



Croxton Forest Management Plan *2022 — 2032*

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



Who is Forestry England?

For over 100 years, we have been growing, shaping and caring for over 1,500 of our nation’s forests for the benefit and enjoyment of all, for this generation and the next.

- We are the biggest landholder in England, managing more than 1,500 woods and forests.
- As well as health benefits, our woodlands make significant contributions to local economies around the country. The 226 million visits we get per year support over 80 private businesses across England
- We are the largest supplier of sustainably produced timber in England, selling around 1.4 million tonnes per year.
- The benefits our forests provide has been estimated at [£24.4 billion](#).

Government Priorities

The 25 year Environment Plan was published in January 2018 to set out the governments approach to maintaining and enhancing the natural environment, within a generation. The plan is broad in scope but covers cleaner air and water, public forests and woodland, marine protected areas, species protection, administrative and governance issues.

The [England Trees Action plan](#) 2021-2024 was developed to support the 25 year environment plan for green recovery. It aims to boost tree planting and establishment, improve woodland management and support a thriving green economy across England, delivering more for society, nature, the climate and the economy. There are 80 policy actions the government is taking over this Parliament to help deliver this vision.

Forestry England Priorities

Our task is to realise the potential of each of the forests in our care for sustainable business opportunities, wildlife and nature conservation, and the enjoyment and well-being of local people and visitors. Each of our forests supports the economy through local jobs, sustainable timber production and the provision of recreation and tourism opportunities. Our compass (opposite page) shows how our purpose, objectives and how [Growing the Future 2021–2026](#) work together to achieve this.

At the district level the East England Forest Delivery plan sets our priorities around five key themes:

1. For wildlife
2. For people
3. For climate
4. Our sustainable approach
5. Our people and our values

These strategic planning documents along with local knowledge are used to prepare a design brief, identifying key objectives for each forest plan area. The objectives for this forest plan can be seen on page 6, and are based around themes 1-4 only as the theme relating to our people and our values cannot be addressed within a plan.



What are Forest Plans?



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

- To provide descriptions of 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.

This draft 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 the Forestry Commission (Forest Services). If all the criteria are met, full approval is given for the management operations in the first ten years (2022 - 2032) and outline approval for the medium term vision (2033 - 2096). The plan will be reviewed after the first five years (2027) 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).

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 FE is certified by outside consultants to ensure our compliance. The most current edition at this time is the fourth edition.

European Protected Species (national)

In August 2007 amendments to the European Habitat Directive came into force in England and Wales to protect the habitat of a number of vulnerable species. Those European Protected Species (EPS) most likely to be found in a woodland habitat include all species of Bat, Hazel dormouse, Great crested newt, Otter, Sand lizard and Smooth snake.

Natural Environment and Rural Communities Act 2006 (national)

The NERC Act came into force in October 2006 and was designed to help achieve a rich and diverse natural environment and thriving rural communities. The UK Biodiversity Action Plan was used to help draw up a list of habitats and species which are of principal importance for the conservation of biodiversity in England as required under section 41 of the NERC act.

Ancient and native woodland in England (national)

Ancient and native woodlands are one of the oldest land uses and most diverse ecosystems. They have often taken hundreds, if not thousands of years to develop, and in the case of ancient woodland are irreplaceable. The managing ancient and native woodland practice guide (2010) promotes greater flexibility, encouraging new innovative approaches to woodland management that enhance biodiversity and heritage. It replaces the 1985 broadleaves policy.

Site of Special Scientific Interest (national)

The SSSI series has developed since 1949 as the suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. Sites are selected as being the best regional examples of habitats, such as broadleaf woodland and/or plant and animal communities, and/or important populations of rare species.

These sites are also used to underpin other national and international nature conservation designations.

Information about individual SSSIs can be found on the Natural England website:
<https://designatedsites.naturalengland.org.uk/>

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.

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)
- Scheduled Monuments* (SM's)
- County Wildlife Sites*

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 possible and appropriate.

Objectives



The objectives below are framed via Forestry England district priorities detailed on page 3:

For wildlife

- W1** To protect, maintain and enhance designated sites.
- W2** To protect, maintain and enhance priority habitats.
- W3** To protect, maintain and enhance priority species.

For people

- P1** Create a pleasant natural environment for the public to enjoy outdoor recreation in a rural woodland setting.
- P2** Maintain and improve cultural and heritage value of the land by protecting sensitive heritage features highlighted through the operational site assessment (OSA)* process.
- P3** Agree management plans for 1 scheduled monument (SM) in Croxton, with Historic England (appendix 1).

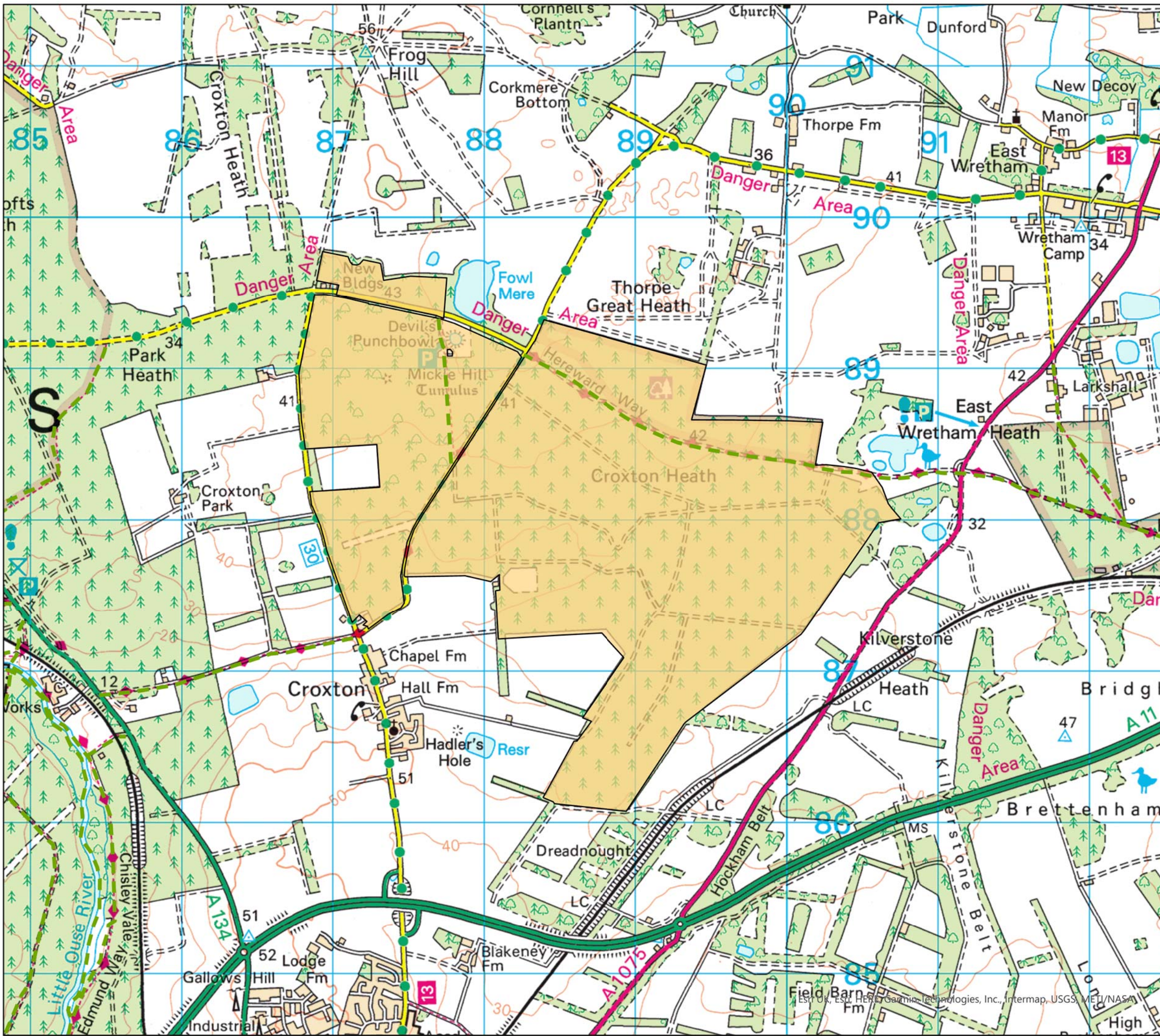
For climate

- C1** Maintain the land within our stewardship under Forest Stewardship Council® (FSC®) / Programme for the Endorsement of Forest Certification (PEFC) by meeting standards detailed in UKWAS fourth edition.
- C2** Increase forest resilience to threats posed by climate change, pests, diseases and fire.

Our sustainable approach

- SA1** Improve economic resilience of our forests by increasing species diversity through restock programmes and mixed silvicultural practices, to protect future timber supplies and biomass.
- SA2** The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments.

To see how these objectives are incorporated into the site's planning please refer to the Design and Concept map on page 8.



East England Forest District

Croxton

Scale: 1:24,000

Plan area and landholding status

Legend

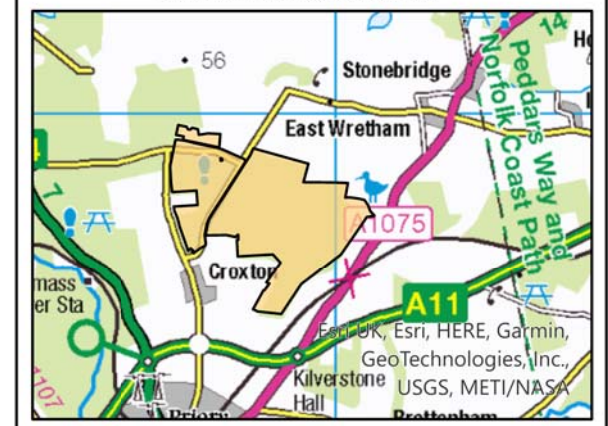
- Freehold woodland
Public right of access
- Management area
- Public Rights of Way

Design Concept Map

- Access and recreation facilities**
- Management area
 - Public Rights of Way
 - Settlements
 - House
 - Forest access barrier
 - FE Car Park
- Environment**
- Sites of Special Scientific Interest
 - Special Protection Areas
 - Special Areas of Conservation
 - Devil's Punchbowl
 - Mickle Hill, Scheduled Monument
 - Proposed future open ride network
 - Heathland creation, managed by Norfolk Wildlife Trust
 - Planned underplanting coupes

Location & Context

Forest Plan area highlighted below



Forest Plan Objectives

For Wildlife

- To protect, maintain and enhance designated sites.
- To protect, maintain and enhance priority habitats.
- To protect, maintain and enhance priority species.

