

# Wilderness

(Plan period – 2024 to 2029)



WOODLAND  
TRUST

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## Introduction to the Woodland Trust Estate

The Woodland Trust owns and cares for well over 1,250 sites covering almost 30,000 hectares (ha) across the UK. This includes more than 4,000ha of ancient semi-natural woodland and almost 4,000ha of non-native plantations on ancient woodland sites and we have created over 5,000ha of new native woodland. We also manage other valuable habitats such as flower-rich grasslands, heaths, ponds/lakes and moorland.

Our Vision is:

“A UK rich in native woods and trees for people and wildlife.”

To realise all the environmental, social and economic benefits woods and trees bring to society, we:

- **Create Woodland** – championing the need to hugely increase the UK’s native woodland and trees.
- **Protect Woodland** – fighting to defend native woodland, especially irreplaceable ancient woodland and veteran trees; there should be no loss of ancient woodland
- **Restore Woodland** – ensuring the sensitive restoration of all damaged ancient woodland and the re-creation of native wooded landscapes.

# Management of the Woodland Trust Estate

All our sites have a management plan which is freely accessible via our website

[www.woodlandtrust.org.uk](http://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.

The following principles provide an overarching framework to guide the management of all our sites but we recognise that all woods are different and that their management also needs to reflect their local landscape, history and where appropriate support local projects and initiatives.

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene in our woods when there is evidence that it is necessary to maintain or improve biodiversity, safety and to further the development of more resilient woods and landscapes.
2. We establish new native woodland for all the positive reasons set out in our Conservation Principles, preferably using natural regeneration but often by planting trees, 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. Where possible, we pro-actively engage with people to help them appreciate the value of woods and trees.
4. The long term vision for all our 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 natural and cultural heritage value of sites is taken into account in our management and in particular, our ancient trees are retained for as long as possible.
7. Land and woods can generate income both from the sustainable harvesting of wood products and the delivery of other services. We therefore consider the appropriateness of opportunities 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 encourage our woods to be used for 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. We maintain a network of sites for long-term monitoring and trials leading to reductions in plastics and pesticides.
10. Any activities we undertake are in line with our wider Conservation Principles, conform to sustainable forest management practices, are appropriate for the site and balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

## The Public Management Plan

This public management plan describes the site and sets out the long term aims for our management and lists the Key Features which drive our management actions. The Key Features are specific to this site – their significance is outlined together with our long, 50 years and beyond, and our short, the next 5 years, term objectives for the management and enhancement of these features. The short term objectives are complemented by an outline Work Programme for the period of this management plan aimed at delivering our management aims.

Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. Any legally confidential or sensitive species information about this site is not included in this version of the plan.

There is a formal review of this plan every 5 years and we continually monitor our sites to assess the success of our management, therefore this printed version may quickly become out of date, particularly in relation to the planned work programme.

Please either consult The Woodland Trust website

[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

or contact the Woodland Trust

[operations@woodlandtrust.org.uk](mailto:operations@woodlandtrust.org.uk)

to confirm details of the current management programme.

A short glossary of technical terms can be found at the end of the plan.

## Location and Access

Location maps and directions for how to find and access our woods, including this site, can be found by using the following link to the Woodland Trust web-site which contains information on accessible woodlands across the UK

<https://www.woodlandtrust.org.uk/visiting-woods/find-woods/>

In Scotland access to our sites is in accordance with the Land Reform Act (of Scotland) 2003 and the Scottish Outdoor Access Code.

In England, Wales and NI, with the exception of designated Public Rights of Ways, all routes across our sites are permissive in nature and where we have specific access provision for horse riders and/or cyclists this will be noted in the management plan.

# The Management Plan

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## 1. SITE DETAILS

### Wilderness

Location:	Livingston Grid reference: NT039652 OS 1:50,000 Sheet No. 65
Area:	18.58 hectares (45.91 acres)
External Designations:	Tree Preservation Order
Internal Designations:	Welcoming Sites Programme

## 2. SITE DESCRIPTION

Wilderness is a woodland site located towards the present southwest edge of Livingston, and lies directly to the north of the A71, opposite the Brucefield Industrial Estate. The wood lies between the altitudes of 130m above sea level in the north, to 155m a.s.l. in the south and generally faces north. The wood is bound on all sides- to the north by a health club, to the east by housing developments of Adambrae, south by Brucefield industrial estate and more recently a new (2023) housing development to the west.

