WOODLAND
TRUST SCOTLAND

Butterdean Wood

Management Plan
2018-2023

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MAPS

THE WOODLAND TRUST

INTRODUCTION

The Trust's corporate aims and management approach guide the management of all the Trust's properties, and are described on Page 4. These determine basic management policies and methods, which apply to all sites unless specifically stated otherwise. Such policies include free public access; keeping local people informed of major proposed work; the retention of old trees and dead wood; and a desire for management to be as unobtrusive as possible. The Trust also has available Policy Statements covering a variety of woodland management issues.

The Trust's management plans are based on the identification of Key Features for the site and setting objectives for their management. A monitoring programme (not included in this plan) ensures that these objectives are met and any necessary management works are carried out.

Any legally confidential or sensitive species information about this site is not included in this version of the plan.

PLAN REVIEW AND UPDATING

The information presented in this Management plan is held in a database which is continuously being amended and updated on our website. Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations.
Please either consult The Woodland Trust website www.woodlandtrust.org.uk or contact the Woodland Trust (wopsmail@woodlandtrust.org.uk) to confirm details of the current management programme.

There is a formal review of this plan every 5 years and a summary of monitoring results can be obtained on request.

WOODLAND MANAGEMENT APPROACH

The management of our woods is based on our charitable purposes, and is therefore focused on improving woodland biodiversity and increasing peoples' understanding and enjoyment of woodland.

Our strategic aims are to:

- Protect native woods, trees and their wildlife for the future
- Work with others to create more native woodlands and places rich in trees
- Inspire everyone to enjoy and value woods and trees

All our sites have a management plan which is freely accessible via our website www.woodlandtrust.org.uk. Our woods are managed to the UK Woodland Assurance Standard (UKWAS) and are certified with the Forest Stewardship Council® (FSC®) under licence FSC-C009406 and through independent audit.

In addition to the guidelines below we have specific guidance and policies on issues of woodland management which we review and update from time to time.

We recognise that all woods are different and that the management of our sites should also reflect their local landscape and where appropriate support local projects and initiatives. Guidelines like these provide a necessary overarching framework to guide the management of our sites but such management also requires decisions based on local circumstances and our Site Manager's intimate knowledge of each site.

The following guidelines help to direct our woodland management:

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene when there is evidence that it is necessary to maintain or improve biodiversity and to further the development of more resilient woods and landscapes.
2. We establish new native woodland using both natural regeneration and tree planting, but largely the latter, particularly when there are opportunities for involving people.
3. We provide free public access to woods for quiet, informal recreation and our woods are managed to make them accessible, welcoming and safe.
4. The long term vision for our non-native plantations on ancient woodland sites is to restore them to predominantly native species composition and semi-natural structure, a vision that equally applies to our secondary woods.
5. Existing semi-natural open-ground and freshwater habitats are restored and maintained wherever their management can be sustained and new open ground habitats created where appropriate.
6. The heritage and cultural value of sites is taken into account in our management and, in particular, our ancient trees are retained for as long as possible.
7. Woods can offer the potential to generate income both from the sustainable harvesting of wood products and the delivery of other services. We will therefore consider the potential to generate income from our estate to help support our aims.
8. We work with neighbours, local people, organisations and other stakeholders in developing the management of our woods. We recognise the benefits of local community woodland ownership and management. Where appropriate we allow our woods to be used to support local woodland, conservation, education and access initiatives.
9. We use and offer the estate where appropriate, for the purpose of demonstration, evidence gathering and research associated with the conservation, recreational and sustainable management of woodlands. In particular we will develop and maintain a network of long-term monitoring sites across the estate.
10. Any activities we undertake will conform to sustainable forest management principles, be appropriate for the site and will be balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

SUMMARY

This public management plan briefly describes the site, specifically mentions information on public access, sets out the long term policy and lists the Key Features which drive management actions. The Key Features are specific to this site – their significance is outlined together with their long (50 year+) and short (5 year) term objectives. The short term objectives are complemented by a detailed Work Programme for the period of this management plan. Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. A short glossary of technical terms is at the end. The Key Features and general woodland condition of this site are subject to a formal monitoring programme which is maintained in a central database. A summary of monitoring results is available on request.

1.0 SITE DETAILS

Site name:	Butterdean Wood
Location:	Gladsmuir, Haddington
Grid reference:	NT456721, OS 1:50,000 Sheet No. 66
Area:	42.15 hectares (104.15 acres)
Designations:	Tree Preservation Order

2.0 SITE DESCRIPTION

2.1 Summary Description

Butterdean Wood is an attractive mixed woodland of confers, ash, birch and mixed broadleaves. There is a car park and two way-marked trails, with a number of wild-life themed sculptures. The terrain is generally flat. The wood lies between Tranent and Haddington and is popular with local walkers.

2.2 Extended Description

Location, Altitude, Aspect
Butterdean wood is situated in East Lothian, approximately 4km east of Tranent. The main entrance to the wood is less than 1km south of the village of Gladsmuir. The whole site lies on a broad ridge of land and is relatively flat, varying in height between approximately 115m and 100m above sea level. The highest point is on the boundary with the open field which is enclosed by the woodland in the west. The main entrance to the wood is located at the car park: GR NT459729.

