Bellsquarry Wood

(Plan period – 2021 to 2026)

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

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

or contact the Woodland Trust

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/

See Appendix 1 in this document for the Sub-compartment Map for Bellsquarry Wood.

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.

1. SITE DETAILS

Bellsquarry Wood

Location:	Livingston Grid reference: NT048650 OS 1:50,000 Sheet No. 65
Area:	17.75 hectares (43.86 acres)
External Designations:	Long Established Woodland of Plantation Origin, Tree Preservation Order
Internal Designations:	Welcoming Sites Programme

2. SITE DESCRIPTION

Bellsquarry Wood is one of the Woodland Trust's larger sites in Livingston. Situated in the south of Livingston, just east of the village of Bellsquarry the site lies between the altitudes of 150m above sea level in the east, to 160m asl in the south-west. The site is surrounded by busy roads and housing.

The geology of the area is sedimentary sandstones, limestones and shale of the Carboniferous Dinantian period, which give rise to brown forest soils with gleying; some gleys are non-calcareous or humic. The MLURI climate map identifies the area as fairly warm, moist lowland and foothill, being moderately exposed with moderate winters.

The site was acquired by the Woodland Trust in 1996, following a short period of leasing from Livingston Development Corporation. Little is known of the wood's history, however the remains of an old limekiln can be found towards the west of the site within the grazed fields

The majority of the site appears on OS maps of 1860 as woodland and is therefore classed as Long Established woodland of Plantation Origin (LEPO) on the ancient woodland inventory. The largest area consists of semi natural birch woodland over a ground layer of ferns and mosses, which has naturally regenerated after the felling of the previous coniferous stand in the 1940's. There are some mature broadleaves, such as beech and oak, mainly in the west of this area and a few scattered Scots pine to the east. The under-storey includes a significant amount of young broadleaf regeneration, mainly of beech but with some oak, rowan and holly. To the south of this area and to the south of the Dedridge burn which flows eastwards through the wood, are the remnants of policy woodland formerly associated with Newpark House. This now consists of narrow belts of mature trees, including oak, sycamore, beech, Scots pine, lime and horse chestnut, with some of these overhanging the long narrow pond.

There is also an old orchard, characterised by scattered mature fruit trees, including some in espalier form, located to the south of the wood just west of Pitcaple Gardens. This was opened up and replanted with new trees in 2011.

In addition to these areas, the compartment beside Alderstone road was extended in 2001 and planted with a number of mixed broadleaves to the east. More recently, the new orchard was created during 2015. There has also been some planting carried out by the Bellsquarry Community Woodland Group to augment some of the more open areas along the southern boundary with Saltcoats Gardens and Tantallon Gardens.

The Dedridge Burn emerges from a culvert near the western boundary and flows east through fields and then parallel to the southern boundary of the wood through wet woodland. This adds a riparian component to the woodland habitat. Previously, periodic pollution from the Brucefield Industrial Estate was impacting on the burn however this appears to have reduced over recent years (2021).

A long, narrow man-made pond is fed directly from the Dedridge Burn and provides a very attractive feature in the centre of the wood; This was desilted and made into distinct open water and marginal sections in 2011. The pond inlet was also re-engineered so that most of the water flow now by-passes the pond. Currently (2021), the pond is leaking causing regular low water levels impacting on the habitat in this area.

Open areas of flora-rich grassland are found beside paths to the south of the pond with a small meadow area immediately south of the pond adding to diversity. Furthermore, three fields to the west comprising approximately

4ha, include both improved and semi-improved grassland. These areas, particularly on and around the old limekiln, have high wildflower diversity. At present these fields are leased for grazing horses.

Bellsquarry wood provides an important reserve of natural vegetation within the larger Livingston complex. The combination of different habitats contributes to its diversity. The birchwood is broadly classified as NVC type W16-oak/birch woodland, with a higher than average species diversity. It is likely to be important for bryophytes and invertebrates and supports a good range of fungi.

As the wood has become isolated by surrounding development, larger mammals such as deer have become less frequent visitors, but a range of birds and smaller mammals benefit from the woodland cover. Grey squirrels are present, but are not considered to be a threat to the woodland.

Bellsquarry Wood provides excellent public access for a range of users with approximately 2.3km of managed paths throughout with access from nine entrances. These paths are primarily stone surfaced (approx. 2.1km) and a mown grass path providing good access throughout the year. In 2014, a new Tootflits and Glingbobs trail for young children was installed along with several other artworks to make a visit to the wood more interesting.

The site also provides excellent public access for both short and longer routes when viewed as part of the local network as it ties into the Livingston Greenways. Entrances to the wood are via pedestrian gaps beside maintenance access gates surrounding the site as well as kissing gates between the grazed fields and orchard on the path to the west. There is no Woodland Trust car park at the site, though cars are able to park on the roadside of adjacent roads.

3. LONG TERM POLICY

The long term intention is to maintain the area as semi-natural broadleaved woodland under continuous cover while increasing the proportion of native species. Individual examples of some conifers, particularly Scots pine which is featured throughout West Lothian, will be retained but the wood will remain predominantly broadleaved.

Along housing and roadside boundaries the intention is to slowly regenerate the woodland edges through individual tree removal and there will be replacement of tree species with those more suitable, to improve biodiversity and reduce conflict with adjacent land-uses. In addition, standing and fallen deadwood will be retained where it is safe to do so.

