WOODLAND
TRUST SCOTLAND

Whinny Hill Wood

Management Plan
2018-2023

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MAPS

THE WOODLAND TRUST

INTRODUCTION

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

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

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

PLAN REVIEW AND UPDATING

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 Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations.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

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

WOODLAND MANAGEMENT APPROACH

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

Our strategic aims are to:

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

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

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

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

The following guidelines help to direct our woodland management:

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

SUMMARY

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

1.0 SITE DETAILS

Site name:	Whinny Hill Wood
Location:	Boturich
Grid reference:	NS397848, OS 1:50,000 Sheet No. 56
Area:	102.91 hectares (254.30 acres)
Designations:	National Park, National Scenic Area

2.0 SITE DESCRIPTION

2.1 Summary Description

This wood contains a mixture of established woodland and new broadleaf planting to create a much larger woodland of around 100 hectares. Great views of Loch Lomond from a couple of vantage points. To access the site follow signs from Balloch Castle.

2.2 Extended Description

Whinny Hill Wood is situated to the south of Loch Lomond, 2 km to the north of Balloch. The wood occupies 2 hilltops, covering both slopes of the northern Knockour Hill and the north west slopes and summit of the southern Whinny Hill. Between the hills valleys run to the south west and the north east. Altitude ranges from 80m above sea level at the public road in the south west corner to 175m a.s.l. on the eastern summit of Knockour Hill.

The site is surrounded by a mixture of open fields and mature woodland. Balloch Castle Country Park lies adjacent to the site on its south western boundary.

The geology of the area is Lower Devonian old red sandstones. These give rise to brown forest soils, with gleying especially in less freely draining areas such as level ground and hollows. There are occasional areas of humus-iron podzols on Knockour Hill. The Macaulay Land Use Research Institute climate map identifies this area as, warm rather wet lowland with moderate exposure and fairly mild to moderate winters. There is one major burn running through the site towards the north

east, into the Tullochan Burn and then into Loch Lomond. To the north of this burn there lies a pond. The hill slopes can be steep in places, especially to the north of Knockour Hill.

The woodland is quite diverse in its structure and consists largely of: (i) mixed native broadleaves planted c.2004 to replace mature conifer stands; (ii) planting and natural regeneration of birch and other broadleaves dating from felling and restocking in the late 1990s; (iii) mixed conifers consisting of hybrid larch, western hemlock and Scot's pine, most of which were planted in the 1950s and 60s. There are smaller stands of semi-mature broadleaves including ash, beech, sycamore, birch and willow, along with smaller groups of more mature, veteran trees, mainly ash and sycamore. Several areas of conifer stands still remain and there is abundant natural regeneration of both conifers and broadleaves across the site. An area of semi-improved grassland in the middle of the site within a deer fence was also partly planted in 2000 and is now well established, and interlinked with areas of open grassland.

Wind damage in the remaining conifer stands continues to be an issue, and management work in this plan period seeks to address this.

The ground flora is diverse across the site and varies with moisture and nutrient regimes and tree cover. There are several parts of the site where there are bluebells and other species indicative of long established and ancient woodland, although only small pockets of the area are included in the Ancient Woodland Inventory. There are also areas of more peaty soils on the hilltops. The grassland area in the middle of the site includes a good range of meadow flora and a large number of greater butterfly orchids and other common orchids.

Gorse colonises any open ground readily, and forms a dense understory in some of the young woodlands. The other significant habitats are wetlands and watercourses. There are several small flushes and areas of marsh and bog dominated by sedges and rushes.

The site was formerly part of the Boturich Estate. Most of the area, except Cpt 7 and the north east field (cpt 11) had been planted with conifers and belts of beech and sycamore in the 1960s. It had been designed to produce a useful timber crop and, along with the duck pond, was at that time suitable for shooting. Several areas on the southern, wetter part of the site had suffered from windblow in the early 1990s and were felled and replanted (or naturally regenerated) with native broadleaves. The Trust acquired the wood firstly as a lease (1997) and latterly as freehold, continuing the process of felling and replanting the more vulnerable conifer stands. There are a number of areas which form part of water catchments feeding into private supplies to properties on the Boturich Estate.

A breeding bird survey (1999) found a total of 36 species on the site over a two day period. Although not directly observed during the survey, there is evidence of capercaillie visiting the site - in the form of bark scratched from pine logs (and a confirmed sighting of a female on another occasion). Other birds observed on the site, which are included on the list of birds of conservation concern produced by RSPB, are skylark, song thrush, linnet, reed bunting, oystercatcher, lesser black backed gull (would not be breeding here), swallow, blackbird and starling. A large number of rooks are present but their rookery is not on the property. Buzzards are frequently seen and may be breeding on site. There is an abundant presence of amphibians within the wet areas. Other fauna includes roe deer, rabbits, grey squirrels, weasel, moles and voles. It is likely that other common fauna are also present on site.

The site is increasing well used by both local people and visitors to the Loch Lomond area. Access is promoted via Balloch Castle Country Park. There is a loop footpath route of around 3km from the car park in Balloch Castle Country Park to a view point over Loch Lomond on Knockour Hill. The path was constructed in 2005 and parts were extended and upgraded in 2011 and 2015. It is surfaced for part of its length where it crosses very wet ground, but otherwise is of compacted earth and mown grass. Due to increasing use and summers with high rainfall the section over Knockour Hill is becoming increasingly muddy, and further upgrades are planned. There is also a management access track which link to the path network from the east side of the site which is used as an informal path link for local people parking at the Blairlinnan Waterworks.

3.0 PUBLIC ACCESS INFORMATION

3.1 Getting there

Whinny Hill Wood is situated to the south of Loch Lomond, 2 km to the north of Balloch (West Dunbartonshire) and adjacent to Balloch Castle Country Park. The wood occupies two hilltops, Knockour Hill and Whinny Hill, and has a varied landscape of mature mixed woodland, developing broadleaved woodland and open grassland. There is also open ground, and excellent views over Loch Lomond from the viewpoint at the top of Knockour Hill.