Physical Description
The underlying solid rocks of Butterdean are the sandstones, siltstones, mudstones, coals and seat clays of the Limestone Coal Group.
The soils found on this parent material are brown forest soils, non-calcareous surface water gleys and some stony, alluvial soils. Throughout much of the wood, the underlying till is heavy boulder clay. This, combined with the flat nature of the site leads to poor drainage through much of the

woodland. During winter months parts of the woodland can become waterlogged and muddy.

The MLURI climate records classify the area of Butterdean wood to be warm dry lowland which is moderately exposed with moderate winters. The average annual rainfall is between 600 mm and 650 mm.

Woodland Description
Within this part of East Lothian, Butterdean is one of the larger woodland areas and forms an integral part of the network of woodland and shelterbelts particularly to the east and south. Butterdean adjoins a shelter belt to the south, which links directly onto other woodland in the area: Cuddie Wood to the south east which in turn links through narrow belts to the LEPO and Ancient woodland around Winton House, Pencaitland and West Saltoun to the west and south, some 4 to 5 km away.

The site of Butterdean has been wooded for many centuries and is classified in the ancient woodland inventory as Long Established Woodland of Plantation Origin (LEPO) dating back to the late 18th or early 19th century. However, trees have been felled, regenerated and planted on several occasions since, with the most recent being in the late 1960s when much of the area was cleared of broadleaves and planted with productive conifers. At the various times of felling not every tree was removed. As a result veteran trees are scattered throughout, particularly on the current boundary lines, or along ditches and bunds within the wood which may once have been hedgerows or woodbanks to provide field and woodland boundaries.

Butterdean Wood has two owners, Woodland Trust Scotland (WTS), owners of the large area of woodland (42.15ha) to the south and west and East Lothian Council (ELC) which own the remaining 12ha at the northern tip of the wood, which includes the car park. In the east, the boundary between the two areas is demarcated by a ditch and bund along which a footpath runs, whilst in the west there is no physical boundary marker. ELC has similar management objectives to the Trust. Hence, there is no obvious change in woodland composition and structure.

Within the Trust's ownership the woodland is best described in 2 parts, east and west. The area west of the main ride from Hodges Farm is predominantly coniferous, with a scattering of broadleaves throughout with which increase in size along the western boundary. Due to the wet nature of the wood random pockets of wind throw occur which are slowly regenerating predominately with birch and ash. Levels of mammal browsing (mainly roe deer) remain within acceptable limits. The main conifers present are: Norway spruce, Scots pine, Sitka spruce, larch, Douglas fir, Western hemlock and the occasional Western red cedar and Lawson cypress.

In the eastern section, the conifers have been less successful, leading to woodland dominated by broadleaves. The conifers occur in groups or as individual trees throughout this area with many of the larger groups felled during the period of the previous plan.

Butterdean Wood is becoming predominantly broadleaved in composition, which make it a relatively rare habitat in East Lothian. The main species being: birch, ash, willow, beech and oak.

Other Habitats
Butterdean Wood is bordered on three sides by agricultural farmland and also has two large fields contained within its boundaries. Consequently, there is a significant amount of woodland edge

habitat. Woodland edge is important to a wide range of wildlife and provides an ideal transition zone for species diversity.

Other Features
There are no scheduled archaeological features within the Woodland Trust boundary at Butterdean. However, eight capped mineshafts are present in the western section of the woodland. There is relatively little historical information available about these sites, other than that they were utilised for coal mining. For public safety reasons, these sites have been fenced off.

In addition, there are the remains of several brick structures at the western entrance to the wood from Penston. It is thought to be that they were ancillary storage areas, guardrooms and possibly an air raid shelter associated with the nearby WWI Penston (Hodge) military air field, which was situated in the field adjacent to the south west of the wood. Their design is similar to ones found at the nearby National Museum of Flight at East Fortune.

Within the larger of the two enclosed fields there once stood Butterdean House. Unfortunately there are no visible signs left of the house, although as recently as the mid-1950's some remains were visible. Very little is known about the origins of the house and why it was built in such an isolated position.

Site History
Much of the land around Butterdean would originally have been forested. Much of this woodland, including Butterdean was cleared during the 14th and 15th centuries for fuel or timber, to increase grazing land, to eliminate wolves or boars and even to remove refuge for outlaws! Adair's map of 1688 shows the area to be within open moorland (Gladsmoor). Roy's map of 1750 shows the area which is now Butterdean wood to be a series of shelter belts and open fields. By 1799 the fields between the shelterbelts are shown as covered with trees, although whether this is through natural regeneration or planting is unclear. It is uncertain as to whether the wood was felled between this period and the war, when timber harvesting is known to have taken place, removing oak, Scots pine and beech.

The last of the saleable timber on the site was extracted by the Forestry Commission shortly after they purchased the wood in 1946. Replanting did not take place until 1966-68.

The woodland was repurchased by the Ogilvy family, its original owner, in 1982. It was then sold in the same year onto a West Lothian farmer who applied to fell the wood and convert it to arable agriculture. This prompted East Lothian District Council to place a Tree Preservation Order (TPO) on the woodland to prevent its being felled for conversion to agriculture or some other usage. Following a protest the issue went to public inquiry, where the TPO was amended (area covered by order reduced). This TPO (no. 46) is still in force to protect the local landscape, recreation and conservation and covers a strip round the outside boundary of compartment 1, all of compartment 2, compartment 3 (part) and a narrow strip down the eastern boundary of compartment 4. The wood was purchased by the Trust, with substantial financial assistance from East Lothian District Council, in March 1988.