For People

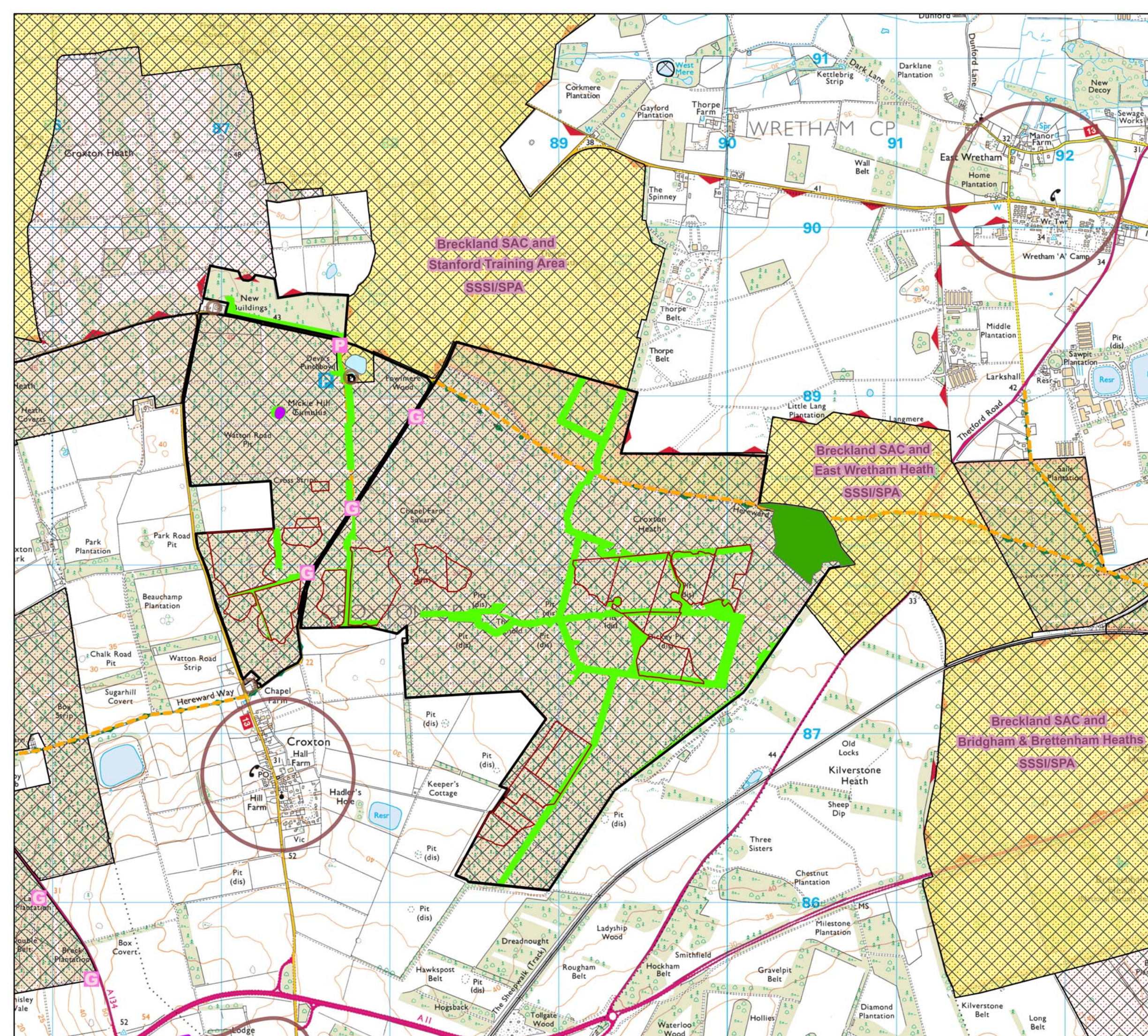
- Create a pleasant natural environment for the public
- Maintain and improve cultural heritage value by protecting sensitive heritage features.
- Agree management plans for 1 Scheduled Monument, with Historic England.

For Climate

- Maintain the forest under FSC®/PEFC certification by meeting the standards in UKWAS (4th edition)
- Increase forest resilience to threats posed by climate change, pests, diseases and fire.

Our sustainable approach

- Improve economic resilience of our forests by increasing species diversity through restock programmes and mixed silvicultural practices to protect future timber supplies.
- The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments





Croxton Forest, which is part of Thetford Forest, covers an area of 714 hectares and 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.

The plan area is situated north of Thetford town, within the county of Norfolk and within the administrative boundary of Breckland Council. It falls within the two parishes of Croxton and Wretham.

The area is bordered by the Ministry of Defence's STANTA training area to the north and private farmland to the south. To the east is Wretham Heath nature reserve, managed by the Norfolk Wildlife Trust and to the west it adjoins with the Lynford area of Thetford Forest.

Croxton Forest is predominantly commercial conifer plantations, with some integrated broadleaf components and valuable heathland habitat. Prior to woodland establishment by Forestry England, Croxton was an open heathland supporting grazing animals, followed by attempts at agricultural improvement during the early C19th. Consequently, no ancient woodland survives in the plan area. Part of the agricultural improvement involved the establishment of pine lines as wind breaks, characteristic of the Breckland landscape. Some of these post 1840 trees survive in Croxton south of Chapel Farm Square and east of Croxton heath. The image opposite shows the 1880's Scot's pine line on the forest boundary adjacent to Ringmere plantation (east of croxton heath). These landscape trees are preserved through long term retention shown on the management map on page 23. There are also some old oaks surviving on the parish boundary with Wretham, an area managed predominantly through low impact silvicultural systems.

In 2020, Forestry England secured ownership of the whole plan area, which is now held under freehold providing open access land (see plan area and landholding status map on page 7). Previous to this 580ha of the plan area was leased to Forestry England for silvicultural purposes only with no public access permitted. This purchase has greatly increased public benefit by increasing the amount of open access land available and linking this with adjoining open access woodland in Mundford and Lynford forest.

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 emerging as a patchwork of trees of different ages intermingled with wide rides and open spaces.

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 Thetford Forest is well on the way to becoming a well balanced and sustainable multi-purpose forest.

Location & History



For Wildlife

Site Characteristics & Biodiversity

Soils

Croxton is a relatively flat plateau, with a very shallow dry valley running from the centre of the wood in a south west direction. Elevation varies from ~40m in the north, east and the very Southern edge to just under 30m in the south west

The soils are free-draining sands over chalk bedrock. The depth of sand varies across the design plan area being shallower towards the west and therefore more calcareous in nature, characterised by the Methwold, Worlington and Croxton soil series. The deeper, more acid sands towards the east are characterised by Freckenham series, with highly acidic Santon series in the very south. However, the surface soils have been 'marled' in places, during the C19th, giving them a superficially calcareous nature. This is evidenced by the dozen or so marl pits across the plan area. The 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 for breeding habitat by several different species of raptor including Goshawks. Many areas are managed through low impact silvicultural systems* (LISS) or natural reserve in the plan to provide habitat for these species (see management map on page 23).

Broadleaf Forest

The majority of broadleaf forest is located along roadside belts and public rights of way such as the Hereward way. Many are linked with conifer belts to create a continuous border around the forest protecting the external and internal landscape. Linking conifer and broadleaf belts provides an important opportunity to develop more mixed species boundaries overtime.

There are also small pockets of broadleaf forest located near to the Devil's Punchbowl, Fowlmere wood, Mickle Hill Tumulas and The Stronghold. The majority are managed through LISS but The Stronghold is managed through minimum intervention as a natural reserve.

The broadleaf woodland across the plan area contains 10 different species, provides the greatest biodiversity and carbon storage making them an important part of the forest environment.

Deadwood

Deadwood of different sizes and stages of decay provide opportunities for feeding, breeding and shelter to many species. Fallen and standing deadwood is an important woodland habitat for a range of fungi, invertebrates such as beetles and solitary wasps and hole-nesting birds such as woodpeckers.

The largest amounts of deadwood can be found in areas managed through LISS, long term retention and natural reserves, where ecological processes such as decay and windthrow increase biodiversity value of the area. Operational site assessments are also used to identify further deadwood opportunities.

Site Characteristics & Biodiversity

Designated 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). 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; 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. Both are associated with rotational clear fell restocks but the Woodlark is further associated with open habitats such as short-turf grass heaths and rides. 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 proposed management plan section, on page 20. Both Breckland Forest SSSI and SPA areas are assessed as unfavourable-recovering.

The Devils Punchbowl (4.11ha) located in the north of the plan area, is part of the Breckland SAC* and Stanford training area SSSI. It is a mere with a fluctuating water level dependent on seasonal changes in the chalk aquifer water level. This fluctuating mere is within a doline depression and the water level can fluctuate >5m.

The designated features include:

- ⇒ H3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition. An aquatic plant community dominated by stoneworts (*Chara* spp) and pondweeds (*Potamogeton* spp), including *P. lucens* - shining pondweed.
- ⇒ S1166 Great crested newt, *Triturus cristatus*.

Both features are assessed as favourable.

Stanford training area in the north and East Wretham Heath in the east lie adjacent to the plan area. Both are designated SSSI, SPA and SAC. Breckland Forest SSSI and SPA adjoins the plan area on the west side.

Priority habitats

The UK Forestry Standard requires a minimum of 10% open ground or ground managed for conservation and enhancement of biodiversity as the primary objective, across the Thetford Forest landscape. UKWAS requires a minimum of 10% of the district management 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 small car park, heathland, pits, the devils punchbowl and the network of forest rides. This accounts for 16% of the plan area (see pie chart on page 16) which includes both permanent open space and temporary open space, created through felling operations. Open habitat is managed through mowing, discing, ground disturbance and forage harvesting practices.

Priority open habitats within the plan area include Lowland heathland, Lowland dry acid grassland, Lowland calcareous grassland and freshwater habitat such as Aquifer-fed naturally fluctuating water bodies.

Lowland heathland, Lowland grassland and open mosaics

There are two areas of lowland heath at TL 90508827 (1.98ha) and TL 9040 8812 (9.46ha). These are adjacent to East Wretham Heath SSSI and effectively managed as an extension of the habitat there, under a Farm Business Tenancy with the Norfolk Wildlife Trust. The larger area is a recent heathland re-creation and functions as a 'bell mouth' for the open habitat plan, connecting via East Wretham SSSI to Roudham Wood and Bridgham and Brettenham Heath SSSI's.

There is a long ride in the centre of the wood (TL 8873 8765) with bee orchid and narrow-leaved everlasting pea present. There is also calcareous grassland along the rides at TL 89008663 (~0.82ha) with red fescue and pyramidal orchid present. The calcareous rides in the centre of the wood share many features and structures similar to open mosaic habitat, with bare ground, rank and short flower rich turf swards.

There are also two forest ride areas of acid grassland at TL 88578857 (0.48ha) and TL 88838636 (~0.4ha).

Freshwater

There is no running water in Croxton. The Devils punchbowl is a doline that is a ground water dependant fluctuating mere.

The marl pits such as Dickey pit behave as natural fluctuating water bodies, with intermittent immersion and dry periods. These support a population of Great-crested newt.

The priority habitats detailed support a variety of nationally rare fauna and flora. It is recognised that widening and linking rides to surrounding open habitat within this plan will increase biodiversity for the priority habitats, whilst improving species distribution. The Thetford Forest Open Habitat Plan was developed for this purpose and aims to integrate 10% open space across the 12 Thetford Forest plans (see appendix 2). The plan aims to create ecological corridors that link important biodiversity areas across Breckland Forest SSSI (Thetford Forest) to SSSIs in the adjoining landscape. It aims to create this landscape network as priority habitat that supports the Breckland Forest SSSI plant, invertebrate and bird conservation features.

These wide rides will not only provide high conservational value but also timber extraction routes, easy access for public use such as walking and 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.

A field scale trial of the network has been carried out in Kings Forest. The learning from this trial will be used to review the network across the forest as part of the forest resilience programme. The habitat and restock map on page 25 shows the proposed network of 40m wide rides for the Croxton plan area. Where appropriate, these rides will be scalloped to add interest and improve edge habitat, increasing their value to wildlife. Scalloping will also improve wildlife management opportunities helping to reduce damage to planted trees and natural regeneration.

Priority species

There is a variety of priority species recorded in Croxton forest including mammals, amphibians, reptiles, lepidoptera, birds and plants.

A well recorded population of Great-crested newts use the Punchbowl and Dickey pit as breeding sites. They also use other marl pits when suitably flooded and use persistent stump rows to hibernate. The waterbodies also provide breeding sites for the Common toad whilst the woodland provides feeding and hibernation sites.

The priority bird species present in the woodland include Goshawk and Tree pipit. Two Goshawk regularly use nest sites identified in the woodland. The Tree pipit, a migrant species, breeds in younger restock* coupes.