The public entrance to the woodland is via Balloch Castle Country Park, where there is ample parking available. Leaving Balloch on the A811 towards Gartocharn, take the last road on the left at the end of the housing estate. Follow Mollanbowie Road which runs along the east side of the housing estate, turning left at the next T-junction. Immediately afterwards where the road turns right, go straight ahead into Balloch Castle Country Park, turning right at the first turn to find the car park just past the walled garden. From the car park, follow either of the paths north, turning right where there are Woodland Trust waymarkers and following the glen of a small burn to a gate onto a private road. The entrance to the wood is through the gate on the opposite side of the road.

By bus, Balloch is served by regular buses from the Glasow direction. There are also local services from Balfron and Balmaha via Drymen. From the Balloch Bus Terminus at Carrochan Road, the southern entrance to Balloch Castle Country Park is on the opposite side of Balloch Road. Form there, walk for 1.2km (0.75 miles) along the road through the park to reach the car park beyond the walled garden. Then follow directions as above.

By rail, from Balloch Station, walk east along Balloch Road for 450m to find the southern entrance to Balloch Country Park on your left. Then follow directions as from the bus stop above.

Within Whinny Hill Wood there are 3km (2 miles) of paths through woodland and open grassland. This includes a loop of 1.6km (1 mile) taking in the view point on Knockour Hill (passing through kissing gates to enter a deer-fenced area). From the car park at Balloch Castle Country Park the whole circuit makes a round trip of about 6km (4 miles). Some sections are stone surfaced, but most of the paths are earth or mown grass and some sections become muddy after wet weather. The gradients are generally moderate with occaisional steeper sections.

The nearest public toilets (with disabled access) are at Balloch Castle (100m from car park).

3.2 Access / Walks

Whinny Hill Wood is situated to the south of Loch Lomond, 2 km to the north of Balloch (West Dunbartonshire) and adjacent to Balloch Castle Country Park. The wood occupies two hilltops, Knockour Hill and Whinny Hill, and has a varied landscape of mature mixed woodland, developing broadleaved woodland and open grassland. There is also open ground, and excellent views over Loch Lomond from the viewpoint at the top of Knockour Hill.

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The nearest public toilets (with disabled access) are at The Old Station Building, Balloch Road, G83 8LQ

4.0 LONG TERM POLICY

The long term objective for the site is to move towards a mixed but predominately native broadleaved woodland, with associated wetland and open ground habitats to enhance the site's value for biodiversity and to provide access to the site for informal recreation on a network of maintained paths.

Woodlands

The long-term intentions for Whinny Hill Wood are to gradually replace the majority of the conifer blocks with a mosaic of native broadleaves of species suited to the site conditions. The aim is to move towards a mixed, predominantly native, broadleaved woodland with willows and alder in the wetter areas, and oak and birch in the drier areas, as well as a range of minor species and shrubs for diversity such as hawthorn, hazel, rowan & cherry. Scots pine will be retained where it is stable. The site's history as a mixed woodland is acknowledged, and other conifers (such as larch, grand fir, Norway & Sitka spruce etc) will be retained while they remain wind-firm. This approach will be achieved by adhering to the following management principles:

1. Ensuring that existing young planting is properly maintained, in particular by removal of tree shelters and deer fencing where it is no longer needed.

2. Creating new native woodland where opportunities exist.

3. Accepting natural regeneration of broadleaved species and Scots pine. It is expected that this will mainly be birch & willow. Beech and sycamore regeneration will inevitably occur and this will be accepted unless they begin to compromise the biodiversity potential of the site. In areas where confers have previously been removed any conifer regeneration will also be removed.

4. Clear-felling and restocking will be considered in confer areas where advanced wind-throw has begun or is likely to occur. In some areas that are already badly blown, but where there is good natural regeneration the blown trees may be left in place to protect the new growth from browsing and crease a deadwood habitat.

5. Managing roe deer to a level which maintains and enhances the biodiversity value of the site. This will be monitored through regular surveys of browsing levels.

6. Where large areas of planting or regeneration are required, deer fencing or individual tree protection may be required. Where deer fences are used, any vulnerable stretches are to be marked to help prevent bird strikes. Where deer fences are serving no other purpose than the protection of trees, they will be removed once the trees have become established. Where they are helping with visitor management, only the top section of the deer fences are to be removed and they will be maintained as standard stock fences.

7. Managing open areas to retain them as grassland or heathland. Wet and inaccessible areas will be left as minimum intervention unless they are threatened.

Connecting People With Woods and Trees

Both local people and visitors to the area will be encouraged to visit Whinny Hill Woods for quiet informal recreation. Access will continue to be promoted from Balloch Castle Country Park, following the loop over Knockour Hill. This will be achieved by:
Continued upgrade of the path surface and drainage to cope with changing visitors numbers and weather conditions
Improved interpretation and signage to attract visitors from Balloch Castle Country Park and direct them around the route.
Promotion via WT website, LLTNP visitor centre and other local outlets.
Management of all entrances and paths used by the public to ensure that they are safe and welcoming
Protecting areas critical to private water supplies by retaining sections of internal fencing

5.0 KEY FEATURES

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

5.1 Secondary Woodland

Description

The main part of the site consists of secondary woodland and is very varied in its composition. Much of this dates from the original planting of the woodlands in the 1960s, and some is more recent following cycles of felling (following wind damage) and either replanting or natural regeneration. There is a narrow strip of woodland classed as LEPO (Long Established of Plantation Origin) in the north part of the site (cpts 10b,d,g,h,j) although this shows little difference in character to the secondary areas, so is included within this Key Feature. There is a good network of rides that gives access to many areas, although many of these are currently overgrown with gorse.