Since purchasing the wood, the Trust have have improved and upgraded the paths and access in partnership with East Lothian Council (ELC).The Trust has also carried out extensive thinning operations and on-going windblow clearance. Thinning took place in: 1999, 2007 and 2013 - which

has gradually opened up the coniferous areas, and released many of the broadleaves scattered amongst them and allowed for some natural regeneration to occur. In the broadleaved area, many of the conifers have now been removed through these thinning operations and subsequent windblow clearance. Further upgrades to the access infra-structure took place in 2014 when the access paths, drainage, information boards and signage were significantly improved within the Woodland Trust site. At the same time, several sculptures, an outdoor learning/meeting area and two new seats were also incorporated into the site. In 2015 the Trust, in agreement with ELC, redesigned, upgraded and enlarged the car park to improve visitor parking.

Access Information
Sited between the busy towns of Tranent to the west and Haddington to the east, Butterdean Wood offers excellent opportunities for recreation either by foot, by bicycle or by horse. A brown and white tourist sign on the main A199, at Gladsmuir advertises the availability of Butterdean wood for public recreational usage. There are over 5km of managed paths within the Trusts ownership at Butterdean with the busier routes being hard surfaced paths. Many of these paths form part of the network of way marked trails linking in with the ELC owned wood and car park to the north. There are also good links onto the wider Core Path Network, with Core Path routes 112, 113, 116 and 117 passing directly through Butterdean Wood, and providing strong north-south links from the car park to Hodges Farm and east-west links from Alba Trees through to the B6363.

The northern section of Butterdean Wood belongs to East Lothian Council and it is through this area that management access to the Trust site is most readily achieved. The track is surfaced and well maintained. ELC have similar management objectives and public access goals for the area of wood which they own and have a good working relationship with the Trust.

Through a formal agreement with the landowner, management access can also be gained to the woodland, by the Trust, via Hodge Farm and along the track running between the fields to the west. Although there is no long-term formal agreement for management access to the wood from Hodges farm, in the recent past this track has been utilized for timber haulage, by kind permission of the owner of the farm.

3.0 PUBLIC ACCESS INFORMATION

3.1 Getting there

Butterdean Wood is situated approximately 750m south of the A199 at Gladsmuir. The woodland is accessed from six formal entrances. The majority of visitors access the wood from the ELC owned car park at the northern end of Butterdean Wood, which is located just off the unclassified road from Gladsmuir to Liberty Hall. The car park has capacity for 10-12 vehicles and also has a separate, gated zone for the safe transfer of school children on and off a mini bus.
Nearest public toilet – Haddington, Neilson Park Rd. (9am-8.30pm Summer & 9am-6pm Winter). Please check East Lothian Council website www.eastlothian.gov.uk for opening times and facilities.
Nearest bus stop – A199 – Gladsmuir, approximately 0.75km to the north. Further information about public transport is available from Traveline – www.travelinescotland.org.uk or phone 0871 200 2233.
(October 2017)

3.2 Access / Walks

The woodland is accessed from six formal entrances. Although there is no Trust car park on site, the majority of visitors access the wood from the ELC owned car park at the northern end of Butterdean Wood, which is located just off the unclassified road from Gladsmuir to Liberty Hall.
The car park has capacity for 10-12 vehicles and also has a separate, gated zone for the safe transfer of school children on and off a mini bus.

In conjunction with ELC the network of waymarked trail posts was renewed and a Woodland Trust information board and ladderboard was installed near the car park in 2014. There are many options for walking. The circular, shorter, multi-use surfaced trail (orange route, 2km) through the central, predominately broadleaved, section of the wood (this route was significantly upgraded in 2014) and the longer, unsurfaced, circuit (black route, 3.5km), which takes in the generally coniferous areas of woodland. In addition, there are numerous informal desire paths throughout the woodland that are not waymarked.

Public entrances to the wood are generally of two types, either open squeeze type entrances or field gates. This provides access for a choice of users and management requirements. The clay soils, flat nature of the ground and limited opportunities for drainage leads to many of the unsurfaced paths becoming waterlogged after prolonged periods of heavy rain. Several sleeper type bridges cross the existing drainage network along the major access routes in order to help maintain access during periods of heavy rain.

4.0 LONG TERM POLICY

Public Access
Existing on site access facilities will be maintained to suit the existing local demand, which is assessed under the Trust's Access Guidelines as Grade B – moderate usage, responding re-actively with changes in demand and with consideration to the development of East Lothian's Core Path Network. Although no formal survey of the number of visitors to Butterdean has been conducted, it is evident that it is well used by members of the public. Proposed developments around Tranent and Haddington may well also impact on levels of use on all paths throughout the site.
The Trust will be co-operative and supportive of any schemes to sign post appropriate access routes by East Lothian Council (ELC), as part of their public access strategy. Opportunities to improve and maintain the path network in partnership with ELC will also be actively explored to ensure a consistent visitor experience while visiting Butterdean Wood.

