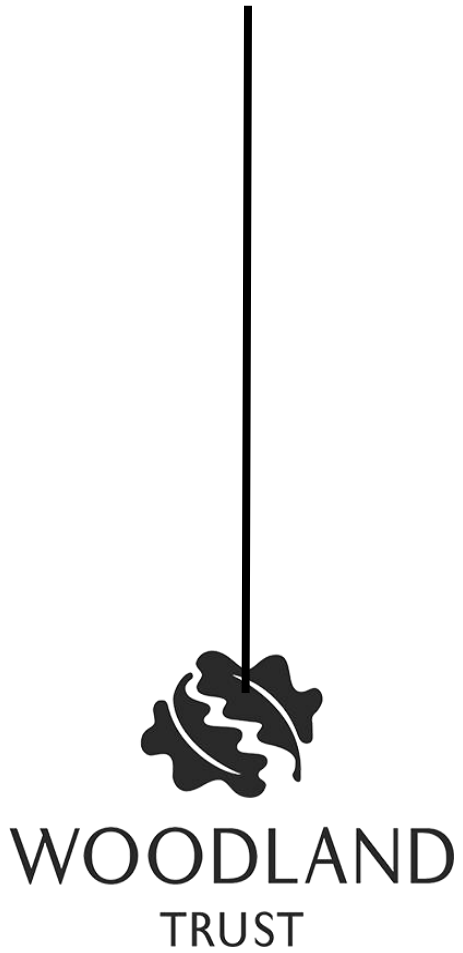
Foulshiels

(Plan period – 2022 to 2027)



Management Plan Content Page

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/

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

1. SITE DETAILS

Foulshiels

Location:	Stoneyburn Grid reference: NS978633 OS 1:50,000 Sheet No. 65
Area:	28.23 hectares (69.76 acres)
External Designations:	Local Biodiversity Site
Internal Designations:	N/A

2. SITE DESCRIPTION

LOCATION

Situated on the site of a restored coal mine, Foulshiels is predominantly level in character, rising gently to the reshaped summit of the bing that has been planted with conifers and is now a prominent feature within the local landscape.

The site is bound on all sides by rough grazing farmland and lies in an agricultural/urban fringe setting. Together with other features in the surrounding landscape the site is reminiscent of the industrial heritage of this part of central Scotland. The irregular woodland edges of the site generally fit in harmoniously with the surrounding landscape of mixed agricultural land punctuated by small woodland, hedgerows and individual trees.

HISTORY

Mining at Foulshiels began in 1898 and was owned by United Collieries Limited for the production of coal for house steam, gas and blaes. During production, the mine had an average workforce of around 450 people producing approximately 580 tonnes per day. During this time, activity on site was focused around the railway, associated buildings, settling ponds and the bing in the area now called compartment 1a. An aerial photograph taken of the site in 1955 appears to show that the other parts of the site were left as rough grazing or scrub woodland. The site was abandoned in 1958. Two mine shafts of depths of 112m were filled and capped in the mid to late 1960's and their location is marked on site with straining posts.

The reclamation project commenced in 1980, and in December 1996, the Woodland Trust acquired the site on a 199-year lease from West Lothian Council. Since then, work has included boundary work to secure the site, drainage to improve wetter and damaged path sections, windblow clearance and thinning of the lodgepole pine in compartment 1c and group felling of Sitka spruce and larch in compartment 1b. Additionally, powerline way leaves are kept free of trees. Some supplementary replanting of the felled areas was undertaken (2005) though natural regeneration is prolific and further replanting is unnecessary. Most recently (2021/2022), extensive path upgrade works were completed from each entrance across a large loop. This has improved access throughout the site, allowing visitors to taken in the varied scenery the site has to offer with ease.

PHYSICAL GEOGRAPHY

The underlying geology is composed of carboniferous sandstone, shale and limestone drift which gives rise generally to brown earth forest soils with gleying, however these only occur to the north of the site. A large proportion of the site around the bing area has been covered with a layer of industrial spoil from mining operations resulting in reduced soil fertility and restricting root development in some areas.

A limiting factor typical of such sites is discharges of iron oxides and other heavy metals from the bing. This often results in high levels of acidity, reducing the solubility of some minerals and therefore, their availability to trees and other vegetation. Prior to the acquisition of the site by the Woodland Trust, high levels of pollution were detected in the burn and nearby watercourses. In mitigation, Lothian Regional Council funded wetland treatment lagoons adjoining the site to the east, now managed by West Lothian Council, into which drains from the bing are filtered prior to entering the burn further downstream. Scottish Environmental Protection Agency (SEPA) regularly tests the water quality, both at entry and at exit from the treatment lagoons. Due to sections of the lagoons containing deep

water, the treatment area is fenced off from the public.