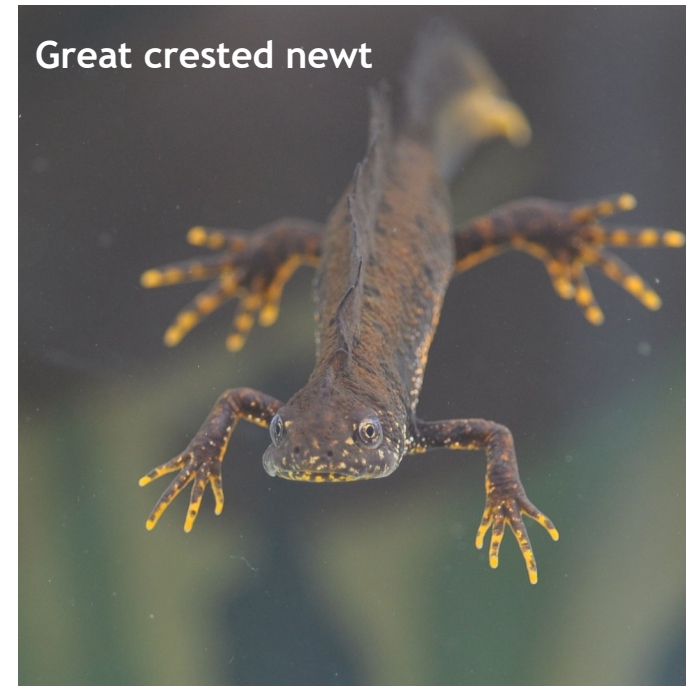
Both Adder and Grass snake are recorded in the woodland. Two ride side hibernation sites have been identified for Adder. The abundant stump rows also provide important hibernation sites. The waterbodies provide feeding sites for Grass snake and the open habitats provide feeding areas for both species.

Basil Thyme is associated with the calcareous track sides and supports a population of the Basil Thyme Case Bearer Moth. There are 19 other priority moth species recorded across the woodland of which most are associated with flower rich or short-turf and disturbed grassland, found in the rides and open habitats. Other species are associated with woodland ecotone habitats for breeding and feeding including Basil Thyme Case Bearer, Lunar Yellow Underwing, Latticed Heath, Small Phoenix, Grey Carpet, Blood Vein, Autumnal Rustic, Cinnabar, Broom, September Thorn, Grey Dagger, Dusky Brocade, Dark-Barred Twin-Spot Carpet, White Ermine, Buff Ermine, Shoulder-Striped Wainscot, Dark Brocade, Mottled Rustic, Small Square-Spot and Sallow. The small heath butterfly is also present and associated with fine leaved grasses in short-turf rides.

In addition to the above listed priority species badgers are also present, evident from the seven badger setts recorded within the woodland.

By applying different management systems across the woodland including the use of lower impact silvicultural systems, clear fell coupes and maintaining open space in heathlands and rides, priority species are well supported here.

All priority species and habitats will be taken into account as part of the OSA* process before work commences to ensure species protection and to identify additional opportunities for enhancement.



Great crested newt



Common Toad



Tree pipit



Goshawk



Grass snake



Adder



Access and Recreation

Public access is permitted on foot across the whole plan area (see plan area map on page 7). This is a significant change from the previous plan where only 134ha of the 714ha woodland was held as freehold land, with the rest leased to Forestry England for silvicultural purposes only. The whole plan area is now owned by Forestry England, offering great benefits to the local community who are now free to access the entire woodland area. As the importance around being outdoors for health and wellbeing grows, this is a welcome change for many.

The block contains two public rights of way including a footpath which runs between The Devils Punchbowl and Wyrley's belt road, and the Hereward way. The Hereward way is a national trail which follows Wyrley's belt road through the centre of the block, then following the route of the old Harling drove towards the A1075.

There is a small car park present in the north of the plan area and although not encouraged, several gateways around the area are used for parking. There is an interpretation board located next to the Devils punch bowl fluctuating mere, just off the Harling drove road. There are currently no plans to increase formal recreation facilities within the woodland.

Europe wide studies have indicated people visiting forests prefer to see stands of large mature trees, both broadleaves and conifers. This confirms our own management policy of retaining some overmature trees and managing them under LISS, thereby contributing to providing a more aesthetic environment.

There is a Thetford Forest facebook page which enables two way communication between Forestry England and forest users.

Community

There are private houses within the plan area and others bordering the forest boundary. Farming units border the plan area along with Croxton village, Stanta MOD training area and East Wretham heath.

The nearest town to the plan area is Thetford with a population of 24,340. Surrounding villages include Croxton and East Wretham with a total combined population of 819.

Forest plans are revised every 10 years and plans for the East England Forest District are accessible from the Forest Plans webpage at <https://www.forestryengland.uk/forest-planning>.

Safeguarding our Heritage

Forestry England acquired the majority of the plan area in the 1920's and 1930's but with just over 90% of the area under leasehold, limiting use to 'purposes of afforestation' only. In 2020, Forestry England secured the freehold of the entire plan which now provides full open access.

Evidence can be found of human activity within the area now covered by the forest of Croxton from the prehistoric periods up until the Second World War. The earliest archaeological finds include prehistoric worked flints, a Neolithic polished flint axehead and a leaf-shaped arrowhead. A sign of daily life in the prehistoric periods is evidenced by finds of 'pot boilers', stones which show signs of having been put into fire so that they could then be put into pots to heat the contents. East Haring Drive runs across the northern part of Croxton Forest, and it has been speculated that the route originated in the prehistoric periods.

The continuing use of this landscape is demonstrated by the presence of a round barrow known as Mickle Hill, a Scheduled Monument. Round barrows are funerary monuments dating from the Late Neolithic period to the Late Bronze Age, with most examples belonging to the period 2400-1500 BC. It has also been speculated that Mickle Hill might date to the Early Saxon period, but no investigation of the site has ever been carried out. There is no known evidence of settlements within this landscape from the prehistoric to the Roman period, but undated earthwork banks that can be identified under the trees using lidar may be evidence of earlier boundaries. Chance finds of a Roman coin and a Roman or Early Saxon bronze mount, possibly from a hanging bowl, also suggest that people were continuing to live or travel through this landscape.

Mickle Hill has a specific individual management plan shown in appendix 1 which was agreed with Historic England in August 2020 and does not form part of the consultation.

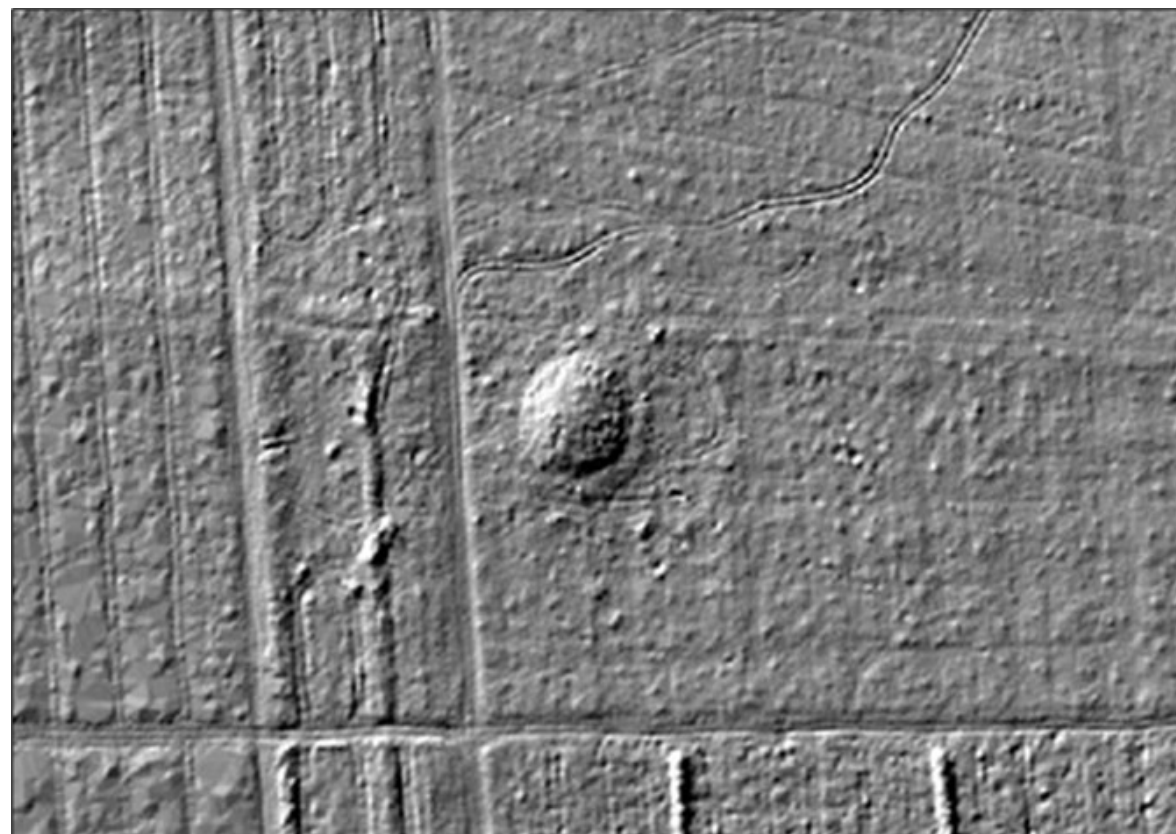


Figure 1 Mickle Hill as seen on lidar. © Crown/Forest Research 2017 (based on Forestry Commission England Fugro Geospatial data).

In the early medieval period, Croxton parish was located in the Hundred of Grimeshou (an Anglo-Saxon subdivision of the county of Norfolk) and contained two manors: Sibton and Bromhill. This landscape was divided between religious and noble landowners prior to the dissolution of the monasteries (c.1540). Croxton Park House, to the west of the forest, is predominantly an 18th century house, but incorporates medieval stonework which appears to have come from a religious building, possibly an earlier landowner. The land on which it stands and that around it was granted to the abbey of Sibton in Suffolk in the earlier medieval period, then to Thetford Priory. Following the dissolution, the manor of Sibton was given to the Duke of Norfolk (Blomefield 1805, 150-155).

In the early 19th century, the village of Croxton is described as being sited on the side of a hill with trees growing on its summit, which could be seen for some distance in the open country around it. The trees on the summit, probably located in the area of the present-day forest, are referred to as "Croxton High Trees" (*ibid*, 150-155) and were presumably a local landmark.

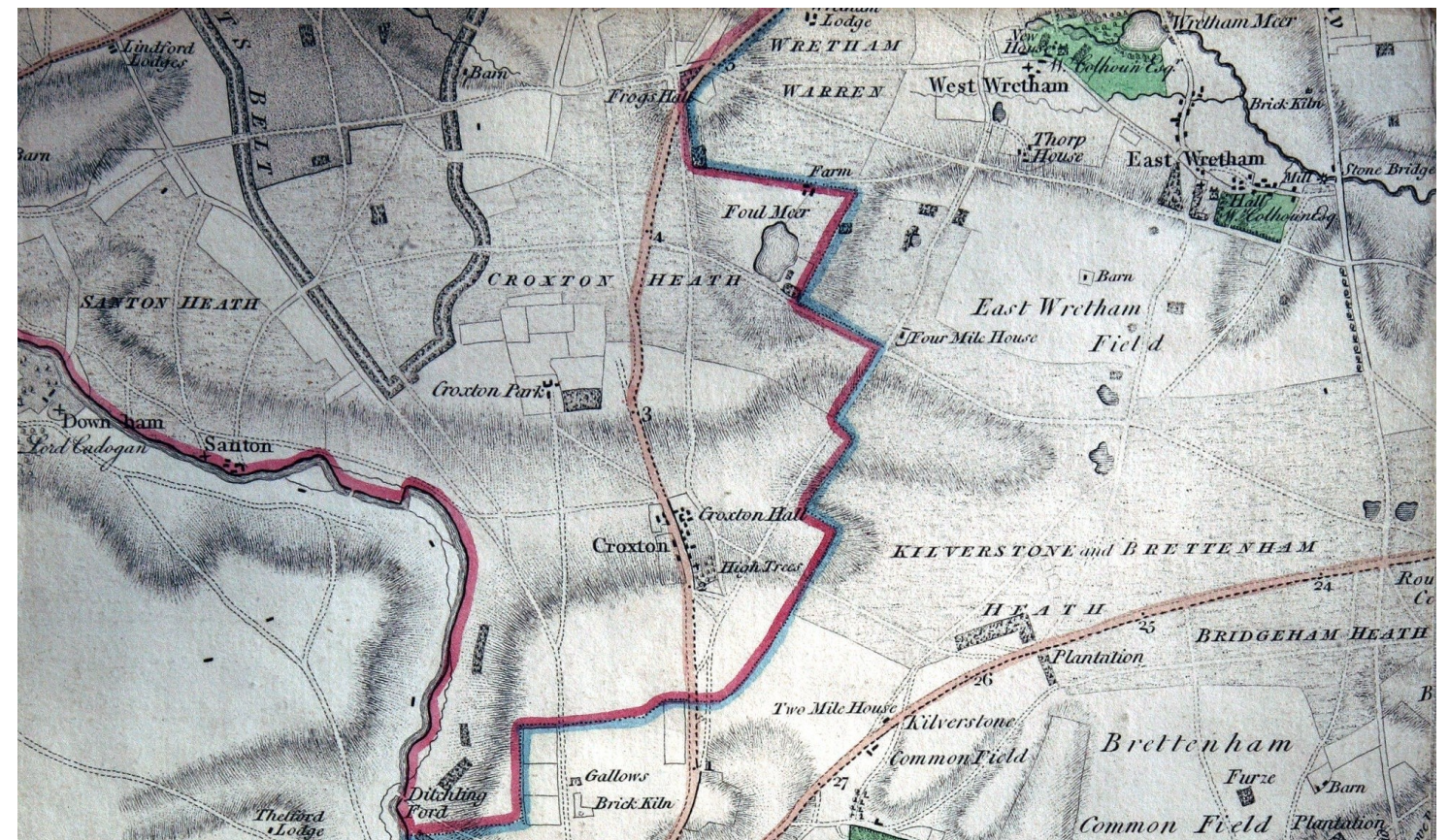


Figure 2 Excerpt of William Faden's Map of Norfolk, 1797. Accessed via <http://www.fadensmapofnorfolk.co.uk/>.