Long Established Woodland of Plantation Origin
The majority of Butterdean Wood is known to have been under tree cover since the production of the first Ordnance Survey map in 1865, although not marked on the Roy map of 1750 and is therefore on the Inventory of ancient and Long established woodland sites in Scotland as category 2b, Long Established of Plantation Origin. However, although the area does not demonstrate the great diversity of species or habitats typical of an Ancient Semi-Natural Woodland, the chequered management history of the wood means that there are a number of different woodland types. The area has been declared a wildlife site by the Scottish Wildlife Trust, which is a non-statutory designation, but reflects its biodiversity value.
The long term intention is to maintain the predominantly broadleaved woodland under continuous cover, encouraging natural regeneration as and when it occurs, and to enhance those areas which are currently predominantly coniferous through gradual conversion to predominantly broadleaf uneven-aged woodland. If, however, endemic windblow begins to occur within the conifers, then larger felling coups will be considered. Wherever possible, native natural regeneration will be utilized and released. Planting gaps with native species will be considered if there is insufficient regeneration. Individual examples of specimen conifers will be retained and a certain amount of regeneration of these species will be accepted whilst aiming to maintain a predominantly broadleaved character to the woodland. Mature and semi mature sycamore and beech will be retained, as they already constitute a proportion of the canopy, although the intention will always be to favour native species. An increase in native tree species should help encourage and support healthy ground flora communities.

5.0 KEY FEATURES

The Key Features of the site are identified and described below. They encapsulate what is important about the site. The short and long-term objectives are stated and any management necessary to maintain and improve the Key Feature.

5.1 Connecting People with woods & trees

Description

Butterdean is situated approximately a quarter of a mile south of the village of Gladsmuir (between Tranent and Haddington) and is within a mile of the A1 dual carriageway which provides excellent links to Edinburgh and the surrounding towns and villages of Mid and East Lothian and the northern area of the Borders. A brown and white tourist sign on the main A199, at Gladsmuir directs visitors to Butterdean Wood. The nearest bus stop is situated on the A199 at Gladsmuir, approximately a quarter of a mile away. Further information about public transport is available from Traveline – www.travelinescotland.org.uk or phone 0871 200 2233. (December 2017).

The woodland offers an excellent opportunity for quiet, peaceful recreational walking and enjoyment. There are two way-marked trails, and the terrain is generally flat. Within the woodland there are some large insect sculptures and a Pictish wild boar sculpture can be found along with some unique and thoughtful seating to provide interest for visitors of all ages.

The woodland is valued and appreciated by the local community. Regular users mainly come from surrounding towns and villages. However, due to the good road network the wood is often visited by people from Edinburgh and further afield. There is a good population catchment in the area. East Lothian's population is currently estimated as 103,050. Prior to improving the visitor access, car parking and experience in 2014, a visitor survey was conducted which indicated approx' 5,000 visitors/annum. Since the work has been done and infra-structure improved this has increased and visitor numbers are now thought to be up to around 8,000-10,000 visitors/annum.

The entrance to the car park is well signed and there is direct access from the car park into the woodland, where there is welcoming signage and interpretation and a clear choice of way-marked trails. There are several sculptures scattered throughout, mainly along the all abilities path (orange route), and two bench seats located within the wood. There is also a woodland meeting/learning focus/picnic area within the wood, with rustic log seating and a den building area.

In terms of ecological and historical interest for visitors, much of the wood is classed as Long Established of Plantation Origin (LEPO) woodland and is therefore gradually being restored to native woodland. On the western side of the wood there is an old woodbank and also the remains of several outlying auxiliary structures from the First World War military airfield which was situated in the adjacent fields west of the wood.
It is planned to use the site more for small scale events. In the past engagement has included working with the local school on site via storytelling and outdoor arts and crafts. Orienteering and woodcraft activities by local groups have also been held. The outdoor picnic area with log seating is often used by families and groups of young mum's with children who meet up to get some exercise, chat, picnic and have fun.

Currently there is only capacity to hold small events on site as car parking is limited to 12 spaces. Recent access upgrades included a minibus safe parking zone to allow small group visits to park in safety. In the past we have organised school events and used a mini bus very effectively to shuttle children to and from two local schools: Macmerry Primary, 2 miles away; and Compass School (Primary) at Haddington, which is 5 miles away.

There are several liveries, a large tree nursery and a small industrial estate nearby which may provide some opportunities for corporate volunteering.
There are two other Woodland Trust woods in the area; Pressmennan Wood, Stenton and a small wood at Seton Dean, near Seton Sands.

Significance

Woodland of this size and composition is a rare and significant feature in East Lothian and therefore the site provides a chance to promote access to a safe, natural environment, in a rural location close to a growing population. It forms an essential part of the local access network, providing varied and alternative routes as well as linking to longer distance Core Paths. The site contains various historic and sculptural features which provide added interest for visitors.

The access & visitor experience improvements in the previous plan period have provided a facility for outdoor learning, improved car parking and significant improvement to the all abilities access route (orange route), which includes; Lara's Land, sculptures, an outdoor picnic/family & friends gathering area, individually designed bench seats and new entrance and way mark signage and interpretation boards.