The MLURI Assessment of Climatic Conditions in Scotland classifies the area as fairly warm, moist lowland and foothill subject to moderate exposure and moderate winters. The woodland is slightly north-facing to the north of the bing, where the land slopes towards a small burn. A deeply cut burn flows eastwards along the southern boundary of the site. Several drainage ditches within the site now channel water from the bulk of the disturbed area to the wetland water treatment area located to the east of the bing site, whilst the northern area drains into the Foulshiels burn, which forms the northern site boundary. The north of the wood also contains two small ponds and a tributary to the Foulshiels burn.

Foulshiels is now considered to hold significant nature conservation value. This is reflected in its designation as a Local Biodiversity Site (LBS) which aims to protect, maintain, and enhance the habitats and species present in the area. Whilst this is not a legal protection, it can influence local planning policies, protecting the area from inappropriate development.

WOODLAND DESCRIPTION

Foulshiels is predominantly open successional woodland (70%) with areas of open ground (approx.10%), seasonal open water (1%), wet woodland (9%) and dense conifer (10%). Many of the trees were planted in 1980 after some natural colonisation by birch. A wide range of mainly native broadleaved species is represented with downy birch, willows (goat and grey) and rowan being the most common. Other species include common oak, silver birch, alder, aspen, beech and wild cherry. Conifers are confined mainly to two areas. Lodgepole pine, the most common conifer species on the site, has been planted on the reshaped dome of the bing and most is of poor form with heavy branching and severe basal sweep. Sitka spruce and hybrid larch are the dominant species in compartment 1b, a small area to the south east of the site. Occasional Scots pine can be found throughout the wood. Within the woodland matrix the areas of heath, grassland and wetland add to the diversity of the site. The structure of the woodland varies from young to semi-mature. This is due to the varying site conditions, mammal damage and fires. The continued fire raising has given rise to an artificial successional habitat over much of the site with the predominantly broadleaved areas within compartment 1 now being scrubby and open in character. Natural regeneration of birch is prolific and soon recolonises burnt open areas. Lodgepole pine is regenerating in areas to the east and northeast of compartment 1c. Due to poor rooting depth, the main area of Lodgepole pine on the bing suffers regularly from wind damage and a phased program of felling and replanting was initiated in 2004 with the felling of groups associated along the sides of paths and adjacent to areas of exiting broadleaf regeneration. Likewise, an area to the east of the spruce and larch in compartment 1b was felled at the same time to encourage existing pockets of birch and willow regeneration to develop.

GROUND FLORA

Although of recent origin and lacking historical connection with the original natural vegetation, the ground flora is of considerable botanical interest. The site benefits from a diversity of vegetation types from wooded to un-wooded, from wet to dry as well as types indicative of acidic soils to those indicative of more base-rich soils. Consequently, there is also rich and unusual species diversity throughout the site. Of particular interest are the good populations of greater butterfly orchid, common twayblade and a large population of common wintergreen. The site also includes unusual intimate mixtures of plant species with neutral or base-rich indicators growing abundantly with acid indicator species. A large variety of mosses are found in dense carpets on wetter ground, particularly to the north. For example, the mosses Brachythecium rutabulum and Eurhynchium praelongum are growing abundantly with

blaeberry.

ACCESS
The site is used by local Stoneyburn residents (population estimated at approximately 3,320 in 2016), but also with longer distance users coming from Whitburn (estimated 10,860 in 2016) and other surrounding areas.

There are four entrance points to the site, three of which lie to the south leading from nearby Stoneyburn and the fourth following the route of the old mine railway towards Whitburn, 3 miles to the north west. Within the wood there is a network of over 4km of formal and informal paths although continued misuse by motorbikes and ATVs has led to severe degradation of wetter sections. There is no 'on site' car parking though there is a public car park adjacent to the MOT garage in Stoneyburn, just south of the central southern entrance to the site, which is capable of holding 6 cars.

Management access to the site is good, either directly off the public road to the southeast or permissively over farm tracks. Within the site a narrow culvert between compartment 1 and 3 limits access, although other access routes ensure that the site to the south of the disused railway is accessible. Vehicle access to the north of the site is effectively limited by wet ground conditions.

3. LONG TERM POLICY

The long term vision is that the site will continue to be a diverse habitat mosaic ranging from areas of open and closed canopy woodland, seasonal open water, heath, grassland and wetland. This will be achieved through allowing natural successional processes to take place, outside of the areas which have been identified as rich habitats. This will inevitably change the balance of the various habitats on site and will gradually move towards greater tree and woodland cover.

