



**Sheffield &
Rotherham**



**Management Plan for
Greno Woods Nature Reserve
April 2015 – March 2022**

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Summary

Greno Woods covers 169 hectares of broadleaf woodland, coniferous plantation and heath and lies on the northern fringes of city, adjacent to Wharncliffe and Wheata woods. Purchased for the purposes of conservation, public recreation and the production of sustainable timber, the woods have been managed by the Sheffield and Rotherham Wildlife Trust (SRWT) since 2010.

Greno Woods is a semi-natural ancient woodland, and includes extensive areas of plantation of ancient woodland sites (PAWS). The history of the woodland has been traced back as far as the 13th century and a Scheduled Monument, Handlands, is also present on site, as are many other archaeological features of note. The woods are designated as a Local Wildlife Site under the Sheffield Plan and the extensive Public Rights of Way network, which includes both footpaths and bridleways, provides access across the site. Greno Woods has long been used as a place for recreation, and enjoyed by generations of Sheffielders for walking, jogging, picnicking, bilberry-picking and horse-riding. In recent years, newer sports, such as mountain-biking and orienteering have become established on site.

Greno Woods has numerous features of (biological) conservation interest, including its areas of semi-natural ancient woodland, the heathland, the ancient woodland ground flora, the population of Northern Wood Ant (*Formica lugubris*), and several birds of conservation concern. Together with adjacent Wharncliffe and Wheata Woods it forms one of the largest areas of ecologically important woodland in Yorkshire. Additionally, their age and continuity of use make the woodlands an important historical site which must be managed to ensure that their unique characteristics, so appreciated by its users, are retained.

This management plan covers the period April 2015-March 2022. Physical works contained in the plan are aimed at increasing the proportion and quality of priority habitats on the site and maintaining features of interest. Works to maintain and improve recreational infrastructure are also included. A survey and monitoring programme will be implemented over the course of the plan, providing data on ecological conditions which will inform future management works.

In addition to these physical works, the Trust plans to engage the public in the management of Greno Woods through the Grenoside Conservation Group. On site information provision will be improved, as will the promotion of the site through the Trust's website. An annual programme of events will be held to attract visitors to promote public understanding of its wildlife and history. The opportunity for volunteers to participate in practical work days will also be offered.

Through the implementation of this plan, the Trust intends to ensure the woodland remains true to the vision:

Greno Woods should be a peaceful woodland, supporting a rich diversity of wildlife, where the woodland's archaeology and history are conserved and celebrated and where people of all ages from local communities and across the city can come to enjoy a variety of recreational pursuits in a beautiful, natural setting.

1.0 Introduction

Greno Woods, located on Sheffield's northern fringe, is an area of broadleaved, mixed and coniferous woodland, 169 ha in extent. It, along with the adjacent areas of Wharncliffe and Wheata Woods, forms one of the largest woodlands in the region. Acquired by Sheffield and Rotherham Wildlife Trust (SRWT) in 2012, Greno Woods are managed for the purposes of conservation, recreation and the sustainable production of timber. The woods form part of the River Don Living Landscape area and act to combat climate change by acting as a carbon store and prevent flooding by retaining and slowly releasing rainfall.

Greno Woods is a semi-natural ancient woodland, which has survived as a distinct entity for over 700 years. As such, and despite several changes in management which have proved damaging over the last century, as well as being an excellent site for wildlife, the antiquity of the woodland demands that it be considered to be “not just a wildlife site, not just a bunch of trees, but a historic site just as important as a cathedral, or a medieval manor house or castle.” (*Mel Jones, pers.comm*). The distinct identity of the woodland and its archaeology and history will therefore be both protected and celebrated, whilst the detailed narrative of past management can be used to inform future works.

SRWT is part of a national association of 47 local Wildlife Trusts, which work with communities throughout the UK to protect wildlife in town and country.

Our vision is to see a Living Landscape – an amazing, green landscape for the wildlife and people of Sheffield and Rotherham, a landscape which is understood, enjoyed and cared for by local people and organisations. In order to fulfil this vision, we:

- i) Work to create and manage a more resilient network of natural spaces, to support a greater diversity and abundance of wildlife and habitats across Sheffield and Rotherham;
- ii) Help local people to visit, understand, enjoy, value and be inspired by nature;
- iii) Support local people and organisations take action for nature and wildlife.

1.1 Purposes and formulation of the plan

This management plan has been formulated for the following reasons:

- To provide comprehensive and cohesive information about the Trust's land holding Greno Woods in one document, with reference to other documents where necessary.
- To outline the key long-term aims and the associated objectives which form the framework of management.
- To outline the rationale for management so as to give a clear and comprehensive explanation of why aspects need management and in what form that management will take place.
- To provide a key document from which projects are developed and associated funding sought.
- To provide consistency and continuity, so that when changes of staff take place, or changes in ownership or disposal of the land occurs, then management aims, objectives and prescriptions are continued.

The work programme is set out within this document. However, the nature of work programmes is such that they vary and are modified due to unanticipated changes or developments such as the availability of funding. Therefore the full annual work programmes are kept and updated electronically at the Sheffield and Rotherham Wildlife Trust offices.