Mature Conifers
The bulk of the site was originally planted (1960s) with productive conifers. The layout and species of the remaining blocks are very varied. In the southern part of the site (Whinny Hill) there are mixes and pure stands of larch and Scots pine. There are also some small stands and mixes of Norway spruce and Sitka spruce (although most of the spruce in this part of the site was felled in 2004 as it was not windfirm). There is sporadic windblow throughout these compartments, with particular problems in a few places (e.g. the spruce in 5a & 8b). In the northern part of the site (Knockour Hill) the ground is better drained and most of the conifer blocks are intact (cpt 10). Here there are some open woodlands of mature larch and some very dense woodland of Norway spruce and Douglas fir, sometimes on steep ground. Along the northern boundary are some complex line mixes of Scots pine, grand fir, noble fir, Douglas fir, Sitka spruce, Japanese larch and beech. Access to this area is quite difficult and the ground is steep. Amongst the mature larch on the southern slope of Knockour Hill (cpt 10f) some group felling and restocking with native broadleaves was carried out in 2000. This has established well, and although the intention was to continue this approach it is now judged to hazardous to open the stand the up further in case of windblow.

Mature broadleaves
There are some small stands of beech, sycamore & ash throughout the site, assumed to have been planted at the same time as the original conifers (1960s). These are sometimes found in small groups (e.g. 2c, 1f) or in mixtures with conifers, or more often in strips or avenues (e.g.4b, 10a, 9a). In particular many of the original conifer blocks have an edge fringe of beech. These mature broadleaves have a diversity value of their own and will be retained as long as they are stable. In places there are small groups of ash (e.g. 8a) - generally these are not showing significant signs of ash dieback, although it is affecting most of the ash regeneration.

Young broadleaves
There are significant areas of mainly native broadleaves dating from previous cycles of felling and restocking in the 1990s. Some appear to have regenerated naturally and are dominated almost exclusively by downy birch (e.g. 4h). Other were replanted c.1999 in tree shelters (e.g. west parts of 4a and 5c) and therefore have a greater species diversity (including oak, birch, rowan, alder and shrubs. However, even in the replanted areas natural regeneration of birch often forms a strong component of the woodland. Although birch regeneration seems prolific enough to establish despite the presence of deer, other species such as holly get severally browsed and cannot establish. In the planted areas the tree shelters are still in place. In some areas there is sporadic established regeneration from the previous spruce crop that was felled.

Invasive species
There is a small area (c 0.2ha) of rhododendron on the boundary in the power line wayleave in the NW corner of the site (cpt 7i). Access to this location for management is particularly difficult.

Significance

The Whinny Hill woodlands are a significant woodland feature in what is a fairly open landscape. It is a key component in the open woodland network formed by the Loch Lomond-side Woods of Knockour to the north and Balloch Castle Country Park to the west. it also lies close to the Ross Priory Forest to the east. Being situated on two hills, it is also very visible in the landscape, being part of the Loch Lomond & Trossachs national Park and designated as a National Scenic Area.

Opportunities & Constraints

Opportunities
The age structure can be gradually diversified and move towards a more diverse and native species mix.
Overgrown rides may be opened up to enable management access
Use existing windblow to protect natural regeneration
Increase ground flora and understory diversity by reducing deer numbers

Constraints
Poor access and steep ground make working some parts of the site difficult.
The presence of roe deer means that any areas for restocking or natural regeneration must protected from browsing. However, deer control is increasingly difficult as woodland cover develops, and control is dependent on control levels on surrounding land.

Factors Causing Change

- Wind damage is increasing affecting some of the conifer stands, especially Sitka and Norway spruce where the ground is wetter.
- Self-seeded spruce are become established in some of the compartment previously felled and converted to native woodland.
- Ash dieback is starting to affect the ash trees on site and is likely to result in the eventual death of almost all the ash.
- Phytophthora ramorum is currently absent, but may present a threat to larch in the short to medium term.

Long term Objective (50 years+)

The woodlands will continue to deliver significant regional landscape and biodiversity benefits. Over time the age structure will become more diverse, as the less windfirm groups of trees are restructured. The species structure will also become more diverse, with a gradual move towards a more native composition featuring both broadleaves and Scots pine. Existing non-natives will also be retained where they do not threaten the biodiversity of the site, including beech, sycamore and larch and occasional other specimen conifers where they have a value as veteran trees. The woodland will be a home for a diverse range of wildlife and flora, and an attractive destination for visitors.

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

In this plan period:
Maintain management accessibility of site:
(ii) Clear rides choked with gorse to facilitate management access (gradually over 2018 - 2022 as needed).

Manage establishment of young planting:
(ii) Remove tree shelters from the earliest re-plantings (pre-2000) where the woodlands are well-established (1f, 4a west, 5c west, 8c, 8d north). (all by 2022).
(iii) Check shelters and remove fallen/empty shelters from more recent re-plantings (2006+) - slit and leave in place those where tubes are becoming tight (4a, 6a, 8d central, 10b) (by 2020).

Prevent re-establishment of occasional spruce regeneration in re-stocked compartments:
(iv) Cut small spruce regeneration and fell larger trees or ring-bark away from paths (4a east in 2006 planting, where accessible; 4h mainly at west end; 5b; 5c west end) (2019).

Restructure conifer areas suffering wind-damage:
(v) Fell remaining spruce in 8b/5d, treat existing windblow to allow management access in this area (0.61ha). Where advance regeneration is not present in sufficient numbers plant with mixed broadleaves at 2.5m spacing (max 1000 trees) in 1.2m shelters (fell 2019, replant 2020).
(vi) Fell remaining standing spruce and larch in 8c north & 8d south (0.5ha), treat existing windblow to allow management of the site (1ha). Restock felled area with mixed broadleaves at 2.5m spacing in 1.2m shelters, c. 800 trees. Enrich existing birch regeneration in blown area with sessile oak and other minor species, c.500 trees. (Fell 2019/restock 2020).
(vii) Make safe windblow in 8d north of power line (0.5ha) to enable management access. There is currently adequate regeneration in this area such that restocking is not required (2019).
(viii) Fell unstable group of grand fir in 9a (0.05ha). Allow to regenerate naturally, as shade among surrounding beech too great for trees in shelters (fell 2019).
(ix) Fell group of larch in 9e that causes interference with the radio mast operation (0.15ha). Replant with low growing native trees and shrubs at 2.5m spacing, in 1.2m shelters, c.200 trees (fell 2019/replant 2020).
(x) Maintain all replanting by replacing dead trees and weeding until established (2020-2022).
(xi) Carry out repairs to the estate road resulting from any damaged caused by forestry or maintenance operations (ongoing).