The area of open ground (approx. 4ha) which has been grazed by horses will continue to be part of the management regime for compartment 41c to maintain the botanical diversity in this area.

The community orchard (1ha) that was planted in 2015 will be maintained and for the enjoyment of many users of the woodland. The site will continue to be promoted as a local resource for Bellsquarry Primary school and local community groups.

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

4. KEY FEATURES

4.1 f1 Connecting People with woods & trees

Description

Bellsquarry wood is well-used woodland in the southern edge in Livingston. Livingston has an urban population of approximately 57,000 people (2020). 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. 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. Visitors also travel to Bellsquarry from elsewhere in Livingston and further afield, drawn in by various attractions including the pond, the orchard, the artwork, the walks, the woodland and its wildlife.

The site is easily accessible for visitors with wide surfaced paths through the woodland. Internally, there are a network of approximately 2.1 km of whin dust surfaced paths and a short loop of grass path in the new orchard linking into a mown path covering approximately 200m. As visitors travel from the entrances towards the pond at the centre of the site the ground gradually slopes downwards. Allowing for differing mobility, the path to the southwest of the pond is more gradual and has two short flights of stairs either side of the bridge to accommodate for the incline in the terrain. Alternatively, the path to the east is steeper but does not include steps. There are also five bridges at Bellsquarry to allow access over either side of the pond as well as the deep drainage ditches close to this area. Three benches positioned across the site allow for peaceful reflection with differing views- facing the pond, the grazing fields and the woodland.

As well as providing an internal circular walk, the paths link directly into the wider network of Livingston giving access to long distance routes. Bellsquarry wood is also located close to another Woodland Trust site known as Wilderness. Despite being situated less than 2 minutes' walk from one another, the two sites are very different in character and both are worth a visit.

There is no Woodland Trust car parking for the site, however, there are usually numerous spaces available on the quiet adjacent roads, particular Calder Road next to the northern entrance.

There are nine entrances which were recently part of upgrades to the site. This work included path repairs, new fencing, and gates with welcome boards conducted in 2018-2019. As a result, the majority are either open or have fencing with a pedestrian gap to allow for access. There are also kissing gates present into the new orchard and along the northern boundary of Dedridge Burn through the fields.

Bellsquarry Wood has attractive elements for all ages. A defining feature of the site is the long narrow pond found towards the centre of the woodland bursting with varied wildlife including bluebells and moorhens. Specifically designed for younger visitors (0-5 years), but enjoyed by everyone, the 'Tootflits and Glingbobs' trail was installed in 2014. The trail incorporates the idea of these mythical creatures through the presence of numerous small wooden doors hidden within several trees on a route from Calder road to the pond. Tootflits making their home in standing dead trees whilst Glingbobs are said to reside in large living trees. There is also a Tootflits and Glinbobs trail installed at Pressmennan Wood, another Woodland Trust site that is located in the village of Stenton in East Lothian.

Another mythical creature is also hidden in the woodland in the form of the 'Oozlum bird' sculpture created by David Evan Mackay in 2014. It has been designed to move slightly in response to the wind so it may be in a different position during each visit to the woodland.

The closest school is Bellsquarry Primary located within a few minutes' walk of the site. Since 2015, educational sessions have regularly been held in the woodland for students of Bellsquarry Primary School. In 2018 staff from Bellsquarry nursery also took part in a CPD session for outdoor learning on the site. Following this, the nursery visits weekly for outdoor learning and play activities. The area is also a popular spot for external forest school providers with the permission from the site management team.

Pupils from this school also helped to design the community orchard which was planted with a mix of ten different species of apple trees in 2015. A further 420 hedgerow trees were planted the following year for the benefit of wildlife as well as masking the fence line. A central feature of this area is the 'human-sized beehive' that visitors can sit inside. This was decorated with the local primary school students in 2016. Bug hotels, hedgehog homes, bird and bat boxes were also installed in the area. There is one information board in the woodland located at the entrance of the orchard. This was designed by Bellsquarry Primary School and was funded by Players of the Postcode Lottery in 2018.There is an annual apple day event held in October in the village hall. An 'Apple Day' event is also organised annually to celebrate the orchard with the local community.

The local community are very interested and invested in Bellsquarry Wood, greatly supporting the Woodland Trust for many years. This includes, two volunteer wardens who patrol and carry out checks on site providing detailed reports on a regular basis. There is also a Livingston Woodland Working Group (WWG) which conducts practical work across Woodland Trust sites including Bellsquarry. A session in early 2020 included vegetation cutbacks, path work, tree guard removal and handrail repairs.

Significance

Woodland of this size and composition is a rare feature in the urban landscape and therefore the site provides a chance to promote access to a safe, natural environment close to where people live.

This is a very popular site as it forms a key part of the local access network and provides alternative scenic routes as well as linking to longer distance paths.

The woods are a significant feature of the local landscape and provide screening and shelter between housing developments and industrial estates.

The easy access and number of attractions within one site secures Bellsquarry Wood as an important and valued place for recreation for the benefit of all ages in the local community and visitors alike.

The site has historical significance within in the local area. The name Bellsquarry comes from the local limestone quarry and the owner Mr Bell. Evidence of previous land-use is also present on site with remnants of an old limekiln located within the grazed fields to the west.