The underlying geology of the area is sedimentary sandstones/ limestone's/ shale of the Carboniferous-Dinarian period. Soils are derived from a glacial till of carboniferous sedimentary sandstones and shale. They are generally brown forest soils with gleying, of the Rowanhill association and are characterised by slowly permeable clayey horizons at varying depths between 40 and 80cm. Soils to the south and west of the site include more acidic areas, as evidenced by remnant healthy vegetation, whereas those on flatter areas of the central and especially the east of the site are more poorly drained. The site is bisected by a narrow burn, which runs in a northerly direction through the site, collecting water from a series of deep drainage ditches. The MLURI climate map identifies the area as fairly warm moist lowland and foothill, being moderately exposed with moderate winters.

Wilderness wood is an attractive and diverse woodland. About two-thirds of the site consists of plantation woodland, whilst the eastern third of the wood is an even-aged stand of dense downy birch, which seems to have regenerated naturally approximately 55 years ago, apparently following a fire. This area now represents most closely the natural woodland type of the area which is Sessile oak-downy birch – *Dicranum majus* woodland (NVC17). Birch, which is also widespread throughout the plantation area, now accounts for about half of the woodland area.

The plantation woodland has a diverse species composition of broadleaves and conifers of various ages. The conifer species present include Douglas fir, western hemlock, Scots pine, Sitka spruce, hybrid larch and lodgepole pine; while the broadleaf species include downy birch, alder, beech, oak, ash and sycamore. Both single species and mixed stands occur within this part of the wood, but there are also some very mixed areas in terms of both age and species content. These may have developed through deliberate under planting of less-successfully established plantations, but perhaps are more likely as the result of natural colonisation by a range of young trees following pocket-clearance of windblow in the past. Diversity is also increased by stands of trees which range from fairly dense close canopy conifers to relatively open mixed species stands and wet woodland areas of more natural character. Several stands, especially in the central area of the wood have been and continue to be affected by regular wind damage. Stands containing lodgepole pine and areas of Sitka spruce have been particularly susceptible in the past.

Ground flora in the wood is influenced by topography, drainage and canopy density. Soft grasses (wavy hair grass, creeping soft grass and tussock grass) with varying amounts of ferns (male fern, scaly male fern, broad buckler fern and hard fern) occupy much of the area. Areas containing patches of heather, occasional blaeberry and heath bedstraw are more common to the south and west of the site and *Polytrichum* and *Sphagnum* moss is present with these species and ferns beneath the wet birch woodland.

Apart from grass rides, there are few open areas within the site, however the drains and watercourses and associated valley floors add additional habitats to the area. Drains running through the wood are important for non-flowering plants and surveys show that the wood is relatively rich in bryophytes, fungi and ferns. Lemon scented

fern, which is uncommon in lowland sites, has been recorded here. These are recorded in The Wilderness Plantation a Natural History Survey (May 1995). The wood is considered as one of the better natural areas within Livingston, with a relatively high diversity of plants and animal life.

The Wilderness plantation provides an important area of more extensive woodland within Livingston. Lying between the A71 and housing developments to the east and west, it is an increasingly important part of the infrastructure of Livingston and provides an attractive backdrop to these areas. Its value as an amenity site for recreational use is also anticipated to increase as more residents become aware of the woodland.

The woodland was gifted to the Woodland Trust in 1996 from the Livingston Development Corporation (LDC). Work completed to date under these schemes has included upgrading and maintaining the path network, extensive thinning operations throughout the various stands to improve light levels reaching the woodland floor, small scale felling and restocking, tree safety work and litter clearance.

Situated to the south west of Livingston, within the Central Scotland Forest, the wood provides good public access for a range of users with approximately 1.8km of managed paths. Access is gained via three entrances to the north, southeast and south west of the site. North of the site near Bannatyne's health club there is a metal vehicle barrier entrance with a pedestrian gap (1.5m) identified by a welcome ladder board. To the southeast near Adambrae housing estate there is a pedestrian gap entrance beside a timber vehicle gate. The entrance to the southwest, near the Wilderness roundabout, is open with a path following the western boundary of the site, including a small footbridge across a drain. There is access to all areas of the woods. These paths are generally surfaced with blaise and are well drained providing good access throughout the year. This route is often used as either as a through route to local amenities or as a circular route from any of the entrances. The paths are mostly flat, and the site generally slopes from south to north but is centred around a small steep-sided burn. The site also provides excellent public access for both short and longer routes when viewed as part of the wider local network as it ties into the Livingston Greenways via the southeast entrance. Following the development of Adambrae a number of unmanaged desire lines have appeared around the site and these suffer seasonal water logging.

There is no Woodland Trust car park at the site but parking close by is available in neighbouring streets.