1.2 How to use this plan

This Plan is written in 11 sections; for a detailed list of contents, please refer to the **Contents** pages.

Section 1 contains the **vision statement** for Greno Woods and lists the **management aims** on which this plan is based.

Sections 2-7 contain the **site description** and, where appropriate, evaluation against key management aims.

Section 8 comprises a **Table of aims and objectives**. This describes the work that will be delivered to achieve each aim during the period covered by this management plan. The primacy of individual objectives is given as HIGH, MEDIUM or LOW. This system will be used to prioritise works when resources are limited. It is, however, our intention to deliver all objective contained within this plan.

Section 9 is the **Work programme**, which is used to schedule management works and shows when individual pieces of work will be carried out. Costings for the work programme for the first three years of the plan are given here.

Section 10 contains the **Figures** – maps and charts that support the plan and which are referred to in the text.

Section 11 comprise the **Appendices**.

Acronyms are used throughout the plan. A **glossary** of acronyms is included as Appendix I.

1.3 Vision statement and management aims

The following vision for Greno Wood was formulated in 2014 through public consultation

Greno Woods should be a peaceful woodland, supporting a rich diversity of wildlife, where the woodland's archaeology and history are conserved and celebrated and where people of all ages from local communities and across the city of Sheffield can come to enjoy a variety of recreational pursuits in a beautiful, natural setting.

To deliver this vision, the Trust has set the following aims for the management of Greno Woods:

1. To safeguard and enhance the woodland's biodiversity value by increasing the proportion of native oak woodland at Greno, prioritising areas of woodland to the north and west for broadleaf reversion.

2. To provide a source of sustainable timber, biofuel and revenue by undertaking *at least* one more cycle of conifer production (from planting to felling) in existing conifer areas to the south and west of the area of broadleaf reversion.
3. To monitor the impacts of management on the value of Greno Woods' wildlife, with an expectation that important features will increase.
4. Maintain and create areas of open ground across the woodland, for the benefit of wildlife and for people.
5. Maintain and restore the reserve's infrastructure.
6. Protect, preserve, research and communicate the reserve's archaeological and historical interest and significance.
7. Improve and maintain public access to the woods, to facilitate quiet enjoyment by all users.
8. Promote and encourage participation in the management of Greno Woods to inspire people to value and care for nature and wildlife.
9. Continue to develop ongoing sources of grant aid to support the management of the nature reserve.
10. Continue to develop productive land use and other income to support management of the nature reserve.
11. Increase public support for SRWT through our work in Greno Woods.

These aims were informed by the history of the woods, their current biodiversity value, national and local conservation and recreational strategies, public opinion (through consultation) and the Trust's own charitable aims and objectives.

2.0 Site Details

2.1 Location, extent and tenure

Greno Woods is located on Sheffield's northern fringe, straddling the A61. It covers an area of 169 hectares (418 acres) and is centred on OS Grid Reference SK 330 950 (**Figure 1**). The majority of the Trust holding (Greno Wood and Little Hall Wood) lies to the west of the A61, with Low Hall Wood to the east.

Approximately 162 hectares of the reserve comprises woodland, with the remaining 6.7 ha comprising heathland and birch scrub which has been enclosed for grazing. Sheffield and Rotherham Wildlife Trust hold the freehold, mineral and sporting rights to the property.

2.2 Landscape value and context

Greno Woods lies on the fringes of Grenoside and High Green. Together with the adjacent Wharncliffe and Wheata Woods, it forms an attractive matrix of woodland and ancient field systems which abut residential areas to the east and south. Greno Woods form the highest portion of the woodland block, with the north and western sections being visible from the M1 and the residential areas of High Green, Burncross, Chapeltown and Ecclesfield to the east. Driving northwards through the woods on the Woodhead Road or the A61 the woodlands very clearly demark the boundary between city and surrounding countryside.

Greno Woods falls just inside Natural England's Natural Character Assessment (NCA) Profile 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield. However, in landscape character terms, the woodland is more typical of the adjacent NCA Profile 37: Yorkshire Southern Pennine Fringe, as a transitional area lying between the upland Pennine block to the west and the lower-lying arable land to the east.

Greno's topography is typified by moderately steep south and east-facing slopes covered by mature trees. Views over the site are restricted by tree growth and only at the top edge of the heathland does the visitor get a sense of overlooking the site; views over the adjoining farmland from the periphery of the wood are however possible at several points. Due to the density of the tree cover, many visitors find the woods a place of solitude and peaceful contemplation and a place where they can be 'with nature' and away from everyday life.

The woodlands comprise a mixture of mature broadleaved woods and coniferous plantations, interspersed with open areas created by recent clear-fell. The broadleaved woodland is characterised by the presence of many old worked trees, a legacy of the days of coppicing. Many of these have a characteristically 'tortured' or 'medusoid' structure. The ground flora in these areas comprises a blend of species associated with heathland (heather, bilberry and fescue grasses and bracken), bramble and woodland flowers and provides a rich and varied tapestry of colour and texture through spring and summer. Coniferous areas are characterised by mature conifers evenly spaced and with a dense canopy and a more homogenous ground flora containing few flowers. Open areas typically consist of a patchwork of brambles, willowherbs and grassland with numerous young trees in plastic shelters.

