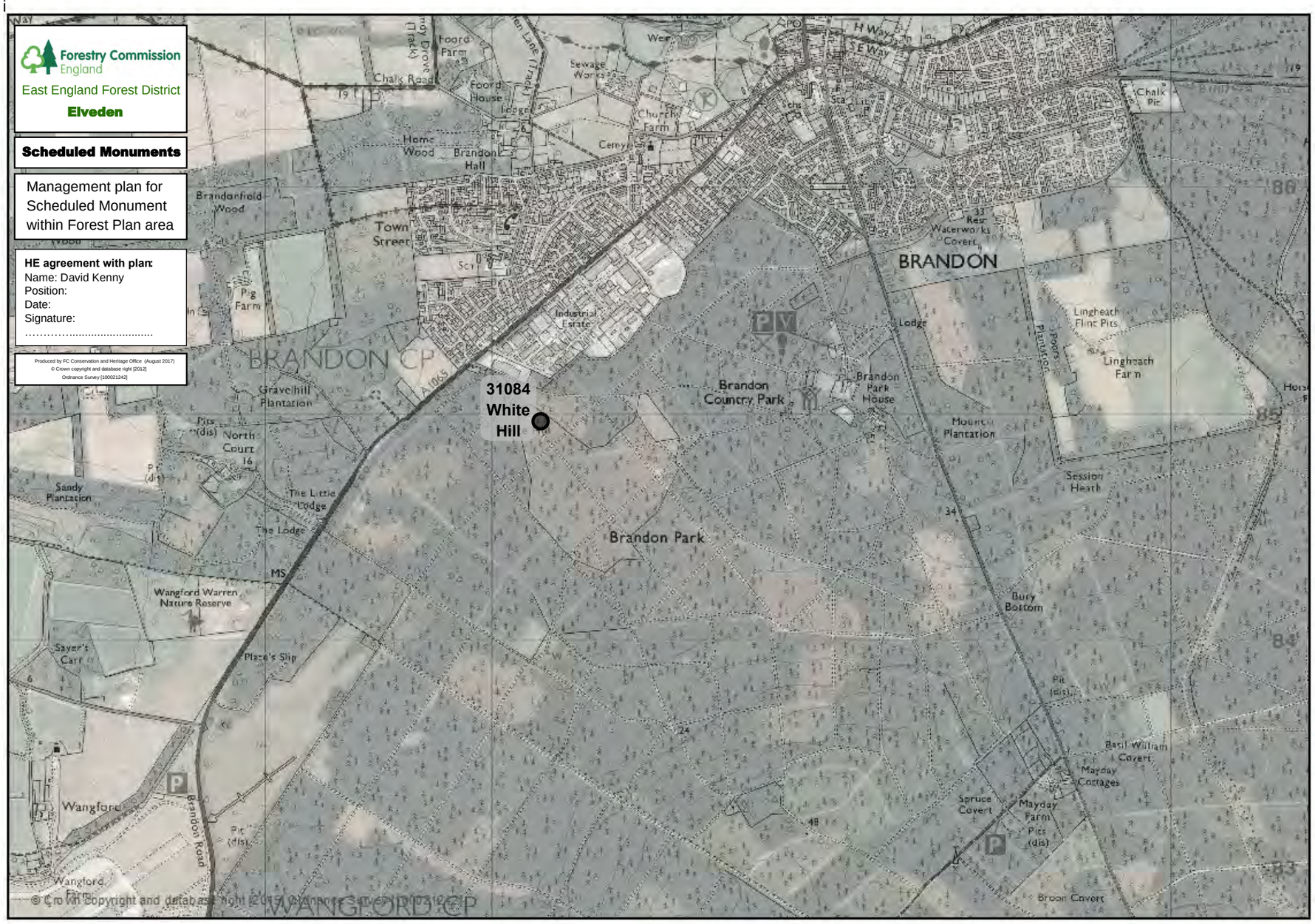
Forestry Commission England

East England Forest District

Open Habitats Implementation Plan For Thetford Public Forest Estate 2014 Onward

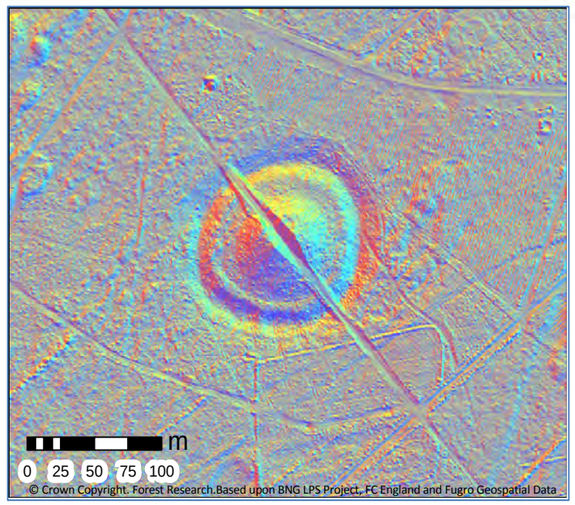
DRAFT Map 27
Composite Network
Landscape Context

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



Bell barrows, the most visually impressive form of round barrow, are funerary monuments dating to the Early and Middle Bronze Age, with most examples belonging to the period 1500-1100 BC. They occur either in isolation or in round barrow cemeteries and were constructed as single or multiple mounds covering burials, often in pits, and surrounded by an enclosure ditch. The burials are frequently accompanied by weapons, personal ornaments and pottery and appear to be those of aristocratic individuals, usually men. Bell barrows (particularly multiple barrows) are rare nationally, with less than 250 known examples, most of which are in Wessex. Their richness in terms of grave goods provides evidence for chronological and cultural links amongst early prehistoric communities over most of southern and eastern England as well as providing an insight into their beliefs and social organisation. As a particularly rare form of round barrow, all identified bell barrows would normally be considered to be of national importance.

The bell barrow known as White Hill is of extraordinary size, although the features which it displays are characteristic of bell barrows in all other respects, and it remains an impressive monument. The cutting of the ride through the upper part of the mound affects only a small part of the monument as a whole, which will retain archaeological information concerning its construction and the manner and duration of its use. Evidence for the local environment prior to and during that time will also be preserved in soils buried beneath the mound and in the fill of the ditch. The proximity of the barrow to a number of other barrows in this part of the Breckland region give it additional interest. Together these barrows give some evidence of the character, development and density of the prehistoric population in this area.



Scheduled Monument Number: 31084; 1017787

Name of Monument: Bell barrow known as White Hill

OS Grid Reference: TL77168498