Safeguarding our Heritage ... continued



Figure 3 Excerpt of the 1st edition Ordnance Survey map (1:10560, 1884) ©Crown Copyright and database right 2022. Ordnance Survey Licence number 100021242.

The 1st edition Ordnance Survey map (1:10560, 1884) shows that, by the later 19th century, the landscape was formed of a patchwork of fields and heaths. Heathland was an important resource in the medieval period, used for rabbit warrens and common grazing and was considerably widespread in Breckland (Rackham 1986, 291-2). The use of heaths declined from the end of the 17th century, and many disappeared through Acts of Enclosure (*ibid*, 296). A comparison between Faden's map of 1797 and the 1st edition OS map of 1884 shows that Croxton Heath declined in size. The 1st edition OS map shows belts of trees and boundaries defining the heaths which probably indicate the limiting of heathland, and the earthwork remains of these boundaries can still be found across the forest.

Numerous small quarry pits are located throughout the forest and around it, some of which are also shown on the 1st edition OS map. They were used to extract gravel and clay, both of which were probably used locally, for example, in building, agriculture and road repair.

During the Second World War two areas of the forest were used for military training. One site was established within the central area of the forest, adjacent to Chapel Farm Square. RAF and USAAF aerial photographs of the 1940s show two concentrations of weapons pits (or foxholes), practice trenches and bomb craters. Another area was established in the south-eastern area of the forest, to the west of Kilverstone Heath. Weapons pits, practice trenches and vehicle tracks can be seen on USAAF aerial photographs of 1944. The remains of the groups of pits can still be found on the ground in both areas, testament to the wartime activities carried out within the forest.

References

Blomefield, Francis, 1805. Hundred of Grimeshou: Croxton. In, *An Essay Towards A Topographical History of the County of Norfolk: Volume 2* (London), pp. 150-155. British History Online <http://www.british-history.ac.uk/topographical-hist-norfolk/vol2/pp150-155> [accessed 16 February 2022].

Rackham, Oliver, 1986. *The History of the Countryside: The classic history of Britain's landscape, flora and fauna*. London: Phoenix Press.

<http://www.fadensmapofnorfolk.co.uk/>



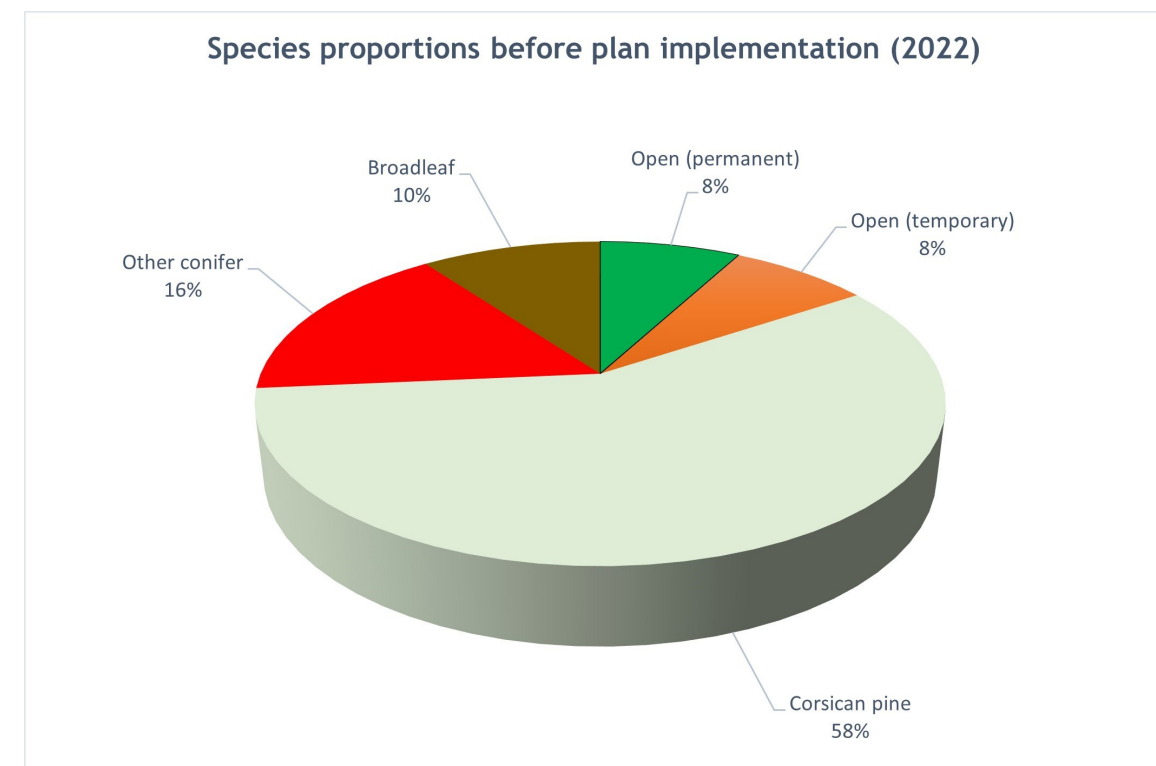
Tree Species

The whole plan area 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 Thetford; growing fast and producing good quality timber. The heavy reliance on pine, particularly Corsican pine, has had its downside as Dothistroma Needle Blight (DNB) is now present across the whole forest; Corsican pine is particularly susceptible to this disease; Scots pine is also affected but to a lesser extent. The effect of DNB 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. This is a concerning issue with 58% of the plan area currently containing Corsican pine. As a result this species is rarely planted and alternatives are used for restocking such as Scots pine and Douglas fir. There are only a few pioneer species (Pine, Birch & Larch) which grow well in the open conditions created after clearfelling.

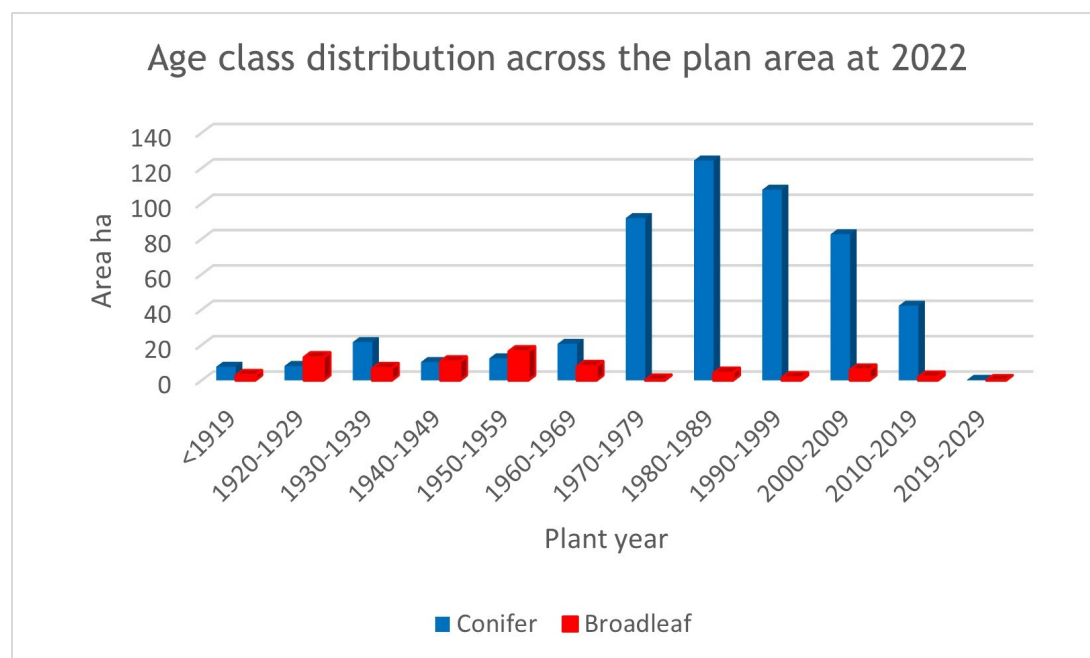
In 2016, a survey of Corsican pine <40 yrs old highlighted areas of extreme infection, requiring intervention to avoid mortality. These areas have been identified for underplanting*. An underplanting programme of 266ha per year over a period of 30 years across the whole of Thetford Forest is currently underway. A number of areas will be underplanted in Croxton predominantly within the central and southern parts. These can be seen on the design & concept map on page 8. 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. The later felling periods also help to smooth felling into the future, reducing peaks between 2032-2051 closer to the mean felling level. This will provide a more even supply of habitat for Woodlark and Nightjar in future, also a key objective of the plan.

Following felling, coupes are planted 2 years later. This fallow period is necessary to reduce the likelihood of the young trees being eaten by pine weevil, found in stumps and roots of felled or dead conifers. Fencing may be required in both underplanted areas and clear fell coupes to reduce mammal damage giving the trees the best possible chance of survival. Fencing requirements should be discussed and agreed with the wildlife management team and kept to a minimum.

Broadleaves make up 10% of the plan area, with the majority located within roadside belts and small blocks across the woodland, as well as natural reserves. Open space including both permanent and temporary (e.g. recently felled areas) accounts for 16% of the plan area.



Structural diversity



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. As detailed on page 16 the underplanting programme will help to achieve this objective by reducing peak felling periods to provide a more even spread overtime. This can be seen in the graph within the proposed management section on page 20.

Forest resilience

Timber is a renewable material and wood products can have a long life. Timber is a low carbon alternative to materials such as plastics, concrete and steel which require a lot of energy to be produced, emitting carbon dioxide when they are made. When trees are harvested we replant the area 2 years later to start the cycle again. Growing and using wood helps to tackle the climate crisis. As the trees grow they remove carbon dioxide from the air and convert it to wood. Trees which grow the quickest and live the longest provide the best ‘carbon sinks’. However, these two attributes are usually mutually exclusive. Productive forests favour fast growing trees like conifers but slower growing trees like Broadleaves can store more carbon over their longer lifetime. A compromise can be found by ensuring the presence of both conifer and broadleaf species within the woodland. In Croxton forest conifer is the main species determined mainly by the designation and business requirements. The faster growing conifer will provide good carbon storage in the medium term whilst the broadleaf areas provide good long term storage.

The threat posed to timber production from climate change and more directly from pests and diseases is having a significant impact in forests, with Corsican pine being the worst affected. The image opposite shows an area of Corsican pine infected with *Dothistroma* needle blight. To ensure long term sustainable timber production the present tree species will require age/species diversification in future rotations selecting species more resistant to the current and increased incidence of pests and diseases.

The plan area is an established woodland with a relatively limited age structure and a 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 10-13 year cycle for LISS areas to encourage natural re-generation. Strip felling and subsequent underplanting is also being carried out in areas of high *dothistroma* infection helping to add further diversity to the woodland.