Opportunities & Constraints

Constraints
Poorly drained soils make soft surface routes unviable in many areas and hard surface routes more susceptible to damage from flooding or need for additional drainage.

Misuse of the site by motorbikes and ATVs not only causes degradation of path surfaces but also leads to regular vandalism of entrances and boundary fences. Other instances of anti-social behave such as mis-use of the 'bee-hive' structure in the orchard may also result in avoidance of areas by some visitors.

No formal car parking, which can cause problems with neighbours and visitors parking on the local roads. This could restrict the opportunity for larger scale events on site that may attract audiences from further afield.

Opportunities
To further promote and use the woodland as an educational resource. Potentially by installing a dipping platform an interpretation panel by the pond about wildlife habitats.

To further develop access facilities within the site, responding reactively to user demand.

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

Opportunity to improve infrastructure within woodland by the addition of more benches.

Opportunity to develop the practical volunteer group to become more self-led.

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

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

Vandalism resulting in damage to signs, posts, benches and other site infrastructure.

New housing development has begun at Brotherton Farm/Limefields will increase use of the site, resulting in greater pressure on paths and more litter picks needed.

Long term Objective (50 years+)

There will be a well-maintained network of paths and rides allowing safe access across the site. The community orchard will be maintained and for the enjoyment of many users of the woodland.

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, through education, of the biodiversity, recreation and health benefits woodlands provide. The site will continue to be promoted as a local resource local schools and

community groups.

Increased volunteer use either by established volunteer group or individual volunteers. New areas where people can enjoy the woodland by new picnic areas and well-maintained paths.

The site should be well-used, appreciated and respected by the local community. It should 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 public access at Bellsquarry Wood which is safe and welcoming. 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) Vegetation cutbacks from path to allow lines of sight where possible and appropriate (as required)
c) Litter and fly tip uplift (as required)
d) Regular site safety inspections (tree safety, footbridges, steps, benches, fencing) (as per site risk assessment)

2) Infrastructure upgrades:
a) Path upgrades:
i) leading into orchard approximately 20m including drainage (2021-2022)
ii) survey on drainage requirements to protect trees and path surfaces (2023)
iii) south of the pond (41d) covering approximately 330m (2024-2025)
iiii) upgrade drainage pipes and ditches in compartment 41a following recommendations from drainage survey (2024-2025)
b) Installation of new bench in compartment 41e (2023)
c) installation of a dipping platform of 2mx2m by the pond including an interpretation board to be used for educational and recreational purposes (2025-2026)

3) Providing and developing more opportunities for community engagement:
a) Liaise with the local community council to support events and volunteering (2021 onwards)
b) Renew wildlife homes in the community orchard in partnership with the local primary school (2023)
c) woodland working group leader volunteer to enable the Livingston group to run more efficiently and frequently (2024)
d) Events:
i) Annual Community Apple day (2022 onwards)
ii) Run third party practical task days on site annually including the removal of plastic tree tubes from site (2022 onwards)

4.2 f2 Long Established Woodland of Plantation Origin

Description
Covering approximately 13ha, the woodland at Bellsquarry is considered to be a Long Established woodland of Plantation Origin (LEPO). This LEPO status is confirmed by the existence of woodland cover in compartments 41a, 41e and 41d on the 1860 OS map. Whilst 41b and 41f are not covered by this LEPO status, the whole woodland is managed as a LEPO site. However, the diversity of the wood has been greatly compromised due to its management history. For example, the Roy Lowland map (c1750) appears to show the entire area as cultivated (the location of the wood assumed to lie between Yellow Stirr and the Calder road on the Roy map). Nevertheless, it is a significant natural feature within the local urban landscape, despite the previous intensive management and fragmentation by development. To the north in compartments 41a and 41b there is semi natural birch woodland over a ground layer of ferns and mosses, which has naturally regenerated after the felling of the previous coniferous stand in the 1940's. This has created an even aged block in these sub-compartments which, now 80 years on, contains mature birches that are becoming over-mature and starting to decline. Whilst rowan, sycamore and beech are also present in these compartments, birch is the most dominant species to the north of the site. Nevertheless, the eastern boundary of 41b has included more recent planting. Compartment 41d is dominated by mature boundary trees including beech, lime, oak. Other species include birch, sycamore, horse chestnut and Scots pine with hazel as the dominant shrub species in this area. Overtime, as these mature boundary species decline, non-native species such as beech and sycamore will be replaced by native broadleaves either through favouring natural regeneration or enrichment planting. Shrub species will also be encouraged to reduce conflict in these boundary areas. Compartment 41e is referred to as the 'old orchard' and contains veteran orchard trees as well as mature boundary trees. Species include sycamore, willow, ash, horse chestnut, rowan, birch, oak, elm. Shrub species include apple, hawthorn, dog rose, rhododendron, laurel, snowberry and redcurrant. Whilst rhododendron is dominant towards the west of this compartment, the rest of the area contains is a diverse mix of species. There are particularly interesting specimens in this area including a phoenix tree towards the northern boundary of this compartment. Potential intervention may be required in the long-term to protect and restore veteran trees in this area. The focus will be on preventing overcrowding whilst also allowing for age complexity and species diversity. Ash die back (ADB), also referred to as Chalara, is present at Bellsquarry wood and is particularly significant in compartment 41f. This sub-compartment is one of the younger areas of woodland on site containing species such as ash, elm, douglas fir, sitka spruce, scots pine, crab apple, hazel and holly. Due to dominance of ash and the prevalence of ash die back in this compartment and out-of-place large conifers beside residential boundaries intervention will be required to remove these species and replace them with a mix of broadleaf native species. As the conifers and diseases ash are removed in this area, planting should focus on low level shrub species to reduce conflict along the residential boundary creating a more staggered approach to the woodland edge. 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 and rabbits 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, particularly in compartment 41e, no intervention is considered necessary or achievable at this time (2021).