Opportunities & Constraints

Opportunities:
To further develop access facilities within the site by responding to user demand and working in partnership with ELC. These could possibly be in the form of: extending the surfaced all abilities path route, making further improvements to ditches, sleeper bridges and muddy sections on unsurfaced paths and liaising with ELC to consider adding extra car parking in the future.

Small scale events could work well-especially now the car park has increased in size. Since making the improvements visitor numbers and the visitor experience has increased. As a result the profile of the wood has increased. There are opportunities for carrying out path improvements to the muddiest sections of the unsurfaced paths and improve drainage and crossing points in these areas. With the support of outreach, encouragement and funding there is opportunity to involve more school related activity in the future, especially if the children arrive by minibus.

There is an opportunity to increase volunteer activity. Lothian Conservation Volunteers are the nearest environmental volunteer group. There are other environmental groups in Edinburgh that could be approached.

Constraints:
Due to the flat ground and heavy clay site, there are always going to access problems at certain times of the year. At times, sections of the unsurfaced paths can become very wet and boggy for prolonged period. If use increases, it would be difficult to increase car park capacity without using the adjoining fields, in the ownership of ELC.

Factors Causing Change

Level ground and heavy soil over much of site means water-logging and path deterioration is an on-going challenge, regular funding will be required to maintain the existing access infra-structure. A program of regular maintenance will be required to ensure increased visitor numbers and increased levels of horse riding do not accelerate path deterioration. The woodland may lose its reputation for peace and tranquility.

Housing development is increasing in the area. Any new housing or industrial development on adjacent land could have a negative impact upon hydrology in the area. The close proximity of an increased local population could put more pressure upon the woodland as a whole.

Long term Objective (50 years+)

To maintain and enhance safe public access facilities for the purposes of informal recreation. The site will continue to be used by a wide range of user groups, from individuals through to family groups and offer the opportunity for quiet, informal recreation, principally for local users.
Opportunities to work together with other groups e.g. East Lothian Ranger Service will continue to be explored.
The site will have a good on-site parking facility and all the main access routes will be clearly defined and well maintained. The all abilities access route will be maintained to a high standard and possibly extended. The site will be maintained in good order and well cared for the benefit people, trees & wildlife.
A range of diverse events will be available for small groups to enjoy, some organised by Woodland Trust Scotland and some organised by specialist groups. There will be more emphasis on project-focused volunteering days and other pre-arranged people engagement events.
Visitors will continue to appreciate the site, enjoy the peace and tranquility the woodland provides and come away feeling inspired and refreshed.

Short term management Objectives for the plan period (5 years)

The site will continue to have a welcoming appearance, remain inviting, and maintained in good order for the benefit of visitor experience and enjoyment. Achieved by regular upkeep of paths, path drainage and maintenance of site furniture to ensure that way marked paths are well-defined and accessible - in keeping with WT Access and Operational Guidelines (annual maintenance program).

The site will be kept in a safe condition by regular safety inspections, and annual maintenance work. All entrance and welcome signage is in a 10 year program of renewal (scheduled 2025 unless required earlier).
A Woodland Warden volunteer role will support the Site Manager. Tasked roles for volunteers: will be encouraged and planned and managed by Site Manager e.g. litter collection, re-spacing and cutting back along paths, path and drain repairs/ maintenance (by 2022). The Volunteer warden and WTS staff will be involved as required.

The Site Manager and Engagement Officer will consider options and best approach for developing a small capacity seasonal events program. During this plan period outdoor learning opportunities within the woodland e.g. orienteering, geography, science, local history and the natural environment will be promoted to local schools and community groups. The potential for a Forest School will be explored. Small events and volunteering activities will be encouraged to increase people engagement. Events will be promoted on the ladder boards at the main entrance points and via the web and local contact groups (to 2022).

5.2 Long Established Woodland of Plantation Origin

Description

The woodlands LEPO status is confirmed by its existence on the 1860 OS map. However since then the wood has been felled and replanted.
The area west of the main ride from Hodges Farm is predominantly coniferous, with a scattering of broadleaves throughout with which increase in size along the western boundary. Due to the wet nature of the wood random pockets of wind throw occur which are slowly regenerating predominately with birch and ash. Levels of mammal browsing (mainly roe deer) remain within acceptable limits. The main conifers present are Norway spruce, Scots pine, Sitka spruce, larch, Douglas fir, Western hemlock and the occasional Western red cedar and Lawson cypress.

There have been three known thinning's of the Norway spruce to date: 2000 (removing 15% of the stems), and again in 2007, and in 2013, when approximately 25% of the stems were removed in each case. Existing broadleaved species, scattered throughout the crop, were favoured during the thinning cycles and careful selective thinning was carried out around the broadleaved trees to further encourage development.

Sporadic outbreaks of windblow have occurred between thinning. Due to the age of the trees and their species characteristics (Norway spruce is a relatively shallow rooting species) and the site conditions (wet, flat ground on a mainly clay soil). Hence, the Norway spruce will become increasingly vulnerable to windblow. As a result, alternative options for silvicultural management to preserve tree cover such as: Continuous Cover Forestry methods are unable to be considered in this case.
The Yield Class of the Norway spruce on this site is estimated at YC 14 to 16. By 2022 the trees will have reached their max mean annual incremental growth on this site.