In the shorter term the existing lodgepole pine 'dome' of the bing, which is suffering from wind damage, will be gradually replaced by mainly native broadleaved woodland. This will be done as areas of windblow are cleared and naturally colonised - often by birch and willow. The conifer block in compartment 1b will be converted to mixed native broadleaves. Elsewhere on site, individual conifers will be retained, rather than selectively felled, as they are prone to windblow due to poor rooting and unstable soil conditions.

Existing on-site access facilities will be maintained to suit the existing local demand, which is classed as Grade B - moderate use, responding reactively with changes in demand and with consideration to the development of West Lothian's Core Path Network.

The Trust's corporate objective of conservation through protecting the ancient woods will be achieved by control and removal of invasive non-native flora where it is realistic and practical to do so. For this site the focus will be on eradicating Rhododendron reviewing the effectiveness of control measures and the recovery of native flora.

4. KEY FEATURES

4.1 f1 Connecting People with woods & trees

Description
Foulshiels is a well-used woodland within easy walking of Stoneyburn (population estimated at approximately 3,320 in 2016). Grazed fields surround the site, giving a real sense of being miles away, despite its being so close to town. The site is a significant asset for the local community, providing them with a valuable outdoor resource in this peri-urban area. The level of public use is defined as WT Access Category B (moderate usage) as it is estimated that 10-15 people use one entrance daily. Since acquisition in December 1996 under a 199-year lease from West Lothian Council, the Woodland Trust has worked on installing drainage to improve wetter and damaged path sections, cleared and thinned some areas of conifer and replanted some areas with native species. New entrance and signage works were conducted in 2018 and 2020 welcoming visitors through the 4 entrances to the site. This included fencing by the main entrance beside the B7015 towards the south of the site. There are good links with the wider path network and as such there are Core Paths leading from the north-west entrance following the old mine railway and following the western boundary to the south western entrance. These link Stoneyburn with Whitburn and also link Foulshiels to Blaeberry Community Wood. Within the wood there is a network of approximately 4.3 kilometers of formal and informal paths, some with blaes surface, offering opportunities for quiet recreation. The Old Railway path linking East Whitburn and Stoneyburn (including Blaeberry Woodland and Foulshiels Bing) is now the Stoneyburn to Whitburn Core Path. Extensive footpath upgrades were initially scheduled for 2020 which was impacted significantly by the Covid19 restrictions. Consequently, this work was delayed to 2021/2022. Now completed, these works have significantly improved the existing path network to enhance the visitor experience on site. This project included the installation of six finger-posts acting as way-markers for the multiple routes available onsite as well as their links to long-distance routes locally. An annual fun-run is held on site for the local community by the Stoneyburn Vision Group. This includes a competitive 5km run and family fun run. The mix of low-level path routes as well as sections available traversing the bing enables use by all abilities. Misuse by motorbikes and ATVs has previously led to severe degradation of wetter path sections and the presence of these vehicles continued once the paths were upgraded. Signage was installed at site entrances in 2022 to discourage inappropriate vehicle use on site. Some of these signs were vandalism within a few months of installation and now require replacement. In 2022, two timber benches were installed- one in the center of the woodland and another to the north west of compartment 1a observing a quiet nature spot overlooking the heathland.

A curved wall structure acts as a sitting area in the center of the wood. This has previously been a location for antisocial behaviour. However, the overall condition of the site appears to have benefitted significantly since the path upgrades with minimal levels of litter throughout and less reports of anti-social behaviour noted.

Significance

The woodland is approximately 0.5km from the centre of the village of Stoneyburn and is easily accessible as it can be reached on foot or via public transport. It is an important resource for local recreation and also forms part of the longer distance route to Whitburn and the rest of West Lothian. The internal path leading from the north western entrance along this boundary to the south west entrance of the site is incorporated within the West Lothian Core Path network, known as the 'East Whitburn to Stoneyburn path'.

The management of Foulshiels including maintaining public access contributes to the Trust's corporate objective of increasing people's understanding and enjoyment of woodlands.

Foulshiels provides a visible reminder of the history of local industry. The Wilsontown, Morningside and Coltness Railway line was constructed during the mid-late 1800s to support the coal mining and shale colliery industries. Although the railway line is now disused and the bing is all that remains of the mining activity, these features have created the landscape of Foulshiels and are a reminder of the site's past.