Within the woodland there are small areas of open ground mainly to the south of the pond and within compartment 41e. Over time, natural regeneration may increase canopy cover in these areas. Considering the large open ground areas will be maintained in the fields and water bodies, expansion of the woodland into these areas will be accepted. The open space is likely to fluctuate over time as mature trees decline and ash die back continues to undermine the ash density on the site.

Invasive species of Rhododendron ponticum, western hemlock, snowberry and laurel have been identified on site. Eradication programs prioritise the removal of Rhododendron ponticum. Once these species require less intervention, focus will move to other invasive species.

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 and ferns. Nevertheless, ramsons, blue bells, yellow pimpernel and honeysuckle are also found within the woodland. The presence of these ancient woodland indicator species perhaps points to a longer woodland history than the LEPO designation suggests. Red campion is also found.

There are minimal species records for this site. Nevertheless, buzzards, chaffinches, grey squirrels, roe deer, hare, wood peckers and song thrush have been seen in the area.

Significance

The amount of ancient woodland left in Britain has been drastically reduced over the last century. The woodland is on the Ancient Woodland Inventory as LEPO, which indicates a relatively high biodiversity potential.

The site has significant local ecological interest with a range of habitats including mature woodlands, new planting, within close proximity to wetlands, a pond and open grassland.

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 which is more resilient to exposure and climate change.

Once rhododendron is removed from 41e and 41d significant ground will be opened up- providing opportunity for enrichment planting in these areas with local oak acorns from the site to help readdress the species balance in favour of native less heavily shading species.

Considering the presence of ADB and planning felling, there is the opportunity to retain deadwood in some areas to increase this habitat across the site.

The open space to the south of the pond could benefit from some additional cover with small scale planting of native broadleaves being introduced here.

Constraints

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

Due to the urban location of Bellsquarry Wood 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 present currently with minimal impact but if populations were to increase this may contribute to potentially suppressing natural regeneration and continued healthy growth of established trees. 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, no management of these species will be undertaken for the foreseeable future and further investment will be required to replace browsed or damaged trees.

Regeneration of non-native tree species such as beech and western hemlock may become an issue in future. Currently only beech is spreading significantly but this could be considered a natural progression of the woodland.

Mature boundary trees are likely to require intervention as they decline to prevent conflict/health and safety issues with neighbouring properties and roadside. Similarly, monoliths have previously been left on site from previous trees works as standing deadwood habitat. As these are declining overtime, those beside paths and boundaries should be removed for safety reasons. In the future monoliths will only be left in the woodland away from the public use areas.

Phytophthora cambivora has also been recorded on another Woodland Trust Livingston site (Dedridge Wood, compartment 42a). This disease could also spread to Bellsquarry Wood 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 as well as maintenance of the treed landscape. This is expected to become even worse in coming years which would particularly impact on compartment 41d as this area encompasses the majority of mature beech at Bellsquarry Wood, particularly at the boundaries with housing.

Ash die back (ADB), also referred to as Chalara, is present on site and throughout Livingston. Due to the prevalence of ADB, Ash will also not be included within restocking. Therefore, its density on the site overall is likely to decline in the long term. Ash die back will also contribute to an increase in standing and fallen deadwood on site over time.

Rhododendron ponticum was mapped on site in 2020 and is also present on neighbouring land outside of the Woodland Trust boundary. If this is not removed this invasive species could continue to spread at the detriment to natural regeneration, woodland specialist flora and overall biodiversity across the site. Leaving any amount of the species within proximity to the site could result in re-infestation of this invasive species in the long-term.

Other invasive species present such as snowberry and western hemlock in the woodland could potentially become dominant, outcompeting native species. These species should be monitored and prevented from spreading beyond its current location.

Long term Objective (50 years+)

The long-term intention is to maintain the area as semi-natural broadleaved woodland under continuous cover; increasing the proportion of native species to create and maintain a diverse, mixed age and mixed species woodland habitat. Individual examples of some conifers, particularly Scots pine which is featured throughout West Lothian, will be retained but the wood will remain predominantly broadleaved. Species composition will be varied, being mostly native though a proportion of non-native species such as beech and sycamore will be monitored to ensure the ground flora are at acceptable levels throughout the woodland.

Along housing and roadside boundaries, the intention is to slowly regenerate the woodland edges. As individual mature trees are removed, suitable shrub species will be encouraged or planted, to improve biodiversity and reduce conflict with adjacent land-uses. In addition, standing and fallen deadwood will be retained where it is safe to do so.

The woodland composition will be dominated by native species across all compartments and biodiversity will be safeguarded by controlling the spread of invasive non-native invasive species where practical.