The planting of small proportions of Corsican pine as both pure crops or within mixtures may be considered for use in areas of high airflow and where establishment is difficult. These will be trial sites and assessed at year 5 and 10 with a report produced to indicate condition and how these coupes may inform decision making on future tree planting. These reports will be submitted to Forest Services. There are three coupes in the plan which may be planted with Corsican pine as a mixture. These are shown on the restock and habitat map on page 25.

To improve forest sustainability, tree species and tree 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 and it may be necessary to fence the replanted areas to prevent browsing by mammals. The split between conifer, broadleaf and open space is shown on the habitat and restock species map on page 25 and a list of possible species for both underplanting and restock are listed in the proposed management section on page 22.





Financial sustainability

Croxton is a productive forest and as such conifer is an important species for continued use across the majority of the plan area. The sandy, free draining soils that dominate these woodlands are well suited to support conifer crops, which take around 50 years to reach economic maturity for our current timber market. During this time they will be thinned regularly on a cycle of 5-7 years to improve growing conditions to enhance the quantity and quality of the final crop.

Broadleaf species can take around 150 years until they are considered of suitable size to produce quality timber products for harvesting. However, the poor growing conditions mean that the trees are often of poor form and low quality and so only suitable for firewood. Therefore they are managed on a shorter rotation under LISS to maximise volume for this market through regular thinning interventions every 10-13 years. Broadleaves remain vital to the woodlands offering the most biodiverse areas and helping to improve soils for the second rotation.

Conifers provide a major source of timber products for construction and housing throughout the world and are also used for furniture, fencing, paper and cardboard. Forestry England is the country's largest supplier of sustainable timber grown in England.

The plan shows that currently the woodlands are predominantly Corsican pine, but in future this will change to include a much wider range of other conifer species. This will increase species diversity across the woodland and improve economic resilience, allowing the woodlands to continue to generate an income that can be reinvested back into the woodlands.

The plan revision should not affect the short term sales contracts commitments, coupes can be changed but appropriate substitution of coupes must ensure that future sales can be met.

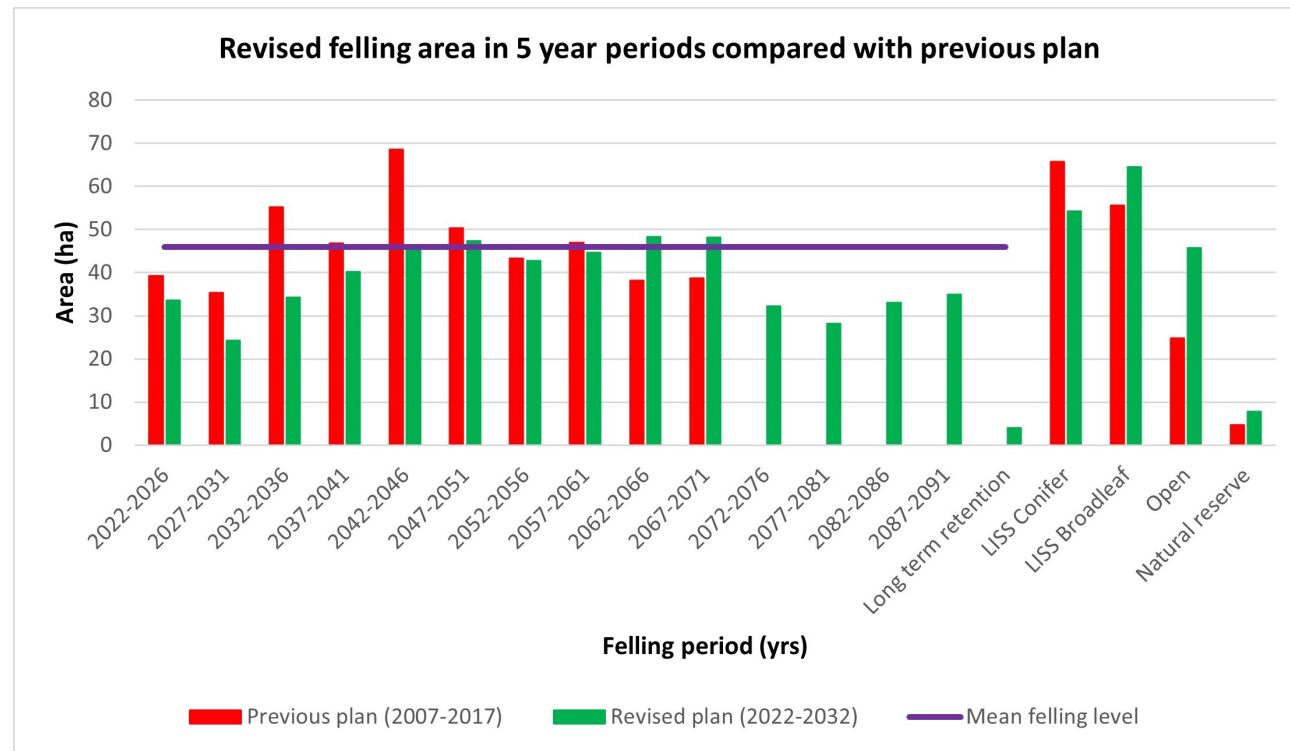


Proposed management plans

The proposed management below builds upon the objectives listed on page 6 and details how progress can be measured:

For Wildlife Objectives

W1 To protect, maintain and enhance designated sites.



The chart above compares the felling area per period of the previous forest plan alongside the new revised plan, together with an indication of mean level of felling across the plan area. The new plan has reduced the peaks in the previous plan to provide a more even spread of SPA habitat long term. There are a number of planned underplanting coupes shown in the design & concept map on page 8 which play an important role in smoothing out these peaks, due to moving the felling period much later than previously planned. This helps provide a more even supply of SPA habitat, consistently into the future.

Open space has increased by 21ha of which 10ha is the creation of the new heathland linking to East Wretham Heath SSSI/SPA. The remaining 11ha increase is from improved data records following a survey of the plan area before the plan revision. It is also due to increased open areas around newt ponds following clear fell operations, as a result of restrictions on ground preparations for restock, within newt buffer zones.

The increase in LISS broadleaf and reduction in LISS conifer is a result of reallocating to the correct species present e.g. some areas in the previous plan were showing as conifer when they were in fact broadleaf. The natural reserve area has been slightly increased and is now located in one large area to improve its conservational value. In the previous plan natural reserves were predominantly small isolated pockets of overmature conifer. These remaining small pockets have now been moved into management under long term retention* which retains overmature trees for environmental benefit well beyond the age normally adopted in the woodland. These will eventually be clear felled at a much later date alongside adjacent clear fell coupes, helping to also contribute to SPA habitat long term.

W2 To protect, maintain and enhance priority habitats.

The provision of permanent open space will see an increase of 1% following implementation of the revised plan. This gives a combined total (permanent plus temporary) of 10% as required in UKFS (see pie chart on page 22).

The increased open space comes as a direct result of the implementation of the Thetford open habitat plan, of which the full extent can be seen in appendix 2. The priority habitats detailed on page 11 support a variety of nationally rare fauna and flora. It is recognised that widening and linking rides to surrounding open habitat within this plan will increase biodiversity for the priority habitats, whilst improving species distribution.

These widened rides will be created gradually as trees reach economic maturity and are felled in the periods detailed on the management map on page 23. At the restock stage 40m rides will be excluded from restocking to eventually link across the whole plan area as shown in the habitat and restock map on page 25. It is recognised that two areas including west of the heathland and south of Chapel farm square will require further felling to complete the open ride network link. However, these areas are currently managed through LISS and until the proposed ride network has been fully assessed to ensure these links are appropriate they will not be included in the felling programme. This will either be amended at a later stage or built into the next plan revision.

Where possible and appropriate the rides will include scallops creating warmer areas for wildlife and improving deer management opportunities. Specific locations for scalloping along the open rides will be considered during the operational site assessment stage and should be agreed between the beat forester, beat wildlife ranger and conservation manager.

W3 To protect, maintain and enhance priority species.

There are a variety of priority species recorded in Croxton forest including mammals, amphibians, reptiles, lepidoptera, birds and plants. Priority species will be maintained through the planned programme of management identified for their supporting habitats. Opportunities will be identified at the operational level and incorporated into work programmes via the operational site assessment (OSA) process.

The proposed management below builds upon the objectives listed on page 6

For People Objectives

P1 *Create a pleasant natural environment for the public to enjoy outdoor recreation in a rural woodland setting.*

It is difficult to assess how pleasant a woodland environment is as this is subjective. However, managing the woodland through a variety of silvicultural systems including clear fell, LISS and retaining patches of overmature trees such as those present in natural reserve coupes and long term retentions, should create a pleasing environment for forest users and passers by. Maintaining open space also helps to create internal views within a relatively flat landscape.

P2 *Maintain and improve cultural and heritage value of the land by protecting sensitive heritage features highlighted through the operational site assessment (OSA)* process.*

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

P3 *Agree management plans for 1 scheduled monuments (SM) in Croxton, with Historic England (appendix 1).*

Appendix 1 shows the Scheduled Monument plan for Mickle Hill. This has been agreed with Historic England.

For Climate Objectives

C1 *Maintain the land within our stewardship under Forest Stewardship Council® (FSC®) / Programme for the Endorsement of Forest Certification (PEFC) by meeting standards detailed in UKWAS fourth edition.*

UKWAS audits are carried out nationally in Forestry England woodlands on an annual basis to retain our certified status. An approved forest plan is a key part of the evidence given to the auditors to prove that the forest is managed sustainably.

C2 *Increase forest resilience to threats posed by climate change, pests, diseases and fire.*

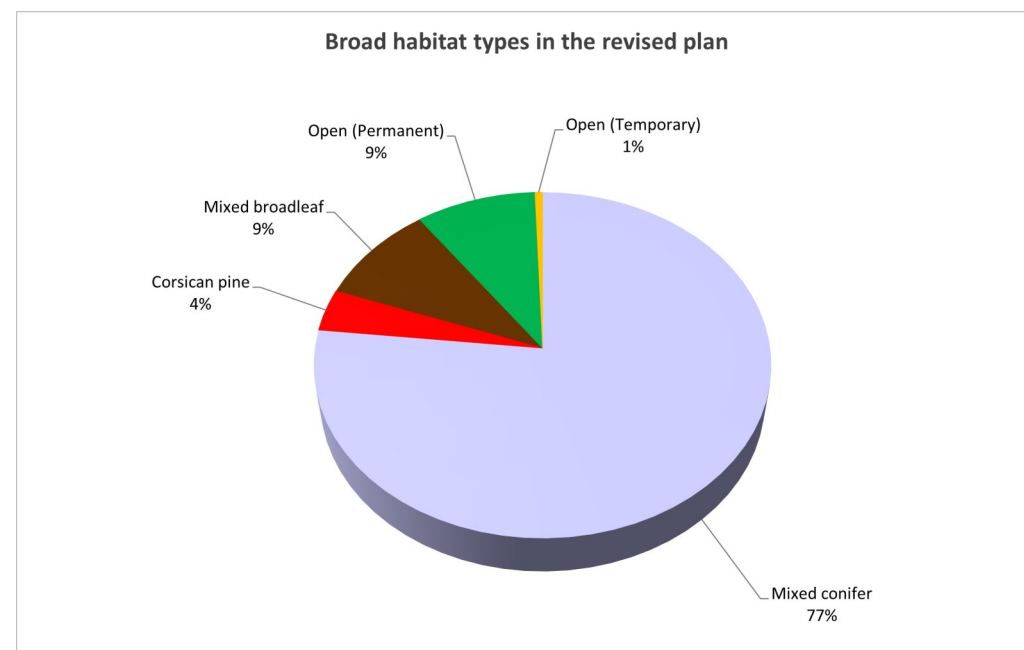
By meeting the first objective in our sustainable approach section on page 22 we will also increase forest resilience to climate change, pests and diseases.