### 3. LONG TERM POLICY

The wood will be managed to safeguard its public amenity and biodiversity value, in line with the Woodland Trust's corporate objectives of improving and enhancing biodiversity, encouraging public access and enhancing people's enjoyment of woodlands.

The long-term vision is to maintain and enhance the woodland areas using continuous cover silviculture where possible. The woodland will consist of mixed broadleaves of mainly native character, with areas of Scots pine dominating some compartments and other conifers remaining in smaller numbers. Where planting adjoins residential and commercial properties. Large scale felling intervention is not expected to be utilised unless windblow or tree disease makes this unavoidable. Instead, regular thinning and small-scale group felling will be undertaken to diversify the age structure and canopy and to promote natural regeneration and diversification of ground flora. Where regeneration is not forthcoming, or the species mix is poor then replanting with native species will be undertaken. Where safe to do so, standing and fallen dead wood will be retained, although the risk of fire raising may sometimes prevent this option.

Existing on site access facilities will be maintained to suit local demand, which is classed as Grade A – high usage, and improvements will be made responding to changes in demand and with consideration to the development of West Lothian's Core Path Network. On-going development in Livingston and its environs is likely to impact on levels of use on all paths throughout.

Due to the wood's location within the central belt and close proximity to large populations, the intention is to use the woods to improve and raise awareness of the biodiversity, recreation and health benefits woodlands provide.



## 4. KEY FEATURES

### 4.1 f1 Connecting People with woods & trees

#### Description

Wilderness is a well-used woodland on the south western periphery of Livingston. Livingston has an urban population of 80,000 approx. (2011 census). The current Livingston South area (which includes Wilderness) is estimated to be 24,301 people currently (2024). However, this number continues to increase in correspondence with the completion of housing developments in the area. For example, to the west of Wilderness Brotherton residential areas were completed in 2023 which has noticeably increased footfall throughout the site.

One of Livingston's beautiful natural areas, a range of native plants, animals and fungi can be found. Fluffy leaved downy birch and sessile oak dominate to the east, creating shelter for soft grasses, ferns and patches of heather and blaeberry. The remaining wood has a range of trees including Scots pine, spruce, alder and beech, making it a haven for local woodland birds as well as visiting migrants.

It is estimated that 20 people minimum use the wood daily. Consequently, the level of public use on this site is defined as a Grade A- high usage site with at least 15-20 people using one entrance per day. This is a popular woodland for the local community as it provides peaceful access routes from housing to school, workplaces, and other local amenities. It is also a very popular circuit route for dog walkers. There are 3 entrances around the wood suitable for public access by a range of user groups. Welcoming signage is present at each entrance and orientation boards are being produced and scheduled to be installed in spring 2024. The woodland is used predominantly by dog walkers/cyclists. Horse riders do use the wood, but it is not known how many and frequency.

The site is easily accessible for visitors with wide surfaced paths through the woodland. The southeastern half of the site is mostly flat and level ground which begins to slope heading to the northwest towards the burn. On the north side of the burn the incline increases. Three benches are located next to the path including one at the top of the incline north of the burn. Internally, there is a network of approximately 1.8km of blaise-surfaced paths throughout the wood, with several additional unmanaged desire lines. There is a good network of paths within the wood, allowing several short circular routes. As well as providing an internal circular walk, the paths link directly onto the Greenway network within Livingston giving access to long distance routes. Wilderness is also located close to Bellsquarry Wood, another Woodland Trust site. More information is available on this site at: <https://www.woodlandtrust.org.uk/visiting-woods/woods/bellsquarry-wood/> Despite being situated less than 5 minutes' walk from one another, the two sites are very different in character.

Whilst there is no designated car parking for the site, there are numerous spaces on the quiet adjacent roads, particularly in the housing areas south of the site near Bellsquarry Primary School.

The closest school is Bellsquarry Primary located within a few minutes' walk of the site. The Early Years regularly use the site for visits to link with lessons. The area has also previously been a popular spot for external forest school providers to use with permission from the Site Management team.

The new Brotherton housing development to the west, allows for over 150 new houses. Once the new buildings began to become inhabited, more user demand became evident towards the southwestern end of the woodland (2022). Considering the need for a more formalised access to this part of the site, the Woodland Trust, Miller Homes and West Lothian Council agreed upon a more appropriate entrance to the site. These works were completed by Miller Homes in 2023 including a type 1, whin dust path leading from the pavement, between the small coniferous block of woodland owned by West Lothian Council and the noise bund located to

the south of Brotherton Avenue. The path leading to the Woodland Trust boundary is to be maintained as part of the housing development. Within the Woodland Trust boundary, Miller Homes installed a culvert to allow access across the drainage ditch on the western boundary. Now installed, the Woodland Trust has responsibility for this culvert. The path along the southwestern boundary is unsurfaced and suffering significantly from the increased use. Planning permission was submitted in 2023 to upgrade this track (approximately 120m) to a surfaced path to join and be consistent with the existing path network on site. This upgrade will improve access for all visitors- particularly those living in the Brotherton housing development using this route to get the local primary school and other local amenities.