Maintain the site in a safe condition:
(xii) Monitor mature groups of ash for signs of dieback and fell once these start to present a safety issue (8a next to phone mast and along east estate road) (annual). Accept natural regeneration if present or plant with native broadleaves as needed if absent.
(xiii) Remove derelict internal barbed wire to prevent injury to deer / visitors: 5c south of duck pond (100m); 6a/7b boundary (290m) (2018).

5.2 New Native Woodland

Description

The existing new native woodland areas were planted in 2000 on land previously pasture in cpts 7b and 7g, totalling 15.8ha. These areas were planted in a deer-fenced exclosure in vole guards are now well established and closed canopy forming an attractive thicket stage woodland with much birdlife. There is still enough light in most areas to maintain a grass sward although this will is becoming weaker as the canopy closes further. These areas are generally well-drained, and species are varied, including oak (30%) downy & silver birch (45%), plus ash, rowan, cherry, hazel and others. Most of the deer fence was removed in 2017, where it served no other purpose. The vole guards still remain on the trees. The planting of the former fields left substantial areas of open ground, between the woodland blocks, which are covered in the Semi-natural open ground key feature.

A smaller strip of new native woodland (11c, 0.75 ha) was planted in 2006 to provide a replacement for the adjacent Scots pine shelterbelt (11a) which is becoming senescent and very open in this exposed location. Trees were planted in 1.2m shelters (which remain on) and main species are sessile oak, Scots pine, ash, silver & downy birch with lesser quantities of rowan, hazel, hawthorn, goat willow and alder. The remainder of the cpt 11 field is currently grazed, although there is an intention to convert this to new native woodland, the design retaining some of the good views that are available from this part of the site.

Significance

The new native woodlands link, buffer and extend the existing mature woodlands, while integrating with open-ground habitats. They also introduce an element of species and structural diversity to the site.

Opportunities & Constraints

Opportunities
Creation of additional native woodland in the remainder of cpt 11

Constraints
Presence of roe deer means young trees need protection during establishment
To achieve species diversity planting is needed rather than natural regeneration.

Factors Causing Change

- Self-seeded spruce are become established in some of the compartments previously felled and converted to native woodland.
- Gorse is quickly encroaching in many of these areas, making management access to the planted trees more difficult. However, the gorse does not threaten the establishment of the trees.
- Ash dieback is starting to affect the ash trees on site, particularly the younger ones, and is likely to result in the eventual death of almost all the ash.

Long term Objective (50 years+)

The new native woodlands will develop into attractive native woodlands supporting a variety of birdlife and other fauna. They will contribute to a mosaic of varied age classes, species and structures across the site.

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

In this plan period:
Ensure that the new native woodlands continue to establish free from threat by:
(i) Removal of vole guards (7b & 7g, approx. 12,000 guards, by 2020).
(ii) Slit tree shelters where becoming tight but leave in place. Remove empty shelters or those with well-established trees (11c, 1200 shelters to check, by 2019).
(iii) Continue to monitor development to ensure establishment, especially re ash dieback in cpt 11c, and re mammal damage in all compartments (condition monitoring 2023)

Create new native woodland, to improve the habitat linkage to neighbouring woodlands.
(iv) Develop a planting plan for cpt 11b (2018) for planting in the season 2018/19. Planting will incorporate significant open ground and should aim to retain some of the fine views available form this location. Planting is likely to require a deer fenced exclosure, as the exposure in this location may make establishment in 1.2m tubes difficult. Manage newly planted trees with annual maintenance (beat-up and weeding) as needed until established (2019-2022).

5.3 Connecting People with woods & trees

Description

Whinny Hill Wood is an attractive location, with a variety of landscapes to offer visitors, including mature and young woodland, high forest and open ground, and some interesting ground flora.

Access is promoted through Balloch Castle Country Park. From the car park at Balloch Castle (off Mollanbowie Road) the park's woodland trails lead north, passing through an attractive wooden glen on a mixture of surfaced and unsurfaced paths, narrow in places, with occasional steps (c. 1km). After crossing an estate road via pedestrian gates, the path enters the Trusts land at Whinny Hill Wood. Once within the Whinny Hill, a surfaced gravel path lead visitors to the heart of the woodland (c 1.3km). From this point a loop route on mainly grass/earth paths takes visitors on a 1.6km loop, passing the top of Knockour Hill, where a viewpoint and bench gives views of Loch Lomond. Parts of the loop route have become increasingly muddy after wet weather with wetter summers and increased use. In all, the loop path takes 6km, starting and finishing at the Balloch Castle car park. There is no parking where the route crosses the western arm of the Boturich estate road, where there is a turning circle (with a 'No Parking' sign) that must be kept clear at all times.

There is welcome signage when entering from Balloch Castle Country Park, and there are some way-markers within the site, although these are now (2018) in need of replacement. There is no orientation board or direction signage from Balloch Castle Country Park.

Local walkers also access the woodland by parking at the end of the minor road next to Blairlinnans Water Treatment Works and accessing the woodland via the eastern arm of the Boturich estate road and a stone-surfaced track that leads southeast through the woodland to meet the path loop. The internal paths are maintained annually by strimming of paths and verges and cutting back encroaching vegetation. Other desire lines exist within the wood, although these are not maintained.

The nearest community to Whinny Hill is Balloch (2km, population c. 6000) which runs seamlessly into the other Vale of Leven towns of Jamestown, Alexandria, Bonhill & Renton (totalling c. 20,000 people of West Dunbartonshire's total of c 90,000). Drive-time analysis shows that there is a population of 126,000 within 20 minutes drive, and 1.3 million within 40 minutes drive (which would include most of Greater Glasgow). Approximately 2.5km to the west is the village of Gartocharn. It is thought that most of the people who use Whinny Hill are local people. However, the Loch Lomond area and Lomond Shores / Balloch Castle is also very popular with tourists, and these also make up a proportion of visitors to the wood in the summer months.