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

The focus of the STOs for Bellsquarry Wood will be to improve biodiversity and resilience on the site through the following objectives:

1) Felling for safety and allowing for restructuring:
a) Compartment 41f- subject to obtaining a felling license Ash- approximately 127 trees and Conifers- approximately 30 trees (2022-2023)
b) Monolith removals by paths and boundaries- predominantly in compartment 41d (2021-2022)

2) Work towards the eradication of Invasive species during this plan period:
a) Rhododendron removal in compartments 41e and 41d by cutting and treating stumps with herbicide during winter (2021)
b) annual assessment of the areas and organise follow-up treatment for regrowth as required (2022-2026)

c) liaise with West Lothian council regarding any invasive species located outside of Woodland Trust land to prevent re-infestation (ongoing)

3) Maintain and encourage floral diversity by:
a) Map the densities of other invasive species (2022):
i) Snowberry- present in compartments 41a, 41f.
ii)Laurel- present in compartment 41e
iii) Western Hemlock- compartment 41a
b) Trial methods for removal to encourage regeneration of native trees, shrubs and plants in these areas (2023 onwards)

4) Utilise enrichment planting to off-set the decline of mature species, encouraging more diversity within the woodland:
a) compartment 41d- remove mature boundary trees when required for safety reasons and replace with a mix of native low-level shrub species (ongoing)
b) compartment 41d and 41e- where rhododendron has been removed by residential boundary- approximately 1,000 trees (2022-2023)
c) compartment 41f- areas opened up by ash, conifer- approximately 300 trees (2023-2024) and snowberry removal- approximately 200 trees (2024-2025)
d) compartment 41a- areas opened up by western hemlock and snowberry removal- approximately 200 trees (2025-2026)
e) monitor compartments 41a and 41b for development of open glades as birch declines for potential planting of native species in small gaps for species and age complexity to develop (ongoing)

4.3 f3 Semi Natural Open Ground Habitat

Description
As of 2021, the current open space across the whole site stands at approximately 5ha, equivalent to 28% of the site's full size. This includes the areas covered by the pond and grazing fields to the west. The open ground of 41c is divided into 4 fields. The ground adjacent to Newpark Road and Calder is leased to be grazed between the period 1 April and 31 October annually. These areas are left over winter to avoiding poaching. The two other fields are less susceptible to this issue and so are grazed year-round. There are currently (2021) three leaseholders for compartment 41c grazing 2 horses each as per an agreement with the Woodland Trust. Botanical surveys of the grazed meadows (compartment 41c) were conducted in 2002 and 2018. Comparison between the two surveys suggested an increase in habitat diversity as well as botanical richness in some areas. The 2018 survey (Averis 2018) also stated that the continued management of this area through horse grazing was believed to be contributing to increased botanical diversity particularly in areas of NVC MG5 (unimproved neutral grassland), MG5/MG6 (intermediate neutral grassland) and MG23b (rush meadow). The open ground to the west of the site provides a mix of habitats Including areas of different UK BAP Habitats referred to as wet woodland, lowland meadow and lowland fen. These areas appear to have had minimal alteration to the soil nutrients because of historical agricultural or other management practices. Of particular interest is the Greater butterfly orchid (Platanthera chlorantha) which is considered an uncommon species. In 2013-2015 the Blue Green Network created a project focused on connecting and upgrading wetland and woodland corridors improving biodiversity, water management and public access through these areas. The Sustainable Urban Drainage System (SUDS) area to the west of the woodland was created and paths were developed to the east of the site to improve access. Since its creation, the SUDS has reduced the level of pollution reaching the pond as well as creating an important riparian habitat through a mix of planted wetland species including willow. There are multiple small areas of water present on site including drainage ditches and the pond as a central feature in compartment 41d. A survey of the pond was conducted in 2017. It noted the diversity of habitats available with deadwood and moderate vegetation levels were suitable for wildlife such as newts. The presence of damselfly, mayfly and stonefly larvae indicated that the pond was very healthy. Frogs, stickleback fish and moorhens also inhabit the pond. Botanical species in and around the pond are also diverse including species such as Broad-leaved Pondweed (Potamogeton natans), Water Forget-me-not (Myosotis scorpioides), Water Mint (Mentha aquatica), Bogbean (Menyanthes trifoliata) and Butterbur (Petasites hybridus). Invasive plants were also noted during the survey including Duckweed (Lemna sp.) and the non-native Nuttall's Water Thyme (Elodea nuttallii). Although low numbers of species may not cause an immediate problem if contained within this area, if they were to become dominant this would be at the detriment to other native species. The report also highlighted the current concrete edges of the pond as aesthetically displeasing as well as poor for access of amphibians. The current tree cover surrounding the pond allows for light to reach the water as well as providing areas of shade. Nevertheless, this should be monitored overtime to avoid excessive overshading of the pond in the longer term. Recently (2019), the water level in the pond has dropped due to a leak in the structure. Repairing this is a priority for this site for early in this management plan period. Whilst trees are present around the pond, recent tree work conducted in 2018 has contributed to more of an open canopy surrounding the pond. There is a small bank separating the pond from the Dedridge burn which holds native

flora as well as tree regeneration, particularly ash, birch and holly. To the west of this banking there is also a species of rhododendron. This is believed to be an ornamental species originally planted during the historical management of the area as part of the former Newpark House estate. The individual trees in this area as believed to be of a different subspecies to the rhododendron ponticum and are not thought to be invasive. Therefore, their current management is to be maintained for aesthetic purposes as they produce attractive white flowers in early summer. Nevertheless, the shrubs will be monitored during the woodland condition assessment to ensure the plants are not spreading or causing excessive shading to the pond.