Currently there are no events at the wood.

Corporate volunteering activities have also occurred on site previously, including replanting of compartment 40d by M&S and Quintiles volunteers in 2012. Peoples Post Code Lottery (PPL) have also volunteered on site in 2023 which included working on the removal of Western Hemlock regeneration, thinning birch regeneration to the north of the site and removing tree tubes from established trees in compartment 40d.

There are a number of Volunteer Wardens across Livingston, one of which specifically covers Wilderness warden. There is also a Woodland Working Group (WWG) for West Lothian which conducts practical work across the Woodland Trust sites, including Wilderness.

### **Significance**

Woodland of this size and composition is rare within the urban landscape and therefore the site provides a chance to promote access to a safe, natural environment close to where people live that provides alternative scenic routes as well as linking to longer distance paths for commuting and recreation.

The wood provides screening and shelter between housing developments and roads forming an integral component of the local landscape.

The easy access, with surfaced paths and availability of large flat spaces in a quieter setting secures Wilderness as an important and valued place for recreation for the benefit of all ages in the local community and visitors alike.

### **Opportunities & Constraints**

#### **Constraints**

Poorly drained soils combined with windblow have contributed to hard surface routes more susceptible to damage from flooding or the need for additional drainage.

Numerous dry ditches and a low internal boundary wall in the form of an old drystone dyke are present within compartment 40j. These features impact on the suitability of repositioning the path from the southwestern boundary further into the woodland. Contractors must navigate around these features for any operations within these areas. However, the current path layout along the southwestern boundary is positioned where there is an existing large within the dyke. There is currently a small pallet bridge to allow for visitors to cross the ditch. It would be beneficial to replace this with a culvert appropriate to the size of the ditch to enable allow better maintenance access.

No formal car parking, which can cause issues for neighbours and visitors parking on the local roads.

### Opportunities

To extend the interpretation on site, including the current animal sculpture trail.

To further develop access facilities within the site, responding reactively to user demand. Including repairs of the existing surface path network whilst machinery is on site to upgrade the southwestern track.

Small scale events with community/local schools and community group involvement.

Opportunity to improve infrastructure within woodland by upgrading the oldest bench to match the style of the more recent ones installed.

Opportunity to develop the Woodland Working Group to become more self-led and provide more corporate volunteering days.

Proximity to other Woodland Trust sites close by allows for potential to group works (such as footpath upgrades) together to be more efficient and cost effective.

### Factors Causing Change

New housing development has been completed at Brotherton Farm/Limefields (2023) including over 150 new houses. This has increased use of the site, resulting in greater pressure on paths and more litter picks needed.

Unofficial mountain bike trails being created in the northwestern section of the woodland

Paths edges growing in, reducing visibility and potentially resulting in personal safety concerns by users.

### Long term Objective (50 years+)

Wilderness will have a well-maintained network of paths suitable to user demand including pushchairs and those with restricted mobility. The wood will see visitors using the site daily and regularly. There will be a continued involvement and support from the local community.

Due to the wood's location within the central belt and proximity to large populations, the intention is to use the woods to improve and raise awareness of the biodiversity, recreation and health benefits woodlands provide. The site will continue to be promoted as a resource for local schools and community groups. The site will be well-used, appreciated and respected by the local community. It will be known for its wildlife interest, varied landscape, history and habitats.

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

During this plan period, the short-term objective is to continue to provide safe, enjoyable public access at Wilderness. Access provision for this site will be in keeping with WT access category A (high usage). This will be achieved by:

- 1) The site will be kept in a safe and welcoming condition through site maintenance:
  - a) Path cuts and entrance maintenance (twice annually)
  - b) Drainage clearances to keep water off the paths
  - c) Vegetation cut backs from path to allow lines of sight where possible and appropriate (as required)
  - d) Litter and fly tip uplift (as required)
  - e) Regular site safety inspections (tree safety, culverts, benches, fencing) (as per site risk assessment)
  