Most visitors are walkers, but the site is also used by runners and mountain bikers. There are 3 well-used geocaches on site. There are currently no links to other path networks (other than Balloch Castle Country Park, so most walkers follow a circular route.

Other countryside sites nearby are Ross Priory Forest (lying immediately east of Whinny Hill) managed by the Forestry Commission Scotland; and the RSPB Loch Lomond Reserve (c. 4km to the east), which has a small visitor centre. National Cycle Route 7, and the John Muir Way pass 1km to the south of Whinny Hill, the latter giving access into the Kilpatrick Hills. The nearest Woodland Trust site is Lang Craigs in the foothills of the Kilpatrick Hills, accessed from Milton, Dumbarton.

Some guided walks have been held at Whinny Hill over recent years, and a volunteer work day.

However, larger scale events have not been held due to the absence of local parking. There are currently no Woodland Trust volunteers associated with the site.

There is a primary schools at Gartocharn, and a number of primary schools in the Vale of Leven. There is also a High School (Vale of Leven) in Alexandria. However, schools engagement has not been pursued to date due to issues of access and parking.

Significance

Whinny Hill provides a significant area of public access to an attractive mixed woodland, and lies within the Loch Lomond & Trossachs National Park and Loch Lomond National Scenic Area. As a mixed woodland, its complements the more highly managed landscape of Balloch Castle Country Park to which it is linked. It is well-used by mainly local visitors, but also those visiting the area from further afield. It offers great views north west over the southern end of Loch Lomond. As such it has potential for form part of the visitor offer around Loch Lomond.

Opportunities & Constraints

Opportunities:

There are opportunities to make more potential visitors aware of the site and what it can offer by:
- Installing orientation/direction signage from Balloch Castle Country Park (BCCP).
- Producing a site leaflet for local distribution and available from dispensers at BCCP.

There are opportunities to improve the visitor experience by:
- Renewing & upgrading signage and estate furniture.
- Improving the quality of the loop section of the path route, which is becoming increasing muddy
- Improving way-marking on the loop route
- Working in partnership with West Dunbartonshire Council regarding the above.

There is potential for volunteer engagement, both through corporate volunteering and direct WT volunteers.

Constraints:
- There is no scope for on-site parking, making access difficult for less mobile visitors.
- The distance from suitable parking to limits attractiveness for school visits.
- Visitor access is discouraged in some parts of the site due to neighbours' concerns over private water supply catchments.
- There are narrow and muddy sections of path connecting BCCP with Whinny Hill that are not managed by WTS.

Factors Causing Change

The increasing numbers of visitors and a tendency towards wetter summers are resulting in path problems on the loop route.

Long term Objective (50 years+)

Whinny Hill will provide an extensive area of quiet informal recreation to a wide range of users both from the local community and from further afield. The use of the site by visitors to the area will be promoted through a positive relationship with the neighbouring tourist sites, with good signage and orientation. WT will work in partnership with Balloch Castle Country Park (West Dunbartonshire Council).

Entrances and signage will have a welcoming appearance, and there will be well maintained paths providing routes through a variety of landscapes, with viewpoints towards Loch Lomond, and linking to Balloch Castle Country Park.

There will be occasional small scale events, appropriate to the nature of the site.

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

The site will be kept in a safe and welcoming condition by:
(i) Ensure adequate entrance/exit signage and upgrade/replace estate furniture (e.g. fences, gates) where needed at all currently used entrance points (BCCP, gate near waterworks entrance, gate at phone mast (2018).
(ii) Maintaining paths and viewpoints free of encroaching vegetation (annually)
(iii) Carrying out regular safety inspections (as per site risk assessment).
(iv) Periodically put up temporary signage reminding dog-owners of their responsibilities, particularly in relation to waste, and cooperate with Kilmaronock Community Council regarding litter issues.

The visitor experience will be improved, and the path network will become more accessible by:
(v) Upgrade to the loop section of the path route (1600m), including drainage, and some surfacing where necessary (2020).
(vi) Replacement of the viewpoint bench (2020)
(vii) Installation of way-markers on the loop route, and orientation boards at BCCP car park (in partnership with West Dunbartonshire Council) and one at the path loop T-junction. (2020).
(viii) Bring desire line connecting phone-mast gate to loop route up to safe standard as grass path (2020).

More people will visit and/or be engaged with the site by:
(ix) Design & production of a site leaflet aimed at both attracting people to the site (via BCCP entrance, in partnership with West Dunbartonshire Council) and guiding & interpreting once on site. Distribution of the leaflet via LLTNP visitor centre and other local attractions (design 2020, distribution on-going).
(x) Once new way-marking and leaflet is in place, an event will be held to launch the facilities (2020). Opportunities for small-scale events will be explored (reviewed annually).

Develop volunteering opportunities by:
(xi) Developing small-scale corporate volunteering where there are appropriate management tasks (on-going).
(xii) Recruiting a volunteer warden who has an 'eyes and ears' role and can report site issues to the Site Manager (2018).

Liaison and partnership working with West Dunbartonshire Council will be essential to many of these objectives.

5.4 Semi Natural Open Ground Habitat

Description

Grassland forms an important component of the central part of the site (7c, 7e, 7i, 7h, 9.40ha total) forming a mosaic with the young woodland planting in cpt 7. These areas consist mainly of grasses and rushes. Within the sward can be found greater butterfly orchid, common spotted orchid, soft rush, jointed rush, bird's foot trefoil, sneezewort, yellow rattle and other meadow flora. Since cpt 7 was removed from grazing for planting gorse has become established, with some particularly dense thickets in the northern ends of 7e and 7c. Further south there are only scattered bushes. Although the gorse adds diversity and habitat value, if left unchecked it will continue to spread and reduce the value of this interesting grassland area.

Significance

This sheltered species rich grassland provides some of the only open ground habitat in the Woodlands and so adds greatly to the diversity. It is also unusual in the locality where most of the surrounding fields are relatively heavily grazed and/or improved.