Maintaining and increasing wider ride networks which in turn provide fire breaks will help prevent fires from spreading whilst also allowing good access for the emergency services. Areas around properties which lie in or directly border the woodland are generally managed as LISS and contain some of the most mature trees within the woodland. These act as fire belts particularly where the species is broadleaf and help reduce the risk to life and property in the event of a fire.

The proposed management below builds upon the objectives listed on page 6

Our sustainable approach objectives

F1 Improve economic resilience of our forests by increasing species diversity through restock programmes and mixed silvicultural practices, to protect future timber supplies and biomass.



The pie chart shows projected habitat proportions by the end of the plan period. 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. The species choice in the chart is shown only as Mixed conifer, this phrase should be taken to mean a mixture of conifers across the forest as a whole not necessarily a mixture in every compartment*.

The increase in restock species diversity should improve the resilience of the forest to climate change and the threat from pests and diseases. The habitat and restock map on page 25 gives an indication of the split between conifer, broadleaf and open space.

The following conifer species may be planted in restock coupes following clear fell operations: Scot’s pine, Hybrid larch (small mixtures only), Loblolly pine, Nordmann fir, Atlas cedar and Oriental spruce. A small percentage of broadleaf species may also be planted including Small leaved lime and Silver birch. Species that may be planted in the underplanting areas shown on the design and concept map on page 8 include: Douglas fir, Western red cedar, Coast redwood, Grand fir, European silver fir, Oriental spruce and Small leaved lime (small percentage).

The planting of Corsican pine may be carried out in three coupes shown on the habitat and restock map on page 25. It is thought these coupes may be difficult to establish so a mix of Corsican pine with other conifer species has been chosen here. Corsican pine will also remain in some of the small patches of mature trees within LISS and natural reserve areas. The future diversity of conifer species is expected to increase across both forests as new species and silvicultural systems are introduced.

The percentage of broadleaf looks to have reduced by 1%, but broadleaf species will actually increase over time as the temporary open space areas become stocked with naturally regenerated Birch and Sycamore, and LISS coupes are managed to encourage a 50/50 split of conifer/broadleaf mixtures.

The stocking density of restock coupes will remain at a minimum of 2,200 stems per ha as per the Breckland Forest Site Management Statement. In LISS areas managed through regeneration felling it is difficult to define stocking density levels as this is dependant on the silvicultural practice used e.g. group felling or single tree selection to encourage natural regeneration. This is dependant on the species present and therefore natural regeneration will have a variable stocking density with the success of stands measured by variation in age structure.

F2 The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments.

The objective to smooth timber production while continuing to meet market commitments is very similar to a prior objective to protect, maintain and enhance designated sites 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 are expected to yield good quality thinning material, and the average coupe size is large enough to allow efficient timber harvesting.

The chart on page 20 shows that the area of felling in the next ten years (2022-2032) has changed from the previous plan. Croxton is a relatively small woodland and some restocked areas have struggled to establish so it is important to ensure felling is at a reasonable level and that felling coupe periods are well spread across the woodland. The change in felling area is a result of delaying some coupes further into the future to avoid previous peaks and concentration of close felling coupe periods in small areas. This change has also helped to allow timber to reach full economic maturity before felling.

There has been a small reduction in clear fell area between 2022-2026 which is the only period currently committed to market. The felling area was removed due to the presence of Goshawk and the limited availability of habitat across the plan area for this species. This reduction has not caused a significant issue as previous plans to retain 20% of stems within the 2022-2026 coupe on the eastern edge have been changed to ensure a complete clear fell of this area which will meet market commitments and reduce any risk of windblow. This has been agreed with the programme manager.

This shows market commitments will be met and the work to smooth production in subsequent years has improved the flow of timber towards the end of the century.

Management map

Legend

Clear fell

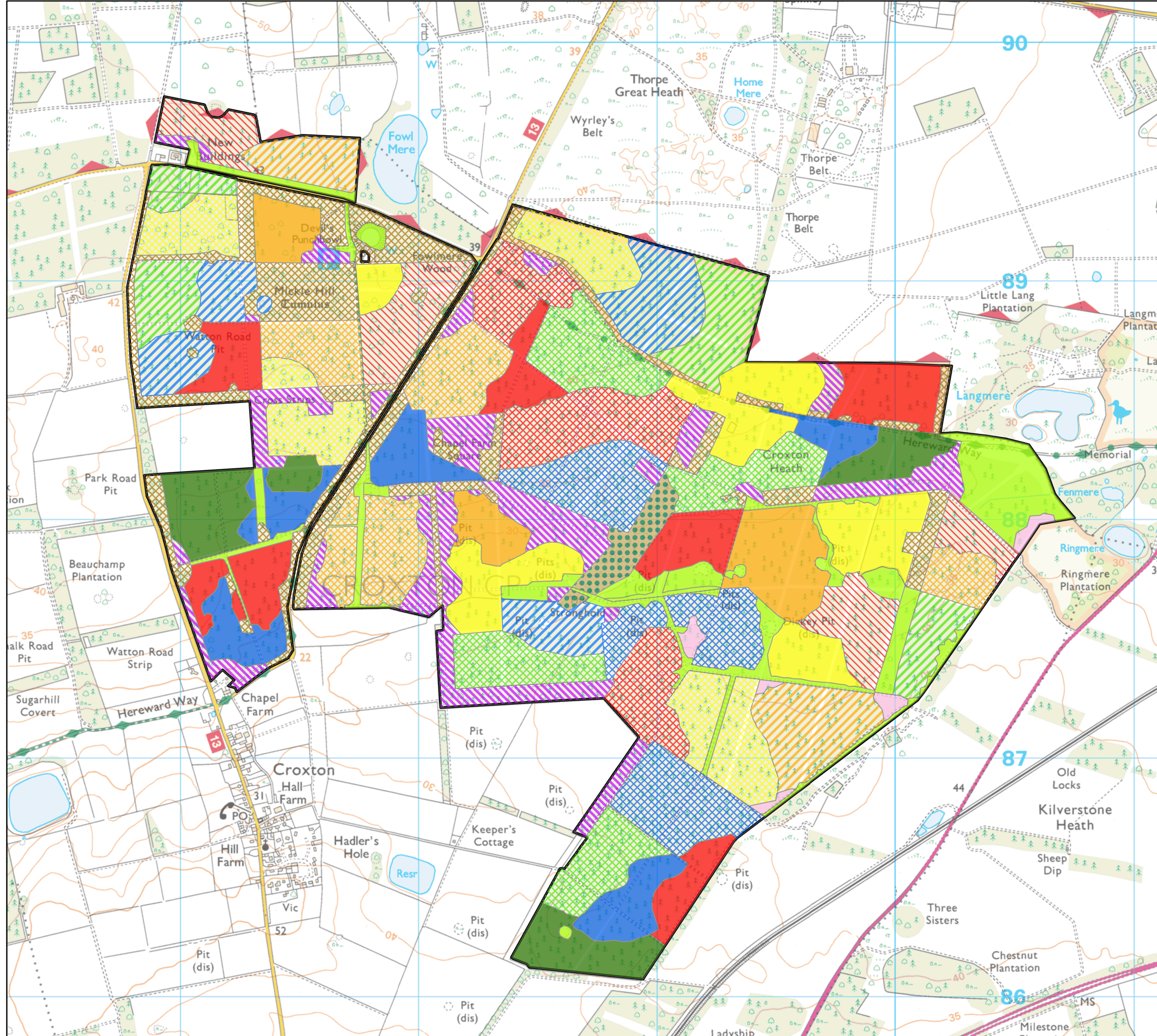
- Clear fell 2022-2026
- Clear fell 2027-2031
- Clear fell 2032-2036
- Clear fell 2037-2041
- Clear fell 2042-2046
- Clear fell 2047-2051
- Clear fell 2052-2056
- Clear fell 2057-2061
- Clear fell 2062-2066
- Clear fell 2067-2071
- Clear fell 2072-2076
- Clear fell 2077-2081
- Clear fell 2082-2086
- Clear fell 2087-2091
- Long term retention

Lower Impact Silvicultural Systems




- LISS Conifer
- LISS Broadleaf
- Natural Reserve

Open/other

- Open space



Management map for 10 year plan approval period**Legend****Clear fell**

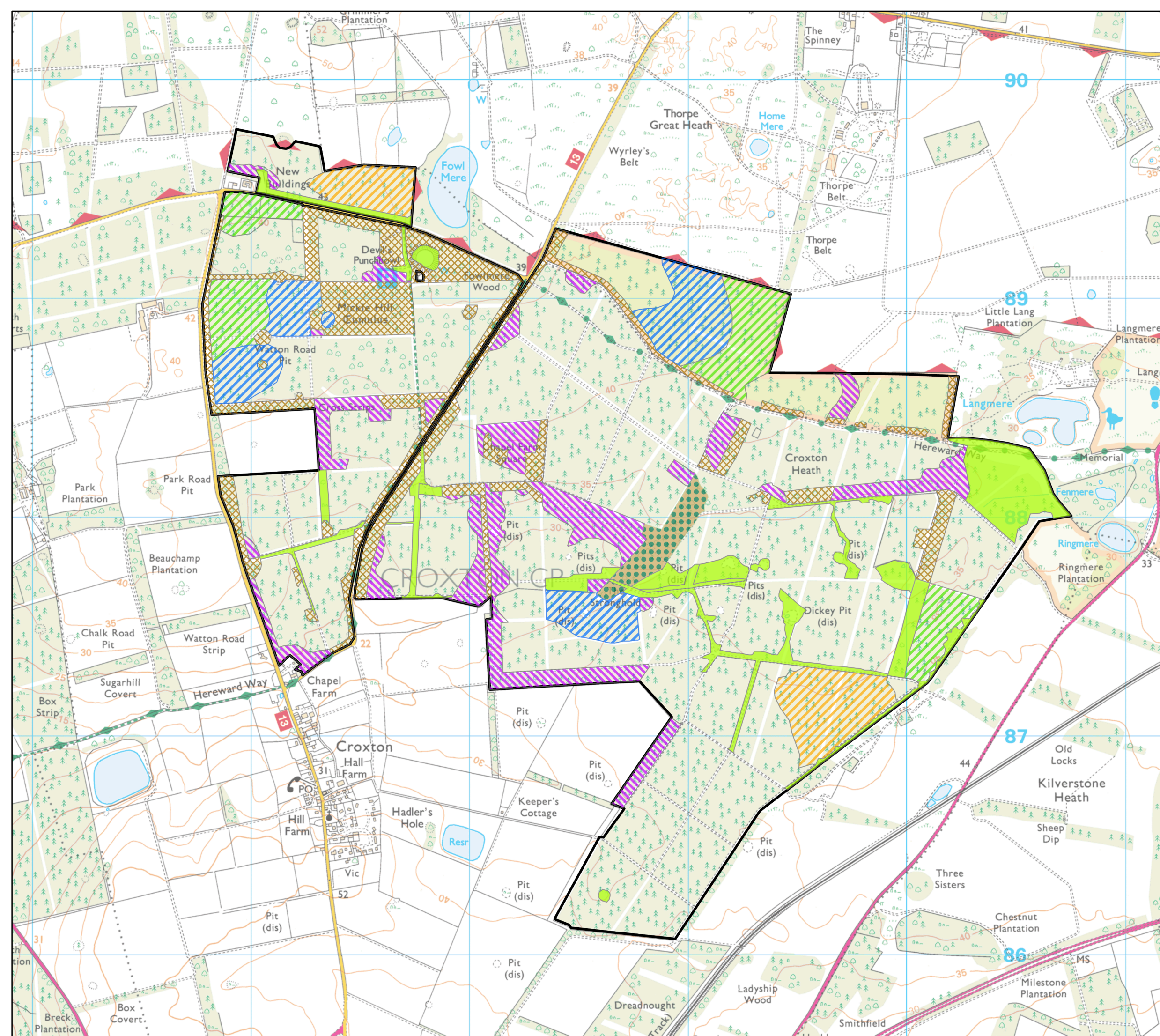
-  Clear fell 2022-2026
-  Clear fell 2027-2031
-  Clear fell 2032-2036