- 2) Improving infrastructure in 2024:
  - a) Path upgrade of the southwestern track (approx. 120m) from unsurfaced to a surfaced track
  - b) Repairs across existing surfaced path (approximately 1km) including drainage improvements such as installation of a culvert on the path next to the bench to the south eastern side of the site
  - c) Replacement of the small pallet bridge on the southwestern track with a 450mm diameter culvert pipe
  - d) Replacement of bench to the south east of the site
  - e) Installation of information boards at each entrance to promote access available to local amenities and wider path network
  
- 3) Providing and developing more opportunities for community engagement:
  - a) Liaise with local schools and community groups to promote outdoor learning and encourage responsible use of the woodland (ongoing)
  - b) Liaise with the West Lothian Partnership Against Rural Crime (WLCPARC) group and the Council to discuss updates and antisocial issues on site and opportunities for collaborations with other local organisations where possible and appropriate (ongoing)
  - c) Recruit a volunteer Woodland Working Group leader to enable the Livingston group to run more efficiently and frequently (2024)
  - d) Run third party practical task days on site annually- including removal of redundant tree tubes and western hemlock regeneration (2024 onwards)

## 4.2 f2 Secondary Woodland

### Description

The far western edge is the only section that appears on the OS maps of the 1860s and includes some veteran trees. As the rest of the area is not detailed as wooded on these earlier maps yet is later depicted as a mixed woodland on the maps of 1898, presumably the woodland was planted sometime in the late 1800's. The woodland is a significant feature in the local landscape lying adjacent to the A71 and providing screening between Adambrae and the new (2023) Brotherton housing development to the west.

The woodland is in two distinct blocks; the eastern more semi natural downy birch now represents most closely the natural woodland cover for this area. The remaining area is more obviously of plantation origin, still with a good percentage of birch but with a range of mixed conifers and broadleaves throughout. The majority of the 18.4ha has matured from planting in the mid-1950s. The main species present include Douglas fir, Scots pine, Sitka spruce, larch and lodgepole pine; while the broadleaf species include downy birch, alder, beech, oak, ash and sycamore. A history of windblow throughout the site has left an open mixed age and fairly diverse woodland

Overall, tree regeneration and the shrub layer is struggling on this site due to lack of light and space. Shrub cover should be the focus during any restructuring around the boundary areas in the future. Therefore, enrichment planting is likely to be required over the short-medium term to help allow for species diversity and age complexity.

Although grey squirrels are present throughout the woodland the impact seems to be minimal. Deer are sighted throughout the woodland but are often disturbed due to this being a popular urban site. Whilst some browsing has been noted, no intervention is considered necessary or achievable at this time (2024).

Thinning was conducted in compartments 40b, 40c, 40d and 40h in 2002 and clear felling in compartment 40a in the same year. In 2003 compartment 40a was planted with 500 trees. In 2004 thinning was conducted in 40e, planting occurred in this compartment in 2012. In 2007 a further 220 trees were planted in compartment 40f with more recent planting completed in compartments 40d in 2012.

Within the woodland there are small areas of open ground mainly with rides to the west. Over time, natural regeneration may increase canopy cover in these areas. The open space is likely to fluctuate over time windblow continues to naturally thin the woodland.

Invasive species of *Rhododendron ponticum* and western hemlock have been identified on site. The rhododendron present is in small, localised patches in compartment 40f. Eradication programs prioritise the removal of *Rhododendron ponticum* which is possible by digging the plant out from the root, avoiding the need for chemical treatment.

Dead wood habitat is adequate with standing deadwood throughout the site, both trees and large fallen trunks. Where felled material is left on site to decay for wildlife, timber is left in large sections to avoid fire lighting on site.

The dominant floral species across the woodland are grasses, mosses and ferns. Nevertheless, heather, wood sorrel and honeysuckle are also found within the woodland.

The removal of 45 trees for safety reasons due to ash dieback were completed towards the north of the site (40b) in 2022. Restocking of this area is to be achieved through natural regeneration, including species of Scots pine, rowan, hawthorn and sycamore, as per the approved felling license.

The wood hosts larger mammals such as rabbits, hare and roe deer including an active fox den. A range of smaller mammals including grey squirrels, stoats, weasel, hedgehog, wood mouse, pygmy shrew and bank vole have also been listed for the wood. Birds recorded as resident in the area include tawny owl, tree sparrow, sparrow hawk, as well as a range of common woodland and woodland edge species, with redwing, fieldfare, brambling and jay and tree pipit as seasonal visitors. No records are held for invertebrates.

### **Significance**

The wood is a feature of the local landscape and provides effective screening and an attractive backdrop for the various housing, industry and road developments that surround it.

The woodland provides a refuge for wildlife from the built-up urban area and surrounding infrastructure, enhancing and protecting local biodiversity.