Opportunities & Constraints

Opportunity: To maintain this area as open ground within the woodland matrix.

Constraints: Wet ground in places may make mechanical management difficult.

Factors Causing Change

Encroachment of gorse.

Long term Objective (50 years+)

In the long term, this area will continue to be managed as an attractive open meadow, providing habitat and structural within the woodland. Gorse will be present, but will be managed at a sustainable level that does not threaten the ground flora interest of the area.

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

In this plan period:
(i) Assess the management requirements (if any) to maintain the diversity of the sward (2019).
(ii) Map existing gorse cover and define a limit of gorse extension for the existing gorse thickets (north part of 7c/7e). This will be based on a maximum acceptable limit of 10% gorse cover of the compartment area overall (2018).
(iii) Prevent establishment of gorse elsewhere by controlling the scattered gorse growth in the south of the compartments 7c/7e by cutting and stump treatment with glyphosate (or overspray for smaller bushes). Estimated 20 small bushes less than 2m diameter (initial treatment 2018 - follow up 2021 if needed).

6.0 WORK PROGRAMME

Year	Type of Work	Description	Due By

APPENDIX 1: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Key Features Present	Designations
1a	1.03	Mixed broadleaves	1960	High forest		New Native Woodland	National Park, National Scenic Area
Semi-mature beech with occasional silver birch. Small group of Sitka spruce and larch with some windblow. Thick downy birch regeneration in part of open ground. Damp ground flora includes bugle and other ancient woodland (AW) indicators. Beech regeneration to 2m under the spruce.							
1b	4.46	Mixed native broadleaves	2006	High forest		New Native Woodland	National Park, National Scenic Area
Mixed broadleaves planted 1999-2006. All in 0.6/1.2m tubes on mounds, following felling of previous Sitka spruce plantation. Strong downy birch regeneration and locally some Sitka spruce regeneration. Some designed open ground. A belt of semi-mature beech on southern boundary which was thinned in 2005. Gorse is dominant with bramble. AW indicators present inc. bluebells, three nerved sandwort, pignut, wood horsetail and others.							
1f	0.97	Mixed broadleaves	1960	High forest		New Native Woodland	National Park, National Scenic Area
Stand of semi-mature broadleaves, mainly sycamore with ash, beech and silver birch scattered throughout. Approx 40 young trees in in 1.2m shelters at 1600/ha, planted 2006 following clearance of windblown conifers. There is regeneration of holly and beech. Ground flora (bluebells) and topography indicates this is a likely area of ancient woodland from which plants will colonise 1b.							
2a	0.22	Sycamore	1980	High forest		New Native Woodland	National Park, National Scenic Area
Semi-mature group of sycamore and ash - Recommend this compartment is merged with 2b.							
2b	3.85	Mixed native broadleaves	2006	High forest	No/poor vehicular access within the site, Services & wayleaves	New Native Woodland	National Park, National Scenic Area

Thick gorse with scattered mature trees; Scots pine, ash, downy birch and occasional sycamore and silver birch. Young planting (2006) 1.43 ha in south, native broadleaves in 1.2m shelters at 1600/ha following felling of conifers in 2005. Thin strip of oak & beech on southern boundary, thinned 2005. In new planting area of compartment, ground flora is blanket of bracken over tormentil, with bluebells.							
2c	0.69	Mixed native broadleaves	2006	High forest		New Native Woodland	National Park, National Scenic Area
Semi-mature dense sycamore with scattered ash, birch and larch. Gorse dominant in open ground. Southern part planted with native broadleaves in 1.2m shelters at 1600/ha, planted 2006,							
2d	0.58	Sycamore	1960	High forest	No/poor vehicular access within the site	New Native Woodland	National Park, National Scenic Area
Thin strip of sycamore with occasional silver birch and ash along boundary.							
2e	0.23	Sycamore	1960	High forest	No/poor vehicular access within the site	New Native Woodland	National Park, National Scenic Area
Stand of mature Scots pine surrounded by gorse. Reasonably stable at present.							
2f	0.62	Downy birch	1995	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Boggy ground conditions with birch and occasional rowan to late sapling stage, and significant gorse. Extensive gorse. Ground flora of jointed rush, sphagnum mosses, molinia caerula, angelica, and marsh violet with bilberry, heather and hard fern in dryer areas.							
3a	3.31	Mixed conifers	1960	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Mature Scot's pine in mix with larch, silver birch, downy birch, rowan and beech. Significant wind damage to the pine and larch in southern part, only the northern steeper & better drained sloped being really wind firm. slopes. One small stand of Norway spruce. Grasses dominant with abundant ferns & mosses. Bilberry and heath rush also noted.							
3b	1.74	Birch (downy/silver)	1995	High forest		New Native Woodland	National Park, National Scenic Area
Dominated by thick pole stage birch with established sycamore, alder, ash and occasional Sitka spruce and Japanese larch regeneration. Mature silver birch, downy birch, sycamore, Sitka spruce, Japanese larch and beech around edges. Includes some very wet areas of ground.							

3f	0.96	Mixed conifers	1960	High forest		New Native Woodland	National Park, National Scenic Area
Mixture of Japanese larch, Scots pine and beech with scattered silver birch and occasional Norway spruce. Windblow near top of hill but less on slopes to north-west. Patches of regeneration of birch, rowan, gorse and Sitka spruce. Very similar in character to cpt 3c.							
4a	1.17	Mixed native broadleaves	2006	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Planted with native broadleaves (birch, alder, oak, rowan, hawthorn, willow in 2006 in 1.2/0.6m tubes @ 2.5m spacing. Occasional Sitka spruce, Japanese larch and mixed broadleaf regeneration. Abundant gorse makes access difficult.							
4b	0.89	Beech	1960	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
A strip of semi-mature broadleaves; beech, sycamore and silver birch.							
4c	6.56	Mixed native broadleaves	1999	High forest		New Native Woodland	
Planted in 1999 with mixed broadleaves (birch, oak, alder & others) and is now at pole stage, with tubes still in place. Strip of semi-mature trees along southern edge and in several strips through the western part of the plantation; beech, sycamore and Norway spruce.							
4h	3.39	Birch (downy/silver)	1999	High forest		New Native Woodland	National Park, National Scenic Area
Stand of late sapling stage mainly downy and silver birch, with scattered beech and occasional sycamore and Japanese larch. At west end frequent pole stage and a few mature Sitka spruce.							
5a	1.07	Japanese larch	1960	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Mature stand of dominant Japanese larch with semi-mature beech. Occasional Norway spruce, Sitka spruce & sycamore. Frequent windblow in centre of compartment..							
5b	0.28	Downy birch	2010	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area