Lower Impact Silvicultural Systems

-  LISS conifer
-  LISS Broadleaf
-  Natural Reserve

Open/other

-  Open space





East England Forest District

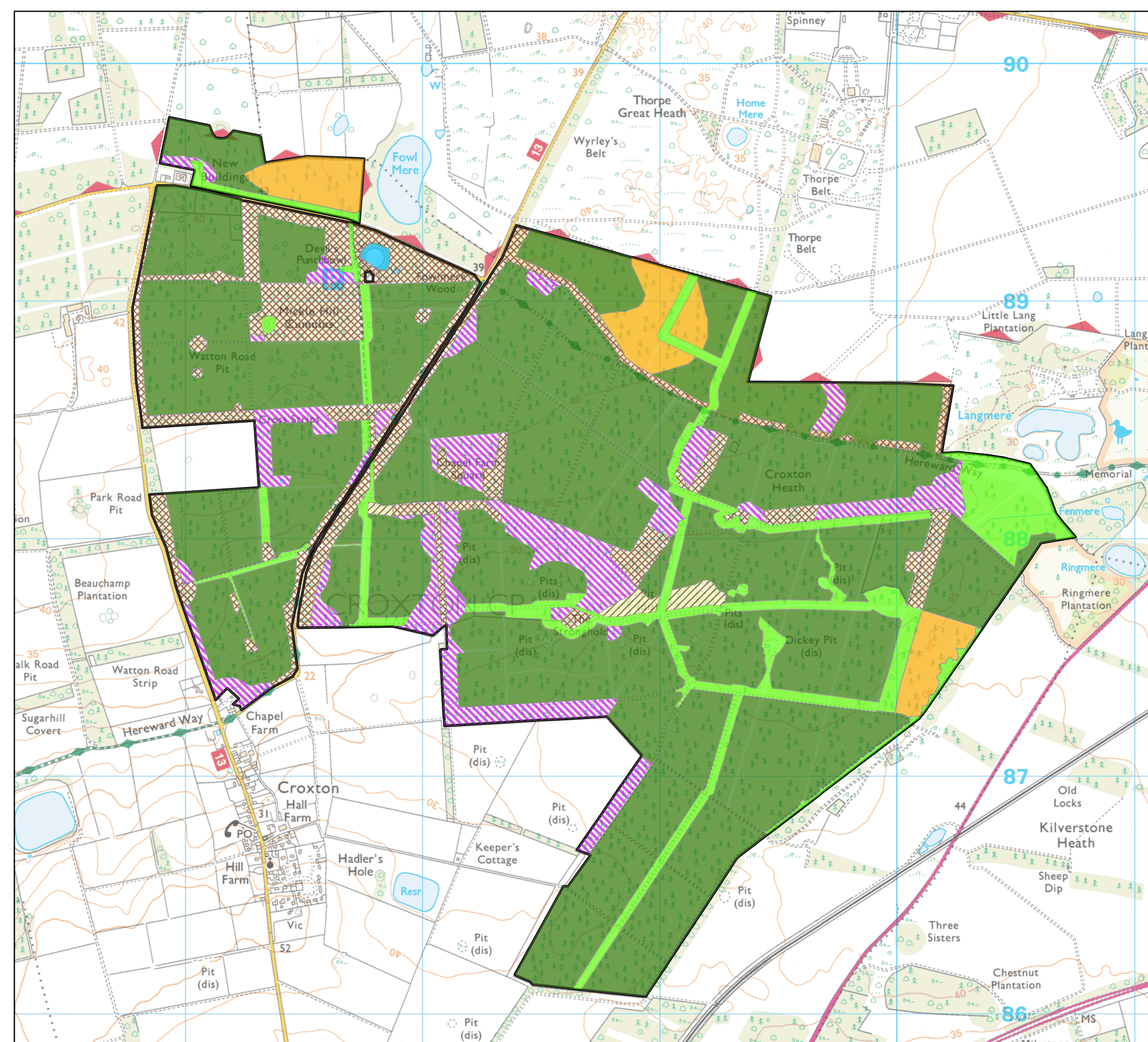
Croton

Scale: 1:15,000

Habitat and restock map

Legend

-  Mixed Broadleaf
-  Mixed conifer/broadleaf
-  Conifer
-  Corsican Pine (60%)
-  Permanent open space
-  Temporary open space
-  Aquifer fed naturally fluctuating mere
-  Land Management Plan Areas



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 delivery plan priorities	Forest Plan Objective	Monitoring
<p>For Wildlife</p>	<p>W1: To protect, maintain and enhance designated sites.</p> <p>W2: To protect, maintain and enhance priority habitats.</p> <p>W3: To protect, maintain and enhance priority species.</p>	<p>A Habitat Regulations Assessment has been carried out and agreed with Natural England. There are 4% of coupes <5ha, which is below the 10% threshold.</p> <p>Progress with implementation of the proposed open habitat network as shown in the habitat and restock map, to encourage distribution of rare flora and fauna. The mid term review (2027) should assess any progress here.</p>
<p>For People</p>	<p>P1: Create a pleasant natural environment for the public to enjoy outdoor recreation in a rural woodland setting.</p> <p>P2: Maintain and improve cultural and heritage value of the land by protecting sensitive heritage features highlighted through the operational site assessment (OSA)* process.</p> <p>P3: Agree management plans for 1 scheduled monument (SM) in Croxton, with Historic England (appendix 1).</p>	<p>As this is subjective it is difficult to monitor. However, feedback made to the beat forester or recreation department will be used to monitor success of this objective.</p> <p>Archaeology will be monitored through the OSA process.</p> <p>See agreed SM plan in appendix 1.</p>

District delivery plan priorities	Forest Plan Objective	Monitoring
<p>For Climate</p>	<p>C1: Maintain the land within our stewardship under Forest Stewardship Council® (FSC®) /Programme for the Endorsement of Forest Certification (PEFC) by meeting standards detailed in UKWAS fourth edition.</p> <p>C2: Increase forest resilience to threats posed by climate change, pests, diseases and fire.</p>	<p>UKWAS audits and certification</p> <p>Sub compartment updates can be used to show movement towards a more diverse range of species overtime. OGB 4's will highlight difficulties with establishment. Maintaining open ride networks and managing areas as LISS around property will increase resilience to fire risk.</p>
<p>Our Sustainable Approach</p>	<p>SA1: Improve economic resilience of our forests by increasing species diversity through restock programmes and mixed silvicultural practices, to protect future timber supplies and biomass.</p> <p>SA2: The felling plan should aim to smooth production from crops in cyclic clearfell but also meet market commitments.</p>	<p>The sub-compartment* database is updated after restocking 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 Forestry England and Forest Services - see Tolerance table on page 33. 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 and assessed as part of the full forest plan revision.</p> <p>The mid term review (2027) will assess the progress and success of underplanted areas identified on the design and concept map (page 8).</p> <p>A comparison between the production forecast of the previous plan (2009-2019) and the revised plan (2022-2032) was carried out to ensure no negative effect on market plan commitments. This has been agreed with the programme manager.</p> <p>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.</p>

UKWAS Compliance table ^[1]

	Forest Plan Area (Ha)	Forest Plan %	Forest District Area (Ha)	Forest District %
Total area	714	100	34,528	100
Total wooded area	658	92	31,408	91
Natural reserve - Plantation (1%)	9	1	273	1
Natural reserves - Semi-natural (5%) ^[2]	3	0.4	181	2.5
Long-term retentions and low impact silvicultural systems	119	17	14,188	41
Area of conservation value (>15%) including designations: PAWS, ASNW, NR, SSSI, SAC, SPA & Conservation zones	695	97	28,431	82

[1] Figures calculated 27th May 2022 and correct at time of publication.

[2] Semi natural figure has reduced from 5.5% in previous assessment to 2.5% following nationally revised calculation method. Natural reserves are currently being revised across the district to rectify the 2.5% loss.

Application for Forest Plan

Forest Enterprise – Property

Forest District:	East England
Woodland or property name:	Croxton
Nearest town, village or locality:	Croxton
OS Grid reference:	TL 886 882
Local Authority district/unitary Authority:	Breckland Council

Areas for approval

	Conifer	Broadleaf
Felling	92	
Regeneration Felling	22	26
Open space (including heathland, ride network and archaeological sites)	11	2

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

Date approval ends.....

*delete as appropriate

Signed
Area Director

East & East Midlands Area

Date of approval.....

I seek approval to clearfell 92ha of the Public Forest Estate (this is the area in green, orange and blue stripe fell periods—i.e. 2022-2032). Restock will be through planting a variety of conifer species at a minimum stocking density of 2,200 stems per ha, as required in the site management statement for Breckland Forest SSSI. Corsican pine may be planted in the locations shown on the habitat and restock map as agreed with Forest Services.

In addition to the above felling 119ha will be managed using lower impact silvicultural systems (LISS) including regeneration and selective felling. This will be done through the removal of single and small groups of trees, removing no more than 40% of the stems within any single management unit/compartments over the approved plan period. This operation is aimed at encouraging initial seeding, provision of sufficient light to boost growth of understorey, allowing adequate space for the development of crowns and stem form for quality timber and to accelerate individual tree growth. Restock will be through natural regeneration, with supplementary planting carried out if required.

Date of commencement of the plan:

Expiry Date:

Mid-Term Review Date:

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 The England Trees Action Plan)

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

Favourable condition

Natural England's definition for a SSSI in its intended state.

GIS

Geographic Information System - computer program that enables FE 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.

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 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.

National vegetation Classification

The key common standard developed for country nature conservation agencies to produce a comprehensive classification and description of the plant communities of Britain. Each are systematically named and arranged with standardised descriptions for each.

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.

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 takes to reach economic maturity e.g. Scots Pine may be grown on a 80 year rotation.

SAC

A special area of conservation is the land designated under directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

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.

SPA

Special Protection Area designated under the European Habitats Directive (European 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.

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.

UK Forestry Standard

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

UK Woodland Assurance Standard (UKWAS)

A voluntary scheme for the independent assessment of forest management in the UK. The Standard 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.

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 m³ per hectare has a yield class of 14.

Clearfelling

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. Any felling over 0.25ha is defined as a clear fell.

Thinning

This is an important part of the management 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. Thinning is a continual process that works around the forest on a 5-7 year cycle.

Lower impact silvicultural systems (LISS)

This is also known as Continuous Cover Forestry and includes a suite of silvicultural systems where species, sites, wind risk, tree health risk and management objectives allow a range of silvicultural approaches. These include group selection, shelterwood or under-planting, small coupe felling, coppice or coppice with standards, minimum intervention and single tree selection systems.

The majority of these systems 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. In the plan this management includes selective felling and regeneration felling.

LISS is often used in areas of high public access to maintain the visual impact of large mature trees for their aesthetic value. It is also a suitable management system on sites where establishment of trees would be difficult if the site were to be clear felled, due to mammal damage or poor soil quality. LISS is also used to manage most of the broadleaf crops and all the mature conifer crops in areas of high conservation value as these trees often provide important nesting habitat.

Open space

Temporary open space follows felling when coupes are prepared for planting or to encourage natural regeneration. It is also created through coppicing.

Permanent open space will be centred on conservation and heritage sites—see open space on page 11.

Long term retention

These are generally small areas of over mature trees retained for environmental benefit significantly beyond the age or size generally adopted by the woodland enterprise. They are felled at a much later date than usual which will generally co-inside with the felling of a larger adjacent coupe particularly if windblow may be an issue.

Minimum Intervention

No systematic felling or planting of trees. Operations normally permitted are fencing, control of exotic plant species and vertebrate pests, maintenance of paths and rides and tree safety works.

Natural Reserves

Predominantly wooded, permanently identified and in locations of particularly high wildlife interest or potential. They are managed by minimum intervention unless alternative management has higher conservation or biodiversity value.