### **Opportunities & Constraints**

#### Opportunities

To further increase biodiversity through continued thinning operations to establish a mixed aged, mixed species, predominantly native broadleaved woodland, more resilient to exposure and climate change.

Once western hemlock, lodgepole pine and other non-native conifers are removed from compartments 40c, 40g, 40h and 40j significant ground will be opened up for native species regeneration, enrichment planting or retained as open space.

The topography of the site, position of the entrances and width and standard of footpaths provide good conditions for potential extraction of timber in some areas of the woodland to aid tree felling works.

The Livingston area has been included within the Scottish's Governments' area of concern covering central Scotland currently (2024) informing deer policy work. This awareness may lend itself to discussions with other local landowners, particularly West Lothian Council, regarding options for appropriate control of roe deer, and potentially also grey squirrels, to enable tree establishment.

#### Constraints

Susceptibility of wind damage to the species on this site will influence the timing of restructuring to avoid over exposure of vulnerable species in certain areas.

The presence of multiple footpaths as well as proximity to roads and pavements restricts scope for retaining windblow and standing deadwood in some areas.

Squirrel damage and deer browsing are threats to young regeneration and planting on site. Whilst the urban location causes disturbance for these species and helps to limit impact in some areas, the urban locale also restricts the suitability and efficiency of possible control methods. With this in mind, any management of these species will be significantly challenging within Livingston and further investment will likely be required to replace browsed or damaged trees.

Due to the urban location of Wilderness within close proximity to multiple small woodland areas in Livingston, invasive species and diseases present elsewhere in Livingston are likely to be aided by people, spreading seeds or spores in soil on their footwear.

### **Factors Causing Change**

Deer browsing, squirrel and rabbit damage are all present and may contribute to potentially suppressing natural regeneration and continued healthy growth of established trees.

Regeneration of non-native tree species such as Beech and Western Hemlock may become an issue in future.

Wind damage, particularly of conifers in compartments 40g and 40h, continues to occur on this site. Over time this may alter the age composition and species density throughout the site.

Phytophthora cambivora has been recorded on another Woodland Trust Livingston site (Dedridge Wood, compartment 42a). This disease could also spread to Wilderness and would be a particular concern for the mature beech and oak.

The large mature beech trees which are such a feature in the West Lothian landscape tend to be of a similar age and are now subject to ongoing senescence. They are becoming increasingly vulnerable to storm damage and disease which is becoming a challenge to deal with in terms of tree safety and also maintenance of the treed landscape. This is expected to become even worse in coming years which would particularly impact on the western boundary as this area encompasses the majority of mature beech at Wilderness, including at the boundaries with housing.

Ash die back (ADB), also referred to as Chalara, is present on site and throughout Livingston. Although there is now minimal ash present at Wilderness, due to the prevalence of ADB, Ash will also not be included within restocking. Therefore, it is unlikely the species will be established on site in the medium to long term.

There have been two Statutory Plant Health Notices (SPHNs) already issued in the Livingston area that have impacted on Woodland Trust sites previous for Phytophthora ramorum and the disease is likely to spread. This would have a significant impact on the western half of the woodland which consists of a high density of larch. Whilst proactive management of larch has been conducted for other Woodland Trust sites in Livingston this is currently (2024) not considered appropriate for Wilderness due to the susceptibility of windblow for the other species on site.

### **Long term Objective (50 years+)**

To create and maintain a diverse, mixed age and mixed species woodland habitat. Species composition will be varied, being mostly native. A proportion of non-native species such as Western hemlock and beech may be maintained as these mature species will provide important age complexity and large diameter habitat throughout the woodland. The ground condition beneath these species will be monitored to ensure the ground flora are at acceptable levels throughout the woodland. If regeneration of native species is significantly hindered, thinning will be conducted to gradually open the canopy again in these areas.

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

The focus of the STOs for Wilderness will be to improve biodiversity and resilience and to maintain the varied composition and structural diversity of the woodland. This will be achieved by minimum silvicultural intervention in the majority of the wood in this plan period as well as the following objectives:

- 1) Carry out forest mensuration to survey the extent of current windblow and volume of remaining conifer volumes to inform any future plans for felling on site if necessitated through windblow or tree disease (by the end of the plan period)
- 2) Work towards the eradication of invasive species during this plan period:
  - a) Rhododendron removal in compartment 40f- using manual digging out method and avoiding the use of chemicals due to only small localised coverage- remove any regrowth (annually)
  - b) Removal of small non-native tree regeneration (under 7dbh) with volunteers in compartments 40i and 40h including western hemlock, Sitka spruce, larch, Douglas fir and beech where native broadleaf regeneration is struggling to establish (by the end of the plan period)
- 3) Facilitate and protect species diversity within the woodland:
  - a) Use enrichment planting to off-set the decline of mature species
    - i) Utilise open glades as birch declines for planting of native species in small gaps for species and age complexity to develop (2028/2029)
    - ii) Monitor natural regeneration levels in areas where ash was removed to the north of the site and enrichment plant as required to meet felling license stocking density of approximately 112 trees (to be completed by 2027)
  - b) Thin young regeneration (under 5dbh) of dense birch and removal non-native conifer regeneration in compartment 40d (approximately 0.78ha) using volunteers- focusing on opening areas surrounding native species such as oak and Scots pine to improve light levels for botanical diversity and tree establishment (by the end of the plan period)
  - c) Remove all redundant tree tubes from previous planting- reusing for replanting or protecting vulnerable regeneration on site if possible/appropriate (by the end of the plan period)
  - d) Initiate discussions with West Lothian Council regarding deer and squirrel populations within Livingston and explore possibilities for a collaborative approach in monitoring and management where considered appropriate (2024)



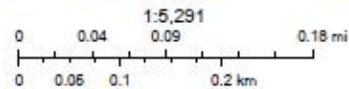
# APPENDIX 1: COMPARTMENT MAP

## Wilderness compartment map



22/08/2022, 08:38:39

- Estate Path Network
- Legal Footpath
- Permissive Footpath
- Estate Access Points
- Estate Subcompartments
- Estate Subcompartments Labels
- Estate Subcompartments Labels Hectares
- Management Units



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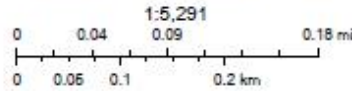
APPENDIX 2: PATH WORK PROPOSAL MAP

Wilderness Path upgrades Map



25/09/2023, 16:00:43

- |                           |                                 |                                |
|---------------------------|---------------------------------|--------------------------------|
| <b>Lines</b>              | C2- Replace bridge with culvert | Estate Path Network - Scotland |
| Path Upgrade              | C3- Install culvert             | Path                           |
| <b>Points</b>             | D3- Replace bench               | Public right of way            |
| D2- Install info board    | C4- Install cut-off drains      | Estate SubCompartments         |
| D1- Install Welcome board | D5- install handrail            | Estate SubComp Labels          |
|                           |                                 | Management Units               |



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## APPENDIX 3: HARVESTING OPERATIONS (20 YEARS)

Cpt	Operation Type	Work Area (ha)	Forecast Year	Estimated vol/ha	Estimated total vol.
40b	Selective Fell	0.54	2032	41	22
40c	Clear Fell	0.79	2032	51	40
40h	Thin	2.56	2032	4	10
40j	Thin	2.56	2032	16	40
40g	Thin	3.31	2035	12	40

DRAFT

## APPENDIX 3 : COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
40a	0.25	Mixed native broadleaves	2003	High forest	Housing/infrastructure, structures & water features on or adjacent to site	Tree Preservation Order
<p>Felled and replanted in 2002 this sub compartment is now well established. Species include ash, sessile oak, downy birch, rowan, alder, hazel and hawthorn. The access road to the health club bisects the area. Ground flora is mainly grasses and brambles with some foxglove. There is no significant deadwood which is restricted to a mulched layer throughout.</p>						
40b	0.54	Mixed native broadleaves	2012	Wood establishment	Housing/infrastructure, structures and water features on or adjacent to site, Services & wayleaves	Tree Preservation Order
<p>Stand of pole stage beech and ash. Beech dominates to the west and ash dominates to the east of the sub compartment. A thin in 2002 allowed for regeneration of broadleaves including willow, hawthorn and birch as well as horse chestnut.</p> <p>Ground flora is poor but under the ash soft grasses dominate. Deadwood is present from the original thinning. Ash felling was completed in this compartment in 2022 with the removal of approximately 45 trees. Although the majority of timber was removed from site small branch wood was left and contributes to deadwood in this area.</p> <p>Gas service</p>						
40c	0.79	Scots pine	1955	High forest	Housing/ infrastructure, structures and water features on or adjacent to site	Tree Preservation Order
<p>Open stand of mature Scots pine with occasional hybrid larch to the west and the occasional oak, birch and western hemlock. Understorey includes occasional rowan holly regeneration. Ground flora is sparse with soft grasses and ferns in areas of better light. Occasional windblow, especially of larch provides the limited deadwood content.</p> <p>There is a bench present along the path leading to the northern entrance in compartment 40b.</p>						