Clearfell site left to naturally regenerate. Remains (rubble) of old building by track. Frequent regeneration to pole stage of spruce and downy birch.							
5c	6.18	Birch (downy/silver)	1999	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Restock area with patchy downy birch and spruce regeneration. 60% has been restocked with native broadleaves (Willow, birch, alder, ash, oak, rowan) in 1.2m tubes@ 2.5m spacing (1999). Trees now at late sapling to pole stage. Narrow 0.05 ha ribbon of Norway spruce from previous stand in NE corner. Wet ground conditions have lead to patchy establishment, giving a natural wet-woodland habitat. Becomes particularly wet in the north near the old pond. Soft rushes, mosses, marsh pennywort abundant.							
5d	0.60	Norway spruce	1960	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Stand of mature Norway spruce, with a small stand of Japanese larch and occasional Sitka spruce either side of management track and powerline wayleave. Windblow severe in this block. Stone conduit containing burn flows under this compartment. There is some broadleaved regeneration in blown areas.							
6a	1.34	Mixed native broadleaves	1999	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Restock site planted with native broadleaves in 1.2m tubes @ 2.5m spacing, in between mature mixed broadleaves, sycamore, oak and birch (remains of a shelterbelt). Bluebell and other AW indicators present in ground flora. Patchy establishment has resulted in an open feel.							
7a	0.19	Mixed broadleaves	1960	High forest	No/poor vehicular access within the site	New Native Woodland	National Park, National Scenic Area
Small group of semi-mature/ mature Norway spruce with occasional Sitka spruce, mixed with broadleaves (mainly willow) on marshy ground. Some windblow, which may be allowed to continue as small number of trees and access difficult.							
7b	12.48	Mixed native broadleaves	2000	High forest		New Native Woodland	National Park, National Scenic Area
Planted with native mixed broadleaves (mainly oak, birch, hazel) in 2000, at 2.5m spacing with vole guards. Originally in deer fence (removed 2016). Excellent establishment, now at pole stage with closed canopy but still quite light. Abundant Greater Butterfly orchid, common spotted orchid, soft rush, jointed rush, bird's foot trefoil, sneezewort, yellow rattle and other meadow flora under trees in area adjacent to comp 7C.							

7c	2.90	Open ground		Non-wood habitat		New Native Woodland	National Park, National Scenic Area
Area of open grassland with scattered gorse, particularly at the north end. Frequent Greater Butterfly orchid, common spotted orchid, soft rush, jointed rush, bird's foot trefoil, sneezewort, yellow rattle and other meadow flora. An NVC survey (Averis 2018) is on file, which identifies botanically rich areas (in particular MG5c and to a lesser extent M23a) where there is an opportunity to restrict gorse encroachment.							
7d	0.37	Open ground		Non-wood habitat		New Native Woodland	
An area of open grassland.							
7e	3.96	Open ground		Non-wood habitat	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Area of open grassland with scattered gorse, particularly at the north end. Frequent Greater Butterfly orchid, common spotted orchid, soft rush, jointed rush, bird's foot trefoil, sneezewort, yellow rattle and other meadow flora. An NVC survey (Averis 2018) is on file, which identifies botanically rich areas (in particular MG5c and to a lesser extent M23a) where there is an opportunity to restrict gorse encroachment.							
7g	2.12	Mixed native broadleaves	2000	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Planted with native mixed broadleaves (mainly oak, ash, downy birch, hazel) in 2000, at 2.5m spacing with vole guards (similar to 7b). Excellent establishment, now at pole stage with closed canopy but still quite light.							
7h	1.82	Open ground	2000	Non-wood habitat	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Area of open grassland. To remain as open ground.							
7i	1.71	Open ground	2000	Non-wood habitat	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Open grassland. Electricity wayleave.							
8a	0.89	Beech	1960	High forest		New Native Woodland	National Park, National Scenic Area

Densely planted beech wood with frequent mature birch and groups of larch, ash and sessile oak. Some patches of regeneration of mixed broadleaves.							
8b	1.40	Mixed native broadleaves	2006	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Well established thicket-stage planting of native broadleaves (downy birch, alder, oak) in 1.2m tubes at 1600/ha, planted in 2006 following felling of conifers. There is also regeneration of birch, rowan, holly and willow, showing signs of regular browsing. Ground vegetation a mix of grasses, ferns, mosses & heather, with rare Sitka spruce regen. A boundary strip to the west consists of beech, birch and sycamore, sapling to early mature.							
8c	0.54	Alder species	1999	High forest	Mostly wet ground/exposed site, Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Wet restocked hollow (1999) with alder in 1.2m tubes @ 2.5m spacing, with birch natural regeneration.							
8d	2.54	Mixed native broadleaves	2006	High forest	Services & wayleaves	New Native Woodland	National Park, National Scenic Area
Scots pine and Norway spruce (part thinned 2005) The western part of this is unthinned early mature Norway spruce with a group of mature larch in the centre. The eastern part is (thinned) mature Sitka spruce with severe windblow, although with birch and rowan natural regeneration establishing. The eastern edge has a belt of pole stage Norway spruce, oak and mature Japanese larch, and the western edge has a narrow strip of broadleaves.							
8e	0.95	Mixed native broadleaves	1999	High forest	Services & wayleaves	New Native Woodland	
North of the power line is the remains of Norway spruce and larch, 90% blown, with a more windfirm group on drier ground in the NW. Good regeneration of downy birch and willow to sapling stage. Also some scattered tubes from a 1999 restock along the southern fringe.							
9a	0.88	Beech	1960	High forest		New Native Woodland	National Park, National Scenic Area
Beech plantation with occasional Japanese larch, birch and a group of noble fir. Ground flora generally shaded out except mosses, and no established regen. Occasional windblow in fir.							