Japanese knotweed was found in two locations within the non-woodland habitat areas. A small patch is present to the western banks of the pond and a larger area covers the northern boundary of compartment 41c.

Significance

The site has significant local ecological interest and the open ground, wetland areas and water bodies provide a range of habitats that compliments the woodland aesthetically and ecologically, contributing to the landscape diversity of the local area.

The open ground supports wildlife providing botanical diversity rapidly disappearing from the built-up urban areas therefore enhancing and protecting local biodiversity.

Opportunities & Constraints

Opportunities
Continue to utilise the horse grazing in compartment 41c to manage the intrinsic floral diversity of the open grassland as well as supporting the local community.

Following the 2017 pond survey, minor improvements could be added to the pond to enable better wildlife access and monitoring.

Constraints
High visitor numbers and instances of vandalism restrict the ability to install loose structures such as hibernaculas next to the pond as previously timber has been thrown in the water. Nevertheless, these types of structures could be constructed slightly further into the woodland in close proximity to drainage ditches to allow for this wildlife habitat to be present elsewhere on site.

Factors Causing Change

Tree species such as willow are naturally beginning to regenerate particularly along the SUDs area between the fields. Over time, the canopy cover could increase in these areas.

Japanese knotweed was mapped on site in 2020 and is also present on neighbouring land outside of the Woodland Trust boundary. If this is not removed this invasive species could continue to spread at the detriment to natural regeneration, woodland specialist flora and overall biodiversity across the site. Leaving any amount of the species within proximity to the site could result in re-infestation of this invasive species in the long-term.

Other invasive species present such as Pyrenean valerian and Nuttall's water thyme in the pond could potentially become dominant, outcompeting native species. These species should be monitored and prevented from spreading

beyond its current location.

The pond has been suffering from low water levels as a result of a leak in the structure. This has caused exposure of the concrete edges, occasional instances of unpleasant smells in the area and impacts the wildlife habitat.

Instances of periodic pollution have happened previously from the Brucefield Industrial Estate into Dedridge burn and the pond. This alters the pH and overall condition of these wetland areas at Bellsquarry. However, this has become uncommon in recent years which could suggest that these habitats may become healthier over time.

Long term Objective (50 years+)

Open ground and wetland areas will be maintained on site for habitat diversity. Although natural regeneration will be accepted this is not expected to exceed more than 20% of the current open ground by 2070.

Native species will dominate across all compartments and biodiversity will be safeguarded by controlling the spread of invasive non-native invasive species where practical.

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

The focus of the STOs for Bellsquarry Wood will be to improve biodiversity and resilience on the site through the following objectives:

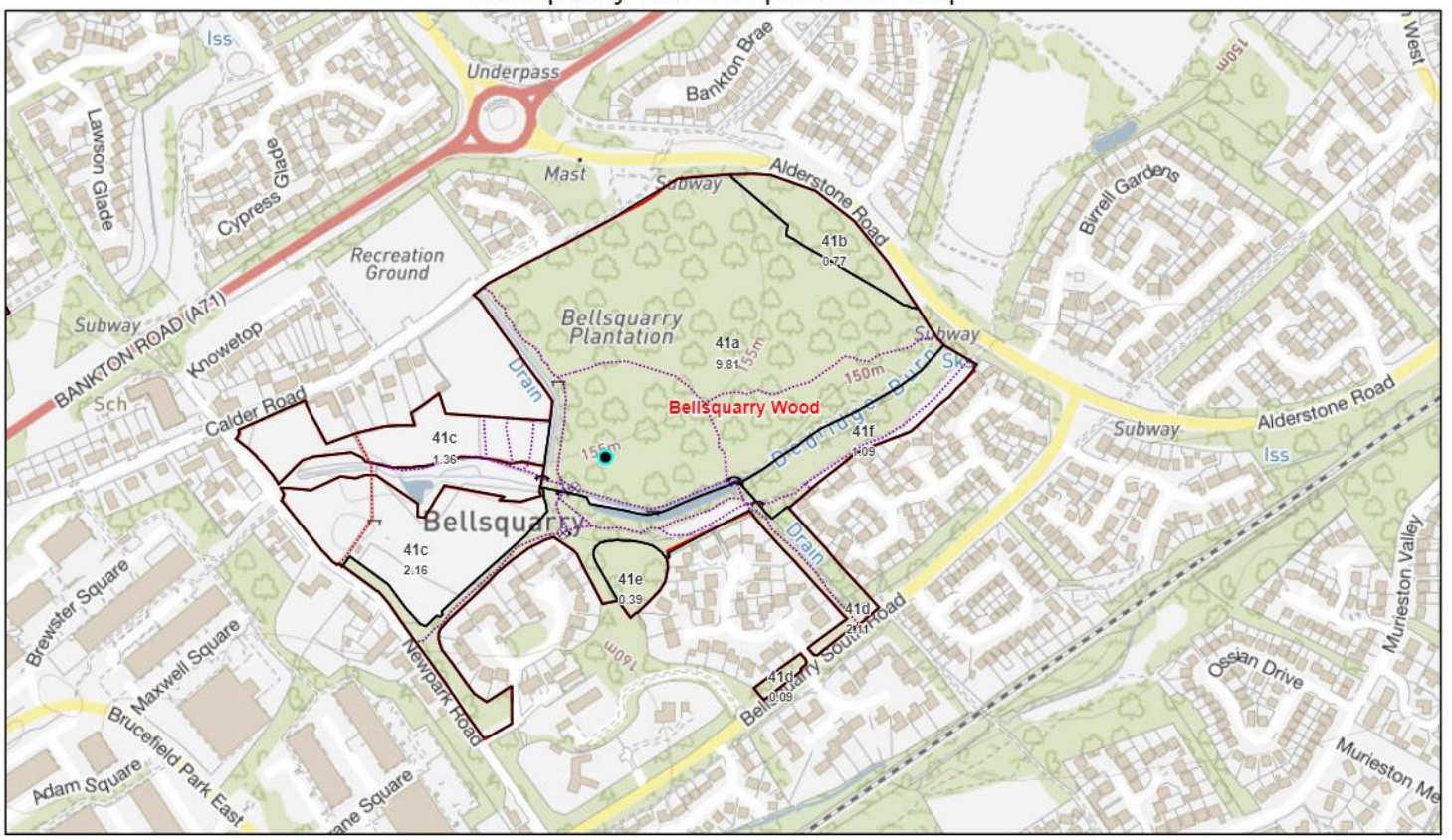
1) Continue the management of open ground in compartment 41c using horse grazing to maintain floral diversity. Maximum of 6 horses on the grazing land at one time with fields to the west only grazed between the 1st April and 31st October annually (2021 onwards).
a) Assess the condition of open ground at the end of the plan period to ensure tree cover does not establish on more than 10% of the current open ground (2026)