The eastern section of the woodland is dominated by broadleaves and is very variable with a wide diversity of species and age structures present. The conifers occur in groups or as individual trees throughout this area with many of the larger groups felled during the period of the previous plan. The main broadleaved species are ash and birch - ash is a significant component within the central area of predominately broadleaved woodland. Ash dieback was discovered among groups of younger, naturally regenerated, ash in the central area (sub-cpt 3a) of the woodland in 2014, and has been monitored annually since. At the moment the disease appears to be slow to develop. However, it is highly likely that many of the ash will succumb over time.
There is a varied ground flora, such as: honeysuckle (dominant in places), bramble, juncus, nettles, wood sorrel, bracken, mosses, herbs and grasses. A number of locally uncommon species are found living within and on the edge of the woodland including: bird's nest orchid, hornet clearwing moth, quail, green woodpecker and nuthatch. There is a wide range of common woodland and woodland edge bird species present such as: willow warbler, black cap, whitethroat, woodcock, tawny owl, etc. Natural regenerated ash and birch is dense in places, interspersed with occasional rowan and willow. Thinning operations and sporadic windblow have gradually created a more open feel over parts of the woodland and led to the development of several small glades resulting in greater structural diversity. The extensive area of woodland edge habitat around the perimeter of and surrounding fields within the woodland also provides greater diversity of habitat. Larger older trees, particularly oak and beech are still evident, especially along field boundaries. Some of which are of coppice origin and predate the last clearfell. Also included are 2 small areas of non LEPO woodland (sub-cpt 1a part and sub-cpt 2a part) which have similar characteristics and are unable to be differentiated on the ground.

Significance

The woodland is on the Ancient Woodland Inventory as LEPO and has existed since at least 1860, which indicates a relatively high biodiversity potential.
Within this part of East Lothian, Butterdean is one of the larger woodland areas and forms an integral part of the network of woodland and shelterbelts particularly to the east and south. Butterdean adjoins a shelter belt to the south, which links directly onto another large woodland in the area, Cuddie Wood to the south east which in turn links through narrow belts to the LEPO and Ancient woodland around Winton House, Pencaitland and West Saltoun to the west and south, some 4 to 5 km away. The management of the woodland supports the Trust's corporate objectives of: 'Preventing the loss of ancient woodland' and ' Improving the biodiversity of woods'.

Opportunities & Constraints

Opportunities:
To further increase biodiversity in the predominantly coniferous areas through continued thinning operations
To work in partnership with ELC
Constraints:
Wind, deer browsing

Factors Causing Change

Ash dieback, increase in deer damage, frequent wind damage

Long term Objective (50 years+)

To create and maintain a diverse, mixed age and mixed species woodland habitat in perpetuity. Species composition will be varied, although ash dieback is likely to have some impact on this. The intention is that most of the site will gradually become mostly native though an increased proportion of conifers, beech and sycamore will be accepted as a result of ash dieback. Gradual opening up of the tree canopy will help encourage and extend a range of healthy ground flora communities.

Short term management Objectives for the plan period (5 years)

The denser areas of conifer high forest predominately made up of Norway spruce (7.5ha) in sub-cpt 1b and Scots pine (2.7ha) in sub-cpt 1a Pyr 1966 will be assessed in 2020. The stand of Norway spruce will be assessed for wind firmness and considered for clearfelling within the period of the plan (2021-2022).

Because of the varied nature of the stand, thinning intensity in the conifers will vary and so requires a sensitive approach. On average intensity will be 20-25% of stems (approx 55m3/ha) however this will be higher along path and track sides (25-30%) and lower (15-20%) where halo thinning around precursor broadleaves. Extraction routes, in general, will follow existing rack system. All woodbanks, veteran trees, mine shafts and historical features will be recorded, protected and retained as per best practice guidelines. Broadleaves, along with examples of “specimen” conifers and the beech avenue will be retained within the stand, and allowed to grow on. Mature broadleaves are to be halo thinned to protect and promote crown development and future wind stability (and avoid desiccation). Should wind damage occur openings created will be allowed to regenerate by natural regeneration.

In sub-cpt 1b (the stand of Norway spruce) assess broadleaved tree regeneration, stocking density and browsing within pockets of windblow every 5 years (next assessment 2020).
Following clear felling of the Norway spruce the site will go through a transition to predominately native woodland and will be managed as follows (note that quantities and timing will be defined as part of the felling plan following the 2020 assessment):
(a) Following harvesting the site will be prepared by brash raking and light scarification to encourage seeding by natural regeneration.
(b) Some enrichment planting in the form of scattered groups of mixed native tree species will also be included as part of the restructuring work over the site. This will be a mix of: predominately sessile oak, along with some: alder, rowan, hawthorn, holly and hazel will be planted using locally sourced Scottish grown planting stock. Planted in 1.2m tree shelters and staked, and annually maintained until fully established.
(c) Significant amounts of standing and fallen deadwood will be retained onsite.
(d) All existing paths will be retained and maintained.
(e) Monitor the effects of deer browsing annually post felling. If damage reaches unacceptable levels carry out deer control over the clearfell area.
(f) Progress of natural regeneration will be assessed at the next plan review.

Whole site:
Annual monitoring for ash dieback.
Thin out up to 50% of the reseeded Western Hemlock and Lawson Cypress predominately in sub-cpts 3a & 4a by 2022 to minimize seeding and spreading and selectively thin any larger non-native conifers which are directly competing with native broadleaves.