	Adjustment to felling coupe boundaries	Swapping of felling coupes	Adjustment to felling operation	Timing of Restocking (including natural regen)	Species choice	Clearance of standing trees associated with wind-blown areas	Tree health
Formal approval by 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	Thinning to selective felling or clear felling	Where this is > 4 planting seasons from the date of felling.	From mixed, predominantly broadleaves to evergreen conifer.	<p>Sensitive^[2] areas: all clearances of ≥1ha or clearances of ≥10% of the stand if area of stand is under 10ha.</p> <p>Non-sensitive areas: all clearances of ≥5ha or clearances of ≥25% of the stand if area of stand is under 20ha.</p>	Where no SPHN issued and felling required.
Written approval only required from area team.	Between 10-25% of the coupe area	Where changes to the felling sequence is likely to result in a minor breach ^[3] of the UKFS adjacency rules		Where this is at least 2 but no more than 4 planting seasons from the date of felling.	Deciduous conifers to evergreen. Change from other conifers to Corsican Pine		Thinning > 50% but < 65%
Formal approval by area team not required.	≤ 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 selective felling or thinning	Where this is <2 planting seasons from the date of felling.	Any other changes.	Only if formal approval is not required.	Where SPHN is issued or thinning up to 50%

[1] Greater than 20% of the coupe boundary

[2] Approval letter retained for compliance inspection purposes

[3] 20% or less of the coupe boundary

[4] District team must retain all relevant documentation for compliance inspections



Appendices:

- 1: Scheduled Monument Plan for Mickle Hill
- 2: Thetford Forest Open Habitat Plan
- 3: Image citations and Stakeholder consultation record

Scheduled Monument Plan - Mickle Hill

Reasons for Designation

Bowl barrows, the most numerous form of round barrow, are funerary monuments dating from the Late Neolithic period to the Late Bronze Age, with most examples belonging to the period 2400-1500 BC. They were constructed as earthen or rubble mounds, sometimes ditched, which covered single or multiple burials. They occur either in isolation or grouped as cemeteries and often acted as a focus for burials in later periods. Often superficially similar, although differing widely in size, they exhibit regional variations in form and a diversity of burial practices. There are over 10,000 surviving bowl barrows recorded nationally (many more have already been destroyed), occurring across most of lowland Britain. Often occupying prominent locations, they are a major historic element in the modern landscape and their considerable variation of form and longevity as a monument type provide important information on the diversity of beliefs and social organisations amongst early prehistoric communities. They are particularly representative of their period and a substantial proportion of surviving examples are considered worthy of protection (Text from National Heritage List entries on Historic England website: <https://historicengland.org.uk/listing/the-list>).

Monitoring plan: Periodic visits by Historic England and Forestry England staff. Official review of these plans will be carried out in line with the forest plan 10 year revision programme.

Scheduled Monument : Mickle Hill

National Heritage List number	1004041
Norfolk HER number	5707
Forestry England Feature ID	MNF5707
Area	0.2ha
Description	<p>A Bronze Age bowl barrow (burial mound) named 'Micklehill'.</p> <p>The barrow mound is roughly circular, has a diameter of about 35m and stands around 1.6m tall. No surrounding ditch is visible, although it is very likely the mound was created from material dug from a ditch and this survives as an infilled feature below ground.</p> <p>No archaeological investigation or excavation of the barrow is recorded in the Norfolk Historic Environment Record.</p> <p>Evidence for the construction and use of the barrow will survive within the barrow mound and surrounding ditch. This evidence could include human remains, pottery and flint artefacts. Evidence for the local environment at the time of the barrow's construction and use may survive in the mound and soils buried beneath it.</p>
Current condition	This barrow is in a clearing in a conifer plantation - the clearing includes the whole of the mound and most of the area likely to contain the infilled ditch. The mound and ditch area are covered in bracken. A few conifer and broadleaf trees may be growing in the infilled ditch. There is a ride adjacent to the west.
Heritage at Risk status	Not on the Heritage at Risk register.
Threats to monument	Root growth from bracken and regenerating trees and scrub. Root growth from, and potential wind throw, of trees.
Management required	<ol style="list-style-type: none"> Annual vegetation management to restrict bracken growth and encourage the development of a grass and/or herbaceous sward, including: <ul style="list-style-type: none"> Cutting bracken, nettles and other ground vegetation. Cutting saplings and scrub close to ground level and treating stumps/roots. Spraying bracken with Asulam/Asulox, if and when Environment Agency special licences allow. Overtime fell trees within the ditch area and nearby to increase the extent of the clearing, so the clearing provides at least 20m of open space around the mound (to meet guidance given in the UK Forestry Standard). This work will be undertaken in stages, normally when forest operations are taking place in the vicinity. The first stage is likely to take place in late 2020 or 2021, when the surrounding compartment is thinned.
Sources used	National Heritage List (https://historicengland.org.uk/listing/the-list). Norfolk Historic Environment Record (http://www.heritage.norfolk.gov.uk/).

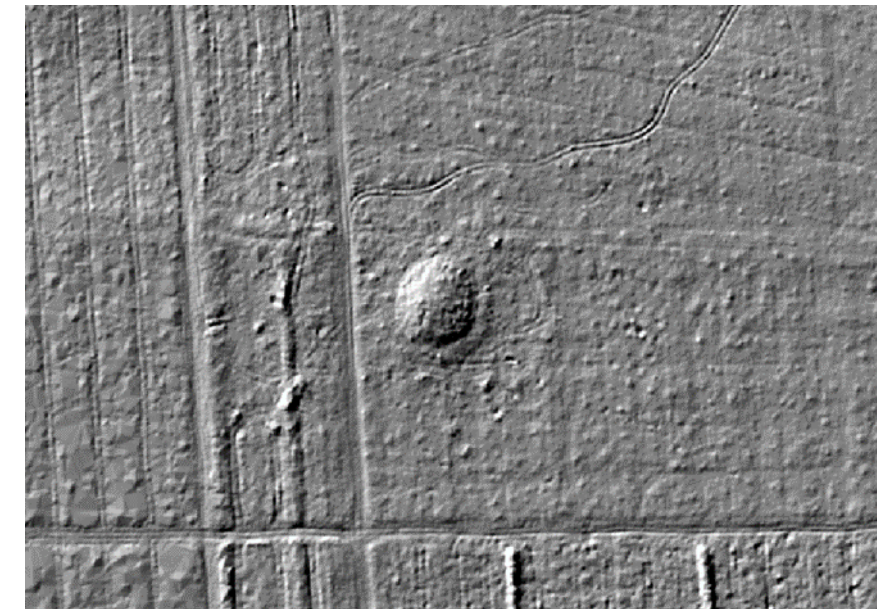
Scheduled Monument Plan - Mickle Hill



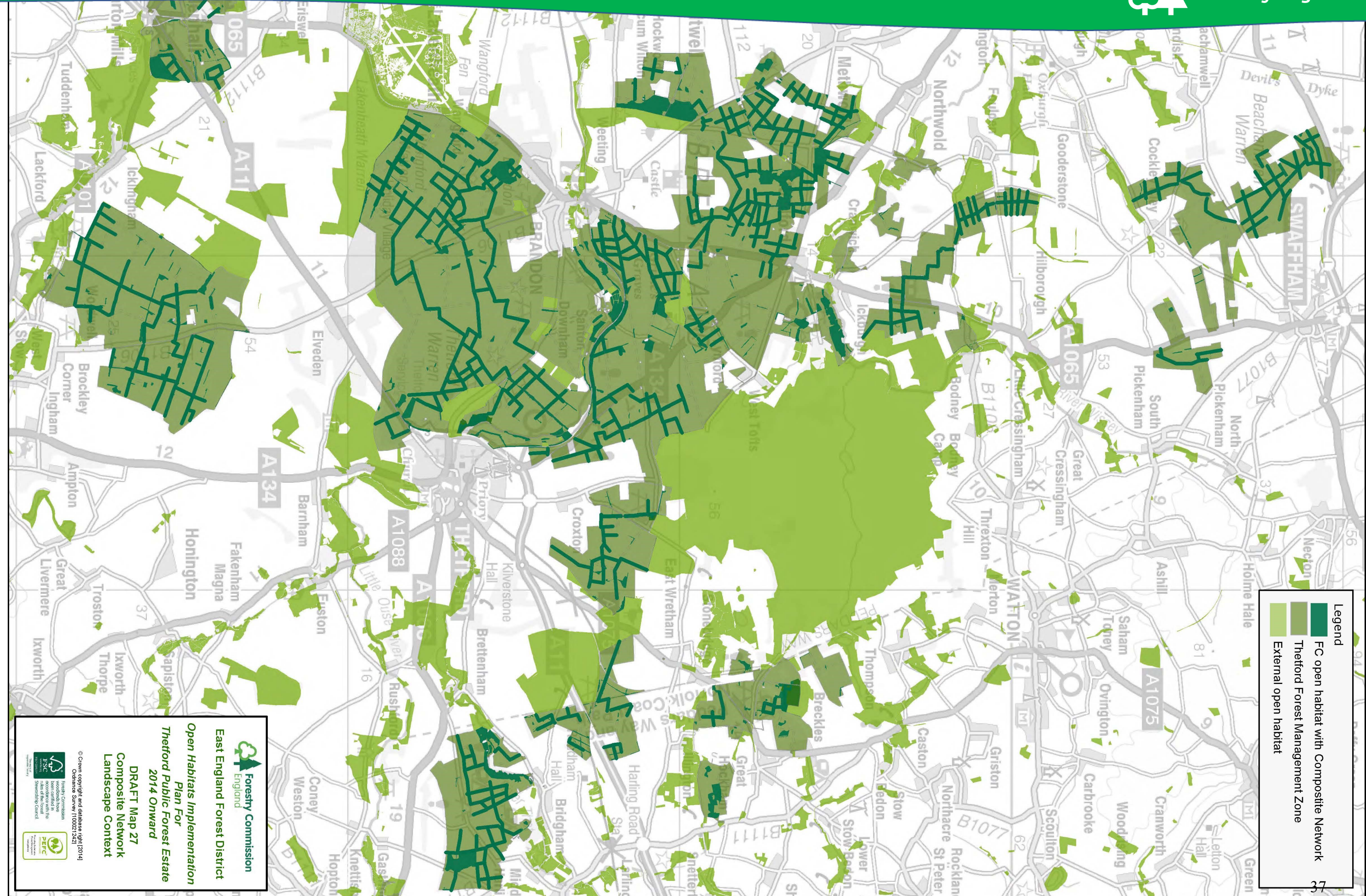
Micklehill in July 2020, just prior to the annual cut
© David Robertson






Identifying and marking trees growing within 20m of
the burial mound, July 2020 © David Robertson



Micklehill in LiDAR data © Crown/Forest Research 2017
(based on Forestry Commission England Fugro Geospatial
data).



Legend

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

Forestry Commission
 East England Forest District

Open Habitats Implementation
 Plan For
 Thetford Public Forest Estate
 2014 Onward

DRAFT Map 27
 Composite Network
 Landscape Context

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 Ordnance Survey 100021241



Image Citations

- Image 1: Devil's Punchbowl, © Neal Armour-Chelu
- Image 2: Thetford Forest, Forestry England photo library
- Image 3: Forest Planning, Forestry England photo library
- Image 4: Scot's Pine belt, Croxton Forest , © Emma Rawlinson
- Image 5: Basil Thyme with Basil Thyme Case-bearer Moth © Rob Dyke
- Image 6: Woodlark, © Chris knights
- Image 7: Grass snake, © Neal Armour-Chelu
- Image 8: Adder, © Neal Armour-Chelu
- Image 9: Great Crested Newt, © Chris Dresh
- Image 10: Common Toad, © Neal Armour-Chelu
- Image 11: Goshawk, © Steve Knell—RSPB
- Image 12: Tree Pippet, © Niall Burton
- Image 13: Thetford Forest Recreation, Forestry England photo library
- Image 14: Forest resilience, Forestry England photo library
- Image 15: Dothistroma Needle Blight, Croxton forest, © Neal Armour-Chelu
- Image 16: Pine logs, Forestry England photo library
- Image 17: Harvesting, Forestry England photo library
- Image 18: Woodlark, © Chris Knights
- Image 19: Chapel Square, Croxton Forest, © Emma Rawlinson

Stakeholder consultation

Statutory: Natural England, Breckland Council and Historic England.

Non-statutory: Parish councils, Environment agency, Friends groups, Neighbours, Forest residents, Sporting tenants, General public, Conservation interest groups, Norfolk Wildlife Trust, RSPB, Butterfly conservation, Woodland Trust, County Archaeologists.



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