2) Work towards the eradication of Invasive species during this plan period:
a) Japanese knotweed in compartment 41c (approx. 50 stems) and 41d (approx. 15 stems) through stem injection where possible and spot treatment for smaller regrowth from July-September (2021)
i) annual assessment of the areas and organise follow-up treatment for regrowth as required (2022-2026)
b) Monitor the spread of invasive species- Pyrenean valerian by the Dedridge Burn and Nuttall's water thyme in the pond- to ensure they are not becoming dominant over native species (2021 onwards)

3) Assess pond health and enhance the area for biodiversity:
a) resolve leaking issues of the pond by constructing a timber weir in the burn to allow the water level to rise and be equal to pond thus stopping the leakage of water from the pond through the bank into the burn (2021-2022)
i) monitor effects on the trees surround the pond (2022-2026)
b) remove silt from the inflow of the pond to the northwest and use this for vegetated embankments at pond edges (2023)
c) Enhance the pond edges to allow for better access by small mammals and juvenile amphibians- using coir rolls or vegetative embankments with native marginal plants (2023)
d) Assess level of shading from canopy cover and rhododendron species to the west to ensure a total maximum of 30% of the pond's surface area (2026)

APPENDIX 1: SUB-COMPARTMENT MAP

Bellsquarry sub-compartment Map



16/08/2021, 10:50:00

Estate Path Network

Legal Footpath

Permissive Footpath

Estate Subcompartments

Estate Subcompartments Labels

Estate Subcompartments Labels Hectares

Estate Other Features

Bridge

Culvert

Seat

Management Units

1:5,291

0 0.04 0.09 0.18 mi

0 0.05 0.1 0.2 km

Woodland Trust

APPENDIX 2: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
41a	9.81	Birch (downy/silver)	1940	Min-intervention	Site structure, location, natural features & vegetation	Tree Preservation Order
Mature downy birch, with occasional sycamore and beech. Understorey is limited but includes pedunculate and red oak, beech, rowan, Scots pine, holly and western hemlock. Ground flora is dominated by grasses and ferns with heather, bramble, heath bedstraw, tormentil and sphagnum moss amongst the undulating furrows. Areas of bare ground without vegetation when the canopy is dense. Good levels of standing and fallen deadwood. A large amount of silt from the pond was deposited within this area in 2011, so there may be some interesting changes to ground flora diversity on these areas. Snowberry is becoming dense towards the north of this compartment. All paths within this compartment are wide, flat and surfaced. A bench is present approx. 90m south of the Calder road entrance. To the east there is a small bridge will goes over the deep drainage ditch provided access to the community orchard in compartment 41c. The path network was extended to the east of this compartment in 2014-2015 as part of the Blue Green Network. There are also deer and bear sculptures hidden beside the path and fairy doors in some of the boundary trees. Drainage is an issue within this compartment as it is a flat on the top of an incline. Deep ditches are present across this compartment but these often result in standing water.						
41b	0.73	Mixed broadleaves	2001	Min-intervention	Housing/infrastructure, structures & water features on or adjacent to site, No/poor vehicular access within the site, Services & wayleaves	Tree Preservation Order
Area of young mixed broadleaved planting including alder, aspen, downy birch, hawthorn, oak and dog rose. Silver birch remains the dominant mature species. Holly present in low numbers in the understorey. Ground flora is dominated by ferns with soft grasses, buttercup, thistles and honeysuckle also present. There are no footpaths within this compartment but there are some faint desire lines present. Deer are typically sighted in this area due to minimal disturbance from the public.						
41c	3.51	Open ground	2012	Non-wood habitat	Housing/infrastructure, structures & water features on or adjacent to site, Management factors (eg grazing etc),	