Opportunities & Constraints

Constraints
Continuing misuse by motorbikes and ATVs not only giving rise to degradation of path surfaces.

Regular vandalism and anti social behaviour in the central stone circle makes this area less appealing for visitors and any new features such as finger posts, signs and benches could be damaged- requiring repairs, replacement or complete removal.

No formal car parking, which can cause problems with neighbours and visitors parking on the local
Roads.

Opportunities

To promote the link path network between Foulshiels and Blaeberry Woodland more to highlight the availability of a longer route.

Close proximity to school- opportunity to promote and utilize the site as a key educational resource for the local community.

Recruit a local volunteer warden to have more of a presence in the woodland and regular reporting on issues and site

condition.

Factors Causing Change

Vandalism to signs, posts, benches and other site infrastructure & motorised access, Continuous detract from the natural beauty of this site and fires could cause long-term environmental damage.

The upgraded paths has increased visitor numbers on the site which will likely increase demand and impact on the condition and maintenance requirements for the site over time.

Long term Objective (50 years+)

The site will be well-used and appreciated by local people for informal recreation.

It should be known for its wildlife interest, varied landscape, history and habitats.

The site should be accessible, safe and welcoming with management of infrastructure and signage.

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 Foulshiels wood which is safe and enjoyable. This will be achieved by:

1) The site will be kept in a safe and welcoming condition through site maintenance:
   a) Two path cuts a year (May & August/September)
   b) Two routine litter picks annually and lift any fly tipping (as required)
   c) Regular site safety inspections (tree safety, footbridges, steps, benches, fencing) (as per site risk assessment)
   d) Damaged correx 'no motorbike' signage will be replaced with new signs of more durable diabond material (2022)

2) Installation of new infrastructure to improve visitor experience on site:
   a) Installation of new bench on top of bing (2023/2024)
   b) Installation additional two finger-posts to the western side of the site and way-markers added to current finger-posts to advertise available path networks (2024/2025)
   c) Creation and installation of information boards about the history and wildlife of the site to be located next to the two recently installed benches (2025/2026)

3) Developing community engagement and volunteering opportunities by:
   a) Recruiting a volunteer warden who has an 'eyes and ears' role and can report site issues to the Site Management Team (2022)
   b) Hold a Citizen Science Bioblitz event in partnership with the University of Stirling and RestREco project (2023)
   c) Liaise with council regarding improving link with Blaeberry Woodland and wider footpath network (ongoing)

4.2 f2 Mixed Habitat Mosaic

Description

Foulshiels is a former mine working restored to a predominantly broadleaved woodland habitat in 1980. Therefore, this is a relatively young woodland with an average age of trees around 40 years old.

The broadleaf woodland across the site is made up of 3 distinct woodland areas, 1a is predominantly silver birch/oak and hawthorn species. Sub-compartments 1b and 1c have high density of non-native conifers including sitka spruce, larch and lodge pole pine. Compartment 2 is dominated by willow and birch species due to this area of the site having wetter ground conditions. Other species on site include blackthorn, rowan, dog rose, elder, ash, aspen, wild cherry, alder, broom and gorse. The most mature trees appear to be beech and oaks located north of compartment 2a. These large boundary trees are a key landscape feature in West Lothian, prized for their amenity value throughout the year. They are also important for age complexity throughout the woodland and provide essential large diameter (standing and fallen) timber to support biodiversity.

Continued deliberate fire raising which has given rise to the artificial successional open woodland habitat over much of the site and a dominance of birch throughout.

Open ground is predominantly represented by the access tracks located at the northwest and south east of the site along the dismantled railway route. There is also significant open space in compartment 2b and surrounding the stone seating area in the center of the site as well as immediately north of this area. The presence of wayleaves onsite also requires clearance corridors to be maintained in compartment 1b and 3a.

An ecological Survey was conducted in 2018 to assess the areas of NVC types in the open areas to influence management of open areas within the plan period of the management plan. The results were compared with an earlier survey conducted by the same ecologist in 2001. A comparison of the 2001 and 2018 survey data reflected an increase in vascular plants and bryophytes species on the site evident thought to suggest that the plants are benefitting and responding the improvement in air quality since the mines closed. Averis (2018) also noted that the moss and ground flora communities had become more developed and matured since the previous survey.

Overall, 44 different vegetation types have been identified within the site (Averis 2018). Open ground ranges through areas of heath, mire, rush pasture, meadow, grassland and swamp with patches interspersed throughout the site. Much of this variation is due to the historical use of the site as a mine which has resulted in a layer of spoil present within the soil. Discharges of iron oxides and other heavy metals from the bing have caused a variety of conditions to develop across the site. In particular, high levels of acidity are present which can reduce the solubility of some minerals and, therefore, their availability to trees and other vegetation. Nevertheless, these conditions have also resulted in interesting botanical assemblages throughout the site, including plants that typically thrive in acid or neutral soils co-existing in the same areas (Averis 2018).