6.0 WORK PROGRAMME

Year	Type of Work	Description	Due By

APPENDIX 1: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Key Features Present	Designations
1a	2.80	Scots pine	1968	High forest	No/poor vehicular access to the site, Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees, Long Established Woodland of Plantation Origin	Tree Preservation Order
A thin strip of woodland between neighbouring fields outside the boundary and the field in private ownership which is entirely enclosed by the wood. The compartment gently slopes east to west down to a ditch which runs along the boundary. The woodland is composed of early mature high forest of mixed conifers and broadleaves. The conifers were planted in 1966-68 and most of the broadleaves have naturally regenerated since then, the proportion of broadleaves is greater in the north and on the boundary with the internal field. From their size there appears to be a number of older broadleaved trees predating the conifers, mainly oak and ash which are scattered throughout the compartment. A small percentage of the conifers in the south east have been thinned, but the rest is composed of closely planted stems of poor quality. Conifers are predominantly Scots pine with larch, Norway spruce and mixed broadleaves with some elder. There is abundant fallen and standing deadwood. The field layer is sparse with occasional mosses and ferns with honeysuckle, brambles and nettles featuring where light allows and along the woodland edge next to the fields. The northern limit of the sub-compartment is the boundary between WTS land and ELC land and is undefined.							
1b	11.90	Norway spruce	1966	High forest	Sensitive habitats/species on or adjacent to site	Connecting People with woods & trees, Long Established Woodland of Plantation Origin	Tree Preservation Order

A predominantly coniferous stand of early mature high forest planted in 1966-68. The main species is Norway spruce, with some: Sitka spruce, Scots pine, Douglas fir and European Larch with semi-mature mixed broadleaves of predominately beech, oak scattered throughout and in the west, the woodland composition gives way to predominately younger naturally regenerating: birch, ash, and rowan and willow species. At the time of planting, 25% of trees were oak and beech in a matrix of conifers. The proportion of broadleaves that remain today is much lower. The stand was thinned in 1999 - 2000, removing approximately 15% of stems and again in 2007 (approximately 20% removed) and 2013 (when a further 20% of the remaining stems were removed) in order to release the existing broadleaves, encourage natural regeneration by gradually increasing light levels within the stand and at ground level to stimulate the development of existing trees. Since the original thinning, windblow has created a couple of open areas which have been colonized with ground flora (predominately course grasses). Tree regeneration (mainly downy birch and willow) has proved successful along the edges of the stand and alongside paths where there are areas of partial shade with sufficient side lighting. Understorey and ground flora have been slow to respond within the Norway spruce. A number of veteran broadleaved trees can be found scattered throughout this compartment (especially along the old woodbank). There is frequent standing and fallen deadwood throughout the compartment. Comprising of: standing dead ring barked trees, windblown stems, fallen deadwood, old cut stumps and brash from previous thinning's.							
2a	6.59	Mixed native broadleaves	1968	Min-intervention		Connecting People with woods & trees, Long Established Woodland of Plantation Origin	Tree Preservation Order
A flat area covered with closely spaced predominantly multi-stemmed trees of willow, sycamore, birch and ash. In the west the woodland is composed predominantly of willow and ash, with a larger proportion of birch and sycamore in the east of the compartment. There are a number of large oak, beech and sycamore along the boundary, between the large ditch and bund and the fence itself. Scattered throughout are mature Scots pine and larch. The north western corner has been coppiced in the past but is reverting to high forest. There is occasional standing as well as fallen deadwood. The shrub layer is made up of good broadleaf regeneration, sycamore, ash and hawthorn with occasional hemlock and Norway spruce also beginning to regenerate, though as individuals rather than groups. The soil is heavy, predominately clay, and ground flora of the area is composed predominantly of grass, brambles and some honeysuckle. Patches of Juncus indicates that the soils are prone to be wet during much of the year.							
3a	10.23	Mixed native broadleaves	1966	High forest	Services & wayleaves	Connecting People with woods & trees, Long Established Woodland of Plantation Origin	Tree Preservation Order

Although flat in aspect this is a very variable compartment in terms of species composition and age structure. The majority of the conifers which were originally planted in this compartment have been removed by past thinning activities and subsequent windblow, although groups of conifers e.g. Scots pine, Norway spruce, Lawson Cypress and Western hemlock remain in a predominantly broadleaved stand. The compartment is composed of widely spaced stems and a very open feeling mature high forest, prone to water logging to the west. The dominant tree species are ash and birch and oak, but there are also numbers of mature Scots pine, Norway spruce and the occasional group of cypress. There are also some substantial old oak and ash specimens. Ground flora is mainly long grass and brambles with frequent honeysuckle. Open areas are slowly regenerating with birch and ash where light allows.