9b	0.95	Mixed native broadleaves	1960	High forest		New Native Woodland	National Park, National Scenic Area
Damp woodland dominated by mature ash, mature and pole stage downy birch and willow, occasional mature Norway spruce and early mature beech. Ground flora dominated by mosses - sphagnum sp., polytricum sp., thuidium tamariscinum, rhytidiadelphus loreus, plagiothecium undulatum. Some wood sorrel, bugle, foxglove and bramble in drier areas. Stream flows along eastern edge by old dyke.							
9c	0.20	Ash	1960	High forest		New Native Woodland	National Park, National Scenic Area
Sapling to pole stage downy birch with mature birch, ash, Norway spruce and beech.							
9d	0.43	Open ground		Non-wood habitat		New Native Woodland	National Park, National Scenic Area
Electricity wayleave - open ground with grasses and rushes							
9e	0.36	Japanese larch	1960	High forest		New Native Woodland	
Japanese larch with occasional Scot's pine. No windblow. Split into blocks of trees by powerline wayleave.							
10a	1.84	Mixed broadleaves	1950	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Neglected beech avenue opening into bracken glade with scattered groups of mature birch and some regeneration of mixed conifers and broadleaves.							
10b	3.00	Mixed native broadleaves	2006	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Scattered birch, occasional grand and noble fir. In south, 0.45ha, young planting of native broadleaves in 1.2m tubes at 1600/ha. Planted 2006 following felling of conifers.							
10c	1.55	Japanese larch	1960	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Open stand of mature Japanese larch. Occasional sitka spruce regeneration and windblow.							

10d	0.99	Japanese larch	1950	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Restock area on ridge top, planted with native broadleaves and Scots pine . Good percentage of planted stock successful with patches of dense birch natural regen and occasional spruce and larch regeneration. Ground flora is dominated by bracken over heathland/acid grassland flora.							
10e	0.38	Mixed broadleaves	2000	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
restocked with native broadleaves (2000), planted bare on mounds inside deer fence enclosure							
10f	4.13	Hybrid larch	1960	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Stand of mature scattered Japanese larch, selectively felled and restocked with Scots pine and native broadleaves (with vole guards) inside deer fence enclosure (2000). Dense grassy sward is inhibiting any significant natural regeneration. Blaeberry on hilltops							
10g	4.50	Norway spruce	1960	High forest	Legal issues, Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Strips of various line mixtures of mature trees; beech, birch, Scots pine, grand fir, noble fir, Douglas fir, sitka spruce and Japanese larch. Two areas have been felled giving views out to the loch. These are to be retained. Some natural regeneration birch/willow. Rhododendron at west end. Blaeberry on hilltops. At east end, 0.45ha young planting of native broadleaves in 1.2m tubes at 1600/ha, planted 2006 following felling of conifers.							
10h	0.43	Mixed native broadleaves	1960	High forest	Legal issues, Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Coppiced birch, rowan and oak on hilltop surrounding trig point. Oxalis and other AW indicators abundant. Mol caer, Des flex and Dry dili frequent.							

10i	2.26	Norway spruce	1960	High forest	Sensitive habitats/species on or adjacent to site	New Native Woodland	National Park, National Scenic Area
Norway spruce plantation, with Douglas fir. Has been thinned. Small group of Japanese larch. Occasional windblow. Ground flora dominated by mosses/liverworts and oxalis with foxglove, ferns and brambles frequent.							
10j	0.83	Scots pine	1960	High forest		New Native Woodland	National Park, National Scenic Area
Strip of mature Scots pine running along contour just below ridge top.							
11a	0.92	Scots pine	1960	High forest		New Native Woodland	National Park, National Scenic Area
Strip of Scots pine on ridge. With scattered mature mixed broadleaves, 2 veteran ash. Occasional windblow with timber rotting in situ.							
11b	6.01	Open ground	2006	Non-wood habitat		New Native Woodland	National Park, National Scenic Area
Open field of improved grassland with dip containing marshy grassland between two slopes. NVC survey (Averis 2018) identified grassland of botanical interest (U4 and M23a). The whole was grazed until 2019. Identified as potential for woodland creation in areas that do not have high value ground flora.							
11c	1.18	Mixed native broadleaves	2006	High forest		New Native Woodland	
NP 2006 Mixed broadleaves now well established in 1.2m shelters at 1600/ha (0.75ha planted, 0.15ha OG).							

Appendix 2: Harvesting operations (20 years)

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2019	5d	Clear Fell	0.31	97	30
2019	8b	Clear Fell	0.30	100	30
2019	8d	Clear Fell	0.50	150	75
2019	9a	Clear Fell	0.05	200	10
2019	9e	Clear Fell	0.15	200	30

GLOSSARY

Ancient Woodland

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

Ancient Semi - Natural Woodland

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

Ancient Woodland Site

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

Beating Up

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

Broadleaf

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

Canopy

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

Clearfell

Felling of all trees within a defined area.

Compartment

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

Conifer

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

Continuous Cover forestry

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

Coppice

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

Exotic (non-native) Species

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

Field Layer

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

Group Fell

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

Long Term Retention

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

Minimum Intervention

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

Mixed Woodland

Woodland made up of broadleaved and coniferous trees.

National vegetation classification (NVC)

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

Native Species

Species that arrived in Britain without human assistance.

Natural Regeneration

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

Origin & Provenance

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

Re-Stocking

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

Shrub Layer

Formed by woody plants 1-10m tall.

Silviculture

The growing and care of trees in woodlands.

Stand

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

Sub-Compartment

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

Thinning

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

Tubex or Grow or Tuley Tubes

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

Weeding

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

Windblow/Windthrow

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