Uncommon floral species of particular interest at Foulshiels include the greater butterfly orchid (Platanthera chloranta), broadleaved helleborine (Epipactis helleborine), common twayblade (Neottia ovata) and common wintergreen (Pyrola minor). The latter was also found in unusually high densities in some areas of the site, illustrating the high botanical diversity of Foulshiels.

Averis' report explained that woodland expansion is likely to continue as the natural progression of the site. However, due to the importance of the mosaic structure for diversity of habitats and species, he identified that areas of lowland meadow (MG5), lowland dry acid grassland (U4), wetland areas also known as lowland fen (M6b) and lowland heathland are of particularly high botanical interest and should be retained rather than woodland expansion allowed to continue in these areas.

A patch of Rhododendron ponticum is present on site towards the north west of the woodland. Although relatively minimal distribution there is evidence of this species expanding its range through this area. First treatment was conducted in 2022 through cutting and treating the stems. These areas will continue to be monitored for at least seven years and any regrowth will be treated to ensure eradication of the invasive species from site.

The University of Stirling have used Foulshiels as one of their research sites for the Restoring Resilient Ecosystems (RestREco) project. Surveys have also been conducted on the site during 2021 and 2022 to monitor invertebrates and their predation as well as soil functionality and plant productivity.

As this is a relatively young woodland, deadwood habitat across the site is limited other than occasional brash, windblown stems and chippings from previous harvesting operations.

Overall, although roe deer and grey squirrels are believed to be present, damage from animals across the site not significant at this time (2022).

Significance

The wood is important locally as an integral component of the surrounding landscape. The site's scale and composition of mixed habitat mosaic is unique within the local environment which is dominated by agricultural land holdings, urban areas and woodland shelterbelt strips. Thus, the wood also has increasing habitat value within an agricultural and peri-urban setting.

The management of the woodland supports the Trust's corporate objective of Improving the biodiversity of woods.

Although of relatively recent origin and lacking historical connection with the original natural vegetation, Foulshiels is host to considerable diversity and interest. It is the diversity of habitats in this small area and the occurrence of a very varied vegetation, with flora not usually found growing together, that makes this site very interesting.

Foulshiels contains multiple UK Biodiversity Action Plan Priority Habitat types including upland birch woodland, lowland mixed deciduous woodland, lowland meadow, purple moor-grass and rush pasture, lowland dry acid grassland, wet woodland, lowland fen and lowland heathland. These habitats are of particularly high botanical interest and should be retained rather than woodland expansion in these areas.

Opportunities & Constraints

Opportunities

To gradually remove dense stands of conifers and replace them with native broadleaved species.

Potential to replace invasive non-native Rosa rugosa with native Rosa canina (dog-rose) to perform the same role in the ecosystem without the threat of invasive species spreading in the longer term

Constraints
Discharges of iron oxides and other heavy metals from the bing often results in high levels of acidity, reducing the solubility of some minerals and therefore their availability to trees and other vegetation.

A large proportion of the site around the bing area has been covered with a layer of industrial spoil from mining operations resulting in reduced soil fertility and restricting root development in some areas.

The poor growth of conifers on the bing due to the ground conditions reduces their economic value if they were to be extracted. However, felling to recycled is not necessarily suitable for Foulshiels due to the numerous instances of fires on site. Therefore, the percentage of deadwood left on site will be limited as well as damage caused by the fire to other trees and wildlife.

Ground conditions limit access for harvesting conifer species as well as restricts suitability for species in restocking in some areas.

Access for machinery for extraction on the dome and wetland areas is limited due to damp and soft ground.

Wind throw impacts the lodgepole present in compartment 1c particularly towards the top of the bing where the trees are most exposed.

There is a lack of age diversity due to extremes of mature boundary individuals and young newly-planted areas. Opportunity to review thinning regime to enable a more complex age structure in the long term.

Natural regeneration is present in some areas but seems to be limited in species and density potentially due to the young age of the woodland. Thus, there may be a need for enrichment planting may be required in some areas.

Factors Causing Change

Frequent wind damage to conifer stands causes areas to open up overtime and increases levels of deadwood on site.