4a	10.80	Mixed native broadleaves	1966	High forest	Services & wayleaves	Connecting People with woods & trees, Long Established Woodland of Plantation Origin	Tree Preservation Order

An open area of woodland in a flat area, which is regularly waterlogged. The majority of the conifers which were originally planted in the area have been removed, although small groups or individual conifers remain. The compartment is composed predominantly of silver birch and ash, with a wide variety of other species: Norway spruce, Scots pine, Western hemlock, Douglas fir, sycamore and even a few hornbeam. There are a few oaks scattered throughout. The majority of these are of coppice origin and appear to be around 100 years old. Ash and birch are freely regenerating along with holly, rowan with occasional beech, Douglas fir, Norway spruce, western red cedar and western hemlock. The ground flora is composed of tall grasses, ferns, Juncus and patches of brambles. Honeysuckle is widespread. Across the compartment there are mixed levels of deadwood from previous selective thinning's of the conifer crop. Along with occasional standing or leaning deadwood from windblown trees. There are also a few big old stumps, these appear to be of oak, beech and Scots pine. The northern edge of the compartment is the ditch which forms the boundary between WTS and ELC land.

Appendix 2: Harvesting operations (20 years)

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2022	1a	Thin	2.71	4	10
2022	1b	Clear Fell	11.90	185	2205

GLOSSARY

Ancient Woodland

Ancient woods are defined as those where there has been continuous woodland cover since at least 1600 AD. In Scotland ancient woods are defined strictly as sites shown as semi-natural woodland on the 'Roy' maps (a military survey carried out in 1750 AD, which is the best source of historical map evidence) and as woodland all subsequent maps. However, they have been combined with long-established woods of semi-natural origin (originating from between 1750 and 1860) into a single category of Ancient Semi-Natural Woodland to take account of uncertainties in their identification. Ancient woods include Ancient Semi-Natural Woodland and plantations on Ancient Woodland Sites (see below). May support many species that are only found in ancient woodland.

Ancient Semi - Natural Woodland

Stands in ancient woods defined as those consisting predominantly of native trees and shrubs that have not obviously been planted, which have arisen from natural regeneration or coppice regrowth.

Ancient Woodland Site

Stands in ancient woods that have been converted to plantations, of coniferous, broadleaved or mixed species, usually for timber production, including plantations of native species planted so closely together that any semi-natural elements of the understorey have been suppressed.

Beating Up

Replacing any newly planted trees that have died in the first few years after planting.

Broadleaf

A tree having broad leaves (such as oak) rather than needles found on conifers (such as Scots pine).

Canopy

The uppermost layer of vegetation in a woodland, or the upper foliage and branches of an individual tree.

Clearfell

Felling of all trees within a defined area.

Compartment

Permanent management division of a woodland, usually defined on site by permanent features such as roads. See Sub-compartments.

Conifer

A tree having needles, rather than broadleaves, and typically bearing cones.

Continuous Cover forestry

A term used for managing woods to ensure that there are groups or individual trees of different ages scattered over the whole wood and that some mature tree cover is always maintained. Management is by repeated thinning and no large areas are ever completely felled all at once.

Coppice

Trees which are cut back to ground levels at regular intervals (3-25 years).

Exotic (non-native) Species

Species originating from other countries (or other parts of the UK) that have been introduced by humans, deliberately or accidentally.

Field Layer

Layer of small, non-woody herbaceous plants such as bluebells.

Group Fell

The felling of a small group of trees, often to promote natural regeneration or allow planting.

Long Term Retention

Discrete groups of trees (or in some cases single trees) that are retained significantly past their economic felling age. Operations may still be carried out within them and thinning is often necessary to maintain stability.

Minimum Intervention

Areas where no operations (such as thinning) will take place other than to protect public safety or possibly to control invasive exotic species.

Mixed Woodland

Woodland made up of broadleaved and coniferous trees.

National vegetation classification (NVC)

A classification scheme that allows an area of vegetation to be assigned to the standardised type that best matches the combination of plant species that it contains. All woodlands in the UK can be described as being one of 18 main woodland types (W1 - W18), which principally reflect soil and climatic conditions. For example, Upland Oakwoods are type W11, and normally occur on well drained infertile soils in the cooler and wetter north and west of Britain. Each main type can be subdivided into numerous subtypes. Most real woods contain more than one type or sub-type and inevitably some woods are intermediate in character and can't be properly described by any sub type.

Native Species

Species that arrived in Britain without human assistance.

Natural Regeneration

Naturally grown trees from seeds falling from mature trees. Also regeneration from coppicing and suckering.

Origin & Provenance

The provenance of a tree or seed is the place where seed was collected to grow the tree or plant. The origin is the geographical location within the natural range of a species from where seeds/tree originally derives. Thus an acorn collected from a Turkey oak in Edinburgh would have an Edinburgh provenance and a southern European origin.

Re-Stocking

Re-planting an area of woodland, after it has been felled.

Shrub Layer

Formed by woody plants 1-10m tall.

Silviculture

The growing and care of trees in woodlands.

Stand

Trees of one type or species, grouped together within a woodland.

Sub-Compartment

Temporary management division of a compartment, which may change between management plan periods.

Thinning

The felling of a proportion of individual trees within a given area. The remaining trees grow to fill in the space created.

Tubex or Grow or Tuley Tubes

Tubes placed over newly planted trees or natural regeneration that promote growth and provide protection from animals such as rabbits and deer.

Weeding

The control of vegetation immediately around newly planted trees or natural regeneration to promote tree growth until they become established. Either by hand cutting or with carefully selected weed killers such as glyphosate.

Windblow/Windthrow

Trees or groups of trees blown over (usually uprooted) by strong winds and gales.