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
					Mostly wet ground/exposed site, Services & wayleaves	
The Two small fields to the west of the woodland area which are dissected by the Dedridge Burn. MG5, MG6 and MG10 grassland with better diversity around the Limekiln and towards the east. No rare or notable flora recorded. The fields are under horse grazing regime which is rotated seasonally around the area. A small area of Japanese knotweed has been identified on the northern boundary of one of the fields to the east which is scheduled for removal in 2021. This area will continue to be monitored for any signs of regrowth for the duration of the management. The southeast of this compartment was converted to a community orchard in November 2015 including the planting of 40 trees- a mix of Allington Pippin, Ard Cairn Russet, Cambusnethan Pippin, Early Julyan, Galloway Pippin, Golden Pippin, Hoods supreme, Lady Sudeley, Ribston Pippin, White Joaneting, Ellison's orange, Laxton's Fortune and Sunset. Willow and hawthorn are also present to the east of this compartment. Within the centre of this area is also a wooden beehive structure that visitors can sit in. There is a bench present along the path leading from Newpark Road to Calder Road within this compartment.						
41d	2.18	Mixed broadleaves	1920	Min-intervention	Housing/infrastructure, structures & water features on or adjacent to site, Services & wayleaves	Tree Preservation Order
Roadside and internal policy tree belts of mature and over mature trees; beech, Scots pine, lime, sycamore, horse chestnut, sessile oak and downy birch, with an understorey of occasional young trees including, ash, beech, sycamore, and horse chestnut. This compartment also includes the pond and the Dedridge burn. Bluebells and Pyrenean valerian are present around the pond and Dedridge burn and Japanese Knotweed is present to the west of the pond. There is the white variety of rhododendron in this area which is to be retained for aesthetic value. This rhododendron will be monitored for the duration of the management to ensure it is not spreading. If there is evidence that it has hybridized with the invasive ponitcum variety removal may need to be considered. South of the pond, there is a small meadow and clumps of shrubs planted along the southern housing boundary. The footpaths in this area require upgrades to be consistent with the other paths on site. An area of young planting (2001) also buffers one of the radial mature strips between Tantallon Gardens and Saltcoats gardens. Deadwood is predominantly timber and branch wood left as the result of safety fellings, with some standing deadwood from dieback in lime and beech. Rhododendron ponticum is present to the area west of Pitcaple gardens. This is scheduled for removal in 2021 and the area will be then monitored for evidence of regrowth as well as any sign of native regeneration. If native species struggle to regenerate, enrichment planting will be considered for this area. A small section of Japanese knotweed has been identified on the western mouth of the pond and Snowberry is dense south of the pond.						

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
41e	0.39	Mixed broadleaves	2012	Min-intervention	Housing/infrastructure, structures & water features on or adjacent to site, No/poor vehicular access to the site	Tree Preservation Order
There are small steps leading from the main path into this compartment known as the 'Old orchard'. Although there are no official paths through this compartment faint desire lines are visible. This area contains scattered fruit trees of mixed age - a dozen new trees were planted in 2011. Older trees generally neglected though pruning has been carried out in 2011 by members of the Bellsquarry Woodland Workgroup. Willow, ash, oak, horse chestnut, Red current, dog rose, hawthorn, rowan, sycamore and apple are present in this compartment. Ground flora here includes soft grasses, rosebay willow herb, lady's mantle, meadow butter cup, ramsons, vetch, horsetail and wood sedge. Exotic flowers (including a white variety of Rhododendron and Laurel) that are remnants of the time this area was managed by Newpark House. Rhododendron ponticum is present in this area and scheduled for removal in 2021 and will continue to be monitored for any regrowth.						
41f	1.11	Ash	1985	Min-intervention	Housing/infrastructure, structures & water features on or adjacent to site, Services & wayleaves	Tree Preservation Order
Stand of mixed broadleaves and conifers. Open ground with some shrub planting to south associated with an early SUDS attenuation pond along housing edge and marshy land to north along the stream edge. Ground flora includes yellow pimpernel, red campion, nettles, brambles, lady's mantle, buttercup, snowberry and willow herb. Dominance of Ash to the southeast of this compartment has been comprised by the extensive impact of ash die back on the site. Currently (2021) there is a large percentage of standing deadwood. This encourages this area to be restructured to remove the declining ash and thin the conifers in the area to favour broadleaves and reduce conflict with neighbouring properties. The percentage of standing deadwood will decrease in this area as a result but fallen deadwood will be retained where possible and there are high densities of standing deadwood elsewhere on site where it is more appropriate. Hazel and crab apple are present and more suitable for the area due to their lower size next to paths and boundaries. As well as supporting the natural regeneration of native species, following felling here, planting in this area will focus on shrub species such as holly, hawthorn and bird cherry. Snowberry is becoming dense and dumping of garden waste is common in this area.						

APPENDIX 3: HARVESTING OPERATIONS (20 YEARS)

Forecast Year	Compartment	Operation type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2022	41f	Selective fell	1.09	55.046	60
2027	41a	Thin	9.81	5.09	50

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.

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