Due to the relatively young composition of this woodland there is minimal levels of deadwood throughout. This will naturally increase over time as trees age and decline. For example, as the mature beech along the edges of the woodland continue to decline and Ash Die Back develops a mix of standing and fallen deadwood will be maintained. Standing and fallen deadwood should be focused away from paths, roads and adjacent buildings for health and safety.

Fires are a regular occurrence on site and change the composition of the woodland, causing damage to trees and flora.

This activity also encourages birch recolonization in these areas but limits the availability of deadwood on site.

Rhododendron ponticum has been mapped on site in 2020. 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. Rosa rugosa has also been identified as an invasive species present on site that could spread without suitable monitoring and maintenance.

Scottish Health Protection Network (SHPN) notices have been issued in Livingston for Phytophthora ramorum which is likely to continue to spread. This could impact other areas of the site that do contain larch such as compartments 1b and 3a.

Ash die back (ADB), also referred to as Chalara, is present on site and throughout West Lothian. Whilst the proportion of ash at Foulshiels is low, there are clusters of the species throughout the site, most notably at the main entrance towards the south-east entrance. Whilst this disease may not have a significant impact on the composition of this woodland, the clusters of ash by roads or paths may require intervention if they become unsafe. Beyond these areas, declining individuals will be retained as standing/fallen deadwood for the site. 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.

Natural regeneration could result in lower percentages of open ground overtime.

Young woodland is starting to mature and trees may increase shading conditions and change the grassland composition.

Senescence of the beech and sycamore on boundaries will eventually lead to loss of mature trees and reduced age complexity of the woodland.

Long term Objective (50 years+)

The long term vision is that the site will continue to be a diverse habitat mosaic ranging from areas of open and closed canopy woodland, seasonal open water, heath, grassland and wetland. This will be achieved through allowing natural successional processes to take place only outside of the areas which have been identified as rich habitats.

At least ten percent of the site will be maintained as open ground, specifically the rides along the old railway line that runs from the west to the east of the site and in areas of diverse heathland.

The existence of non-native tree species will be accepted as an occasional feature of the canopy provided there is no evidence of threatening the species diversity present on site.

Safeguard species diversity by controlling the spread of invasive non-native species.

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

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

1) Maintain a balance of habitats and safeguarding biodiversity by:

a) Mapping areas of sensitive/high value ground flora for protection from operation works (2023)

b) Mapping high interest habitats identified by Averis' 2018 survey (2023):

i) north of compartment 1a including north western spur

ii) south east of compartment 2a

iii) compartment 2b

iv) open ground in compartment 3a

c) Retaining these open ground habitats, preventing woodland expansion in these areas by:

i) monitor regeneration expansion into open ground through drone imagery at the start and end of the management plan period for comparison (2023/2027)

ii) install markers on site of woodland edge and remove regeneration beyond these points (2023)

iii) trial transplanting the removed regeneration from these areas into the woodland compartments requiring regeneration and species diversity (particularly rowan, birch, hazel and elder) (2023-2027)

d) Removal of conifers to increase light levels for ground flora and natural regeneration (2025-2027):

i) Clear fell of Sitka spruce and larch in compartment 1b

ii) Thinning of Lodgepole pine in 1c

iii) Thinning of Larch in 3a

iv) Retain large diameter deadwood onsite from thinning operations or naturally occurring where it is considered appropriate to do so (2022 onwards)