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
40d	1.39	Mixed native broadleaves	2012	Wood establishment		Tree preservation order
<p>Replanted in 2012 with mixed native broadleaves to replace Western hemlock and Sitka spruce. Planted by M&amp;S and Quintiles volunteers. Some trees tubed but a lot of birch natural regeneration also expected to establish. Some deer and hare browsing evident. Some trees tubed which require removal and a lot of birch natural regeneration has established now requiring thinning. Some deer and hare browsing evident. There is a bench present at the top of the hill above multiple water bars that cross the path down to the burn. Vehicle culverts present to the north over drainage ditch and to the south across the burn. There are two small wooden beaver silhouettes located to beside the vehicle culvert over the burn.</p>						
40e	0.63	Alder species	1955	High forest	Mostly wet ground/exposed site	Tree Preservation Order
<p>Stand of semi-mature mixed broadleaves consisting of alder, downy birch, beech, sycamore and ash, with occasional hybrid larch. Understorey includes frequent alder and beech regeneration, with occasional soft grasses in the ground flora on a flushed valley site. Limited deadwood.</p>						
40f	0.21	Mixed native broadleaves	1955	High forest		Tree Preservation Order
<p>Open stand of occasional semi mature downy birch, previously surrounded by dense unthinned sitka spruce which was felled in 2006. Replanted with sessile oak and ash in equal proportions in 2007 in 0.6m shelters at 1100 stems per ha.</p>						
40g	3.31	European larch	1955	High forest	Housing/infrastructure, structures and water features on or adjacent to site	Tree Preservation Order
<p>Mixed stand of mature broadleaves and conifers. Previously opened up by wind damage and the removal of small groups of unstable conifers this compartment containing oak, birch, beech, ash, sycamore with larch and Scots pine dominating to the west and occasional groups and individuals of mixed conifers, larch, sitka spruce, Douglas fir, lodgepole pine and Scots pine. Several mature specimens of beech over look the burn from the east. Open areas gradually regenerating with rowan, ash, holly, birch and occasional oak. Ground flora varies with canopy structure but is strong where light allows and dominated by ferns, soft grasses and brambles. Mixed levels of deadwood ranging from blown stems to branch wood and occasional standing deadwood.</p>						

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
40h	2.56	Mixed native broadleaves	1955	High forest	Management factors (eg grazing etc)	Tree Preservation Order
<p>Mixed mature stand dominated by downy birch with occasional hybrid larch, lodgepole pine, sitka spruce, Scots pine and Douglas fir. Other broadleaves include oak, beech, willow and rowan. There has been significant windblow within this stand (mainly pine/larch) in the past leaving a very open feel. The occasional to frequent understorey is made up of mixed age regeneration of birch, holly, rowan, beech with some Scots pine and sitka spruce throughout. Ground flora of occasional patches of soft grasses, ferns, heather and heath bedstraw. Lemon scented fern has been found in the eastern drain with polytrichum and other mosses frequent throughout. Good levels of deadwood across this sub-compartment. A wolf sculpture has been carved at the top of standing deadwood beside the path in one area</p>						
40i	6.34	Birch (downy/silver)	1970	High forest	Housing/infrastructure, structures and water features on or adjacent to site,	Tree Preservation Order
<p>Stand of semi-mature downy birch with occasional beech throughout. The understorey comprises frequent beech regeneration with rowan, willow and occasional oak. Fairly diverse ground flora includes patches of soft grasses, polytrichum and sphagnum mosses, broad buckler fern, heather, heath bedstraw, wood sorrel and wild strawberry.</p> <p>There is a bench present in the south eastern corner of this sub compartment and a wooden silhouette of a wild boar positioned beside the path. There are numerous unmanaged desire-lines in this compartment which have increased along with the development of local residential areas.</p>						
40j	2.56	Scots pine	1955	High forest		Tree Preservation Order
<p>Stand of mature/ semi-mature Scots pine, with occasional mature birch, ash, beech, sycamore and lodgepole pine. Understorey includes birch, willow, rowan, oak, sweet chestnut and holly with honeysuckle throughout. Ground flora of soft grasses, ferns, bramble and heath bedstraw. Gorse and broom are also present along the western boundary. Deadwood levels have been improved by thinning of the Scots pine and spruce which has been left in situ. There is a small bridge present along the path to the west of this sub-compartment crossing a drainage ditch and remnants of an old drystone dyke in this area.</p>						

### **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.

### **Windblow/Windthrow**

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

### **Registered Office:**

**The Woodland Trust, Kempton Way, Grantham, Lincolnshire NG31 6LL.**

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