Description: The monument includes the bell barrow known as White Hill, which is situated on a gentle WSW facing slope towards the north west corner of Brandon Park. The barrow is visible as a large oval earthen mound, which stands to a height of approximately 3m. It measures about 75m north east-south west by 57m north west-south east, and is surrounded by a berm up to 22m wide and a ditch. The ditch, from which earth was dug and used in the construction of the mound, has become partly infilled but is marked by a hollow up to 22m wide and 1m deep.

The barrow, including the berm and the ditch, measures approximately 147m north east-south west by 136m north west-south east. A forest ride crosses the barrow in a north west-south east direction and has cut into the mound to a depth of 2m. The surface of the ride is excluded from the scheduling, although the ground beneath it is included.

Size: ……..ha (EH designated sites shapefile)

Current condition: Monument is within a heatland re-creation site. It is now largely in good condition following realignment of the fence line and management under a heathland option in Norfolk Wildlife Trust HLS agreement. Monument conservation volunteer day organised jointly with Historic England removed the remaining self-set birch from previously excluded south east land parcel.

Visitor and animal erosion is concentrated in the area of the north west/south east forest ride which has exposed the loose sand make up of the mound. Stock are currently excluded from the monument to minimise erosion of exposed faces to either side of the ride as they are attracted to the sun-warmed sand.

Threats to monument:

Erosion

Scrub development

Management purpose:

To repair the current erosion scar allowing for the forest ride to cross without further erosion, and thereafter protect the monument and maintain its overall structure

Work proposed in the plan period (detailed plan/record of work in GIS SM work programme file)**:**

Historic England to negotiate a Section17 Management Agreement with Norfolk Wildlife Trust aimed at consolidating and repairing the exposed faces to either side of the ride and ensuring that the surface of the ride itself is stable. This consolidation will permit the re-introduction of grazing animals which will benefit the heath covered monument in its entirety and create appropriate habitat for the invertebrates using the sand exposure.

Monitoring plan:

In line with provisions of the Section17 Management Agreement, the HLS agreement and annually within the life of the Forest Plan.

Information about Bello Barrows and the monument description are taken from https://historicengland.org.uk/listing/the-list/list-entry/1017787