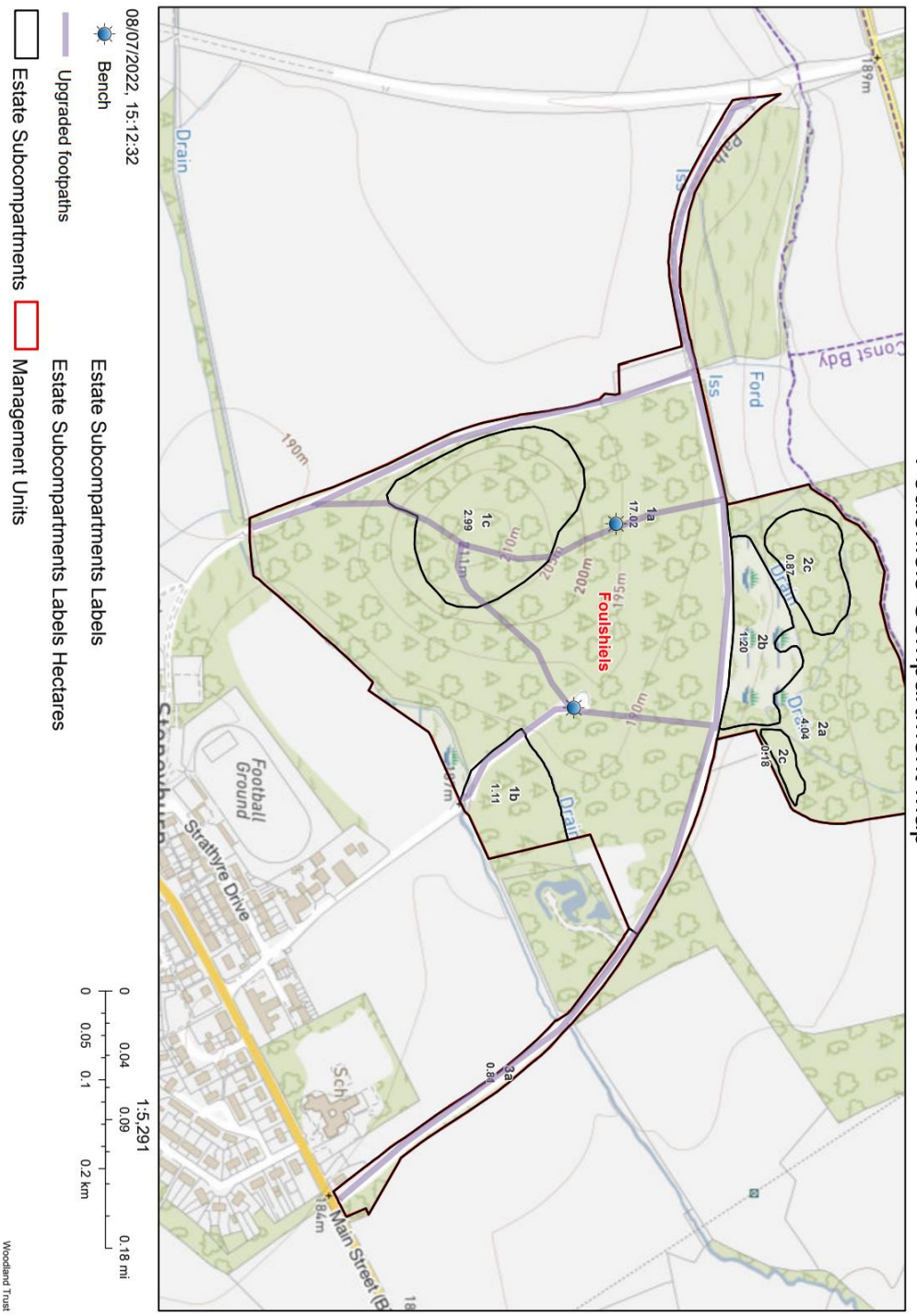
2) Safeguard species diversity by controlling the spread of invasive non-native species by:

a) Working towards the eradication of Rhododendron ponticum in compartment 1a through annual assessment of the areas. Organise follow-up treatment of spot spraying for regrowth as required (2022-2026)

b) Monitor Rosa rugosa at south western edge of the site through photo monitoring and/or drone photography onsite (2022-2026)

i) review monitoring data and consider the possible need for removal at the end of the plan period (2027)

APPENDIX 1 : SITE MAP



APPENDIX 2 : COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
1a	17.02	Birch (downy/silver)	1980	Wood establishment	Very steep slope/cliff/quarry/mine shafts/sink holes etc, services & wayleaves	
This sub-compartment consists of a mosaic of young (approximately p1980s), predominantly broadleaved woodland comprised of downy birch with some willow and alder and the occasional lodgepole pine with areas of open ground. Factors including soil deficiency, mammal damage and random illegal fire raising have resulted in a variable structure with open and scrubby areas throughout. The prolific understorey consists of juvenile downy birch with occasional willow, alder and oak. There are patchy variations: the area in the north west has proportionately more willow; the north has more oak; the east is more open with clumps of regeneration; the south contains more juvenile alder along ditches and along the western boundary willow is found in equal quantities as the birch. There is also the long narrow strip heading north west running along the line of the old railway which is open ground with occasional broom, hawthorn, rose and willow. Greater butterfly orchid and Common Twayblade is found in this area. Regeneration is abundant of predominantly birch, as well as occasional oak and lodgepole pine. Ground flora is often typical of poor and restored ground and includes grasses and heather with frequent soft rushes, tufted hair-grass, rosebay willow herb and thistles. At least fourteen species of moss occur, including Sphagnum palustre, Thuidium tamariscinum, Pleurozium schreberi, Hylocomium splendens and Pseudoscleropodium purum. There is little deadwood habitat, but some fungi occur on the ground. Epipactis helleborine is also present in the woodlands to the south west of this sub-compartment.						
1b	1.11	Sitka spruce	1980	Min-intervention	services & wayleaves, People issues (+tve & -tve)	
The sub-compartment is composed of unthinned, pole stage Sitka spruce, hybrid larch, oak and birch, and there is occasional alder scattered throughout. About 10% was felled in 2003 to encourage natural regeneration and occasional birch and willow is beginning to develop. The scattered understorey is comprised of downy birch and oak, with occasional regeneration of birch and rowan. Though very sparse under the coniferous canopy, the ground flora consists of grasses, with frequent rushes, tufted hair-grass and creeping buttercup, as well as occasional broad buckler, male and lady ferns and thistles. Honeysuckle is present in a concentrated area towards the middle of the compartment. Mosses include Polytrichum formosum, Scleropodium purum, Lophocolea bidentata, Plagiothecium undulatum and Atrichum undulatum. Fungi also occur on the ground. There is occasional dead wood in the form of brash, mainly concentrated along the edge of the power line wayleave to the south of the compartment.						
1c	2.99	Lodgepole pine	2005	Min-intervention	services & wayleaves, People issues (+tve & -tve)	

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
Covering the dome of the bing, this is an area of semi-mature lodgepole pine with a small element of naturally regenerated birch and willow. The pine is poor in form and as rooting depth is limited, the trees are prone to wind blow. Some small clearings and scalloped edges were created in 2003 by felling areas of previous windblow. The understorey is sparse due to overshading, but includes willow and birch with some lodgepole pine. There is abundant willow and birch natural regeneration in the new clearings. The ground flora is variable and dominated by Common wintergreen in places, numerous mosses, including frequent Rhytidiadelphus squarrosus and occasional Dicranella heteromalla and Hylocomium splendens. Two of the main footpaths intersect at the top of the dome.						
2a	4.4	Birch (downy/silver)	1980	Wood establishment	services & wayleaves	
An area of young broadleaves (~p1980), demonstrating vigorous growth in comparison to some parts of the neighbouring compartment, and merging with areas of open ground and wetland habitat. The canopy (60% cover) consists of mainly alder, with downy birch, willow, aspen and the occasional oak. The relatively prolific understorey (35% cover) is dominated by downy birch, with some alder, willow and oak. There is frequent regeneration of mainly birch with willow. The area contains numerous mature beech trees along former boundaries that pre-date the restoration of the site. The northeast contains patches of semi-mature, coppiced alder with a sparse understorey, creating open woodland. There are small wet flushes throughout, containing sphagnum mosses and rushes. Otherwise, ground flora dominated by grasses, with broad buckler, male and lady ferns, nettles, bilberry and dock. A small burn runs from the south to the northwest. Common Twayblade and Epipactis helleborine are also present in woodland in this sub-compartment.						
2b	1.2	Open ground		Non-wood habitat	Mostly wet ground/ exposed site	
This is a wetland area containing two small seasonal ponds to the north. The wetland flora includes rushes and cotton grass. Elsewhere herbs including greater birdsfoot trefoil and three species of orchid are amongst ground dominanted by grasses with the occasional rosebay willowherb by the track to the south. Willow scrub is beginning to encroach at the edges, and there are clusters of both juvenile and recently regenerated downy birch and willow within the subcompartment.						
2c	1.05	Open ground		Non-wood habitat		
This subcompartment is divided into two areas of open ground dominated by heather and grasses, with frequent soft rushes and occasional blaeberry. Mosses include frequent Sphagnums, Polytrichum commune and Hpynum jutlandicum. Juvenile trees including mostly birch and some willow, alder and oak provide a sparse, scrubby cover. Regeneration is frequent, dominated by downy birch but also willow and alder.						
3a	0.81	Birch (downy/silver)	1980	Min-intervention	services & wayleaves, Housing/infrastructure	

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Designations
					& Water features on or adjacent to site	
This is an access track running along the route of the former railway line, with approximately 0.1ha of young (p.80) mixed woodland next to the entrance to the southeast. The wooded area contains alder, birch, larch and Scots pine, with some ash, oak, cherry and willow. There is a sparse understorey here of predominantly hazel, rose, blackthorn and hawthorn and broom, with some juvenile rowan, Scots pine and willow. Occasional regeneration occurs, dominated by ash. Ground flora is mostly comprised of grasses, with abundant rosebay willowherb, frequent creeping buttercup and clover and occasional thistles, soft rushes, nettles, dock and ground elder. Mosses include Eurhynchium praelongum and Brachythecium rutabulum in the wooded area.						

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.