A network of sandstone forest tracks or ‘rides’ runs through Greno Woods. Some of these are old holloways; routes that have linked adjacent settlements for generations. In much of the woodland these run under the tree canopy and give the visitor a sense of being enclosed by the woodland. More open rides, where a softer grading from high forest to grass/heathland is present, provide a pleasing contrast allowing the visitor to emerge periodically into the open air.

Much of the site is bounded by drystone walls but these are rarely visible from within the woodland.

2.3 Site ownership

The majority of Greno Woods has been owned by Sheffield and Rotherham Wildlife Trust since 2012, with the remaining 26ha being bought from the Esmée Fairburn Foundation in 2013. Although not solely in SRWT ownership, the woods have been managed by the Trust since 2010 and were purchase with the support of Viridor Environmental Credits, the Heritage Lottery Fund and private subscription.

2.4 Designations and policy context

Greno Woods is designated as a **Local Wildlife Site** under the **Sheffield Plan**. It receives protection from development and damage under policies G1-G3 relating to Safeguarding and Enhancing Biodiversity and Features of Geological Importance, the Green Belt and Trees, Woodland and South Yorkshire Forest.

The northern part of the woodland is listed as ancient woodland on Natural England’s ancient woodland inventory, with the remainder of the site being listed as plantation on the site of ancient woodland.

A **Scheduled Ancient Monument** (SM no. 29822) is present within Greno Woods (**Figure 2**). This area, known as ‘Handlands,’ covers 8 ha and comprises the remains of a Romano-British settlement in the woods. Any works (other than those associated with forestry operations) in this area require the consent of the Secretary of State. ‘Works’ are defined by the Ancient Monuments and Archaeological Areas Act 1979 as: demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or tipping material onto the monument. Forestry operations will be planned in consultation with English Heritage to ensure minimal ground disturbance and ensure best practise on site.

A **Tree Preservation Order** (TPO) is in force within compartment 19 adjacent to a residential area of Grenoside village. This order still allows trees to be felled if ‘under good silvicultural management’ and/or part of an EWGS approved by the Forestry Commission.

‘**Sheffield’s Great Oudoors**’ sets out the Council’s approach to green and open spaces. Under this document, the Council recognises the benefits provided by access to high quality green space to the city’s population (for health and recreation), to the environment and wildlife and to the local economy. The importance of engaging local people in the design and development of green spaces is also highlighted.

The **Public Rights of Way Improvement Plan** (2007) seeks to facilitate and develop inclusive access to woodlands, riverbanks, waters edge and urban and rural open space and ensure that all public rights of way will be safe and easy to use. It includes the following policies that are relevant to Greno Woods:

Policy 5: To identify areas of primary bridleway need. To resolve route fragmentation and establish bridleway (multi use) routes where possible.

Policy 9. To improve cycling facilities and links between existing routes/trails and further develop the cycling network as part of a sustainable transport policy and within the context of the Cycling Action Plan.

Policy 14. In areas designated for nature conservation the impact of access provision will be treated with sensitivity and with due regard to the likely effects on the fauna, flora and any important geology.

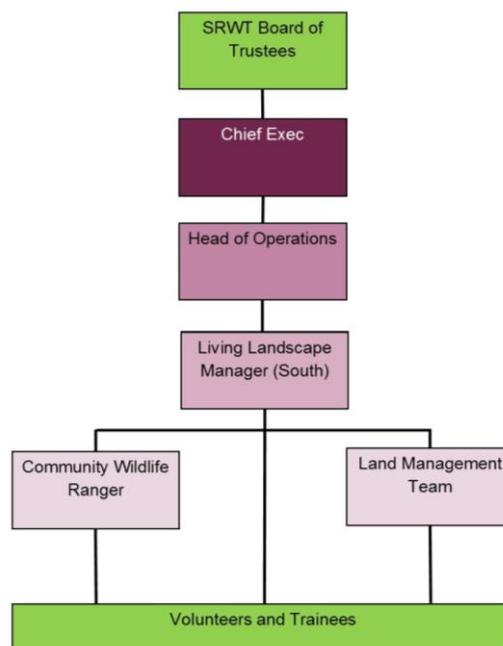
Policy 17. To provide confidence building measures and opportunities for wider path use through public education, community liaison and physical improvements.

Policy 24. To extend the network of easy-going trails.

Policy 26. To work with path user groups, landowners and occupiers, parish councils, the National Park Authority, adjacent local authorities and community groups to better focus path provision and reduce conflict.

2.5 SRWT staff structure for reserve management

The organogram below shows all staff who are directly involved with management of the site.



The Trust also employs a professional forester to oversee and manage its forestry operations at Greno.

2.6 Site safety, security and maintenance

2.6.1 Site safety

A site specific risk assessment has been written for Greno Woods and is reviewed on an annual basis. Further risk assessments are prepared for specific tasks and events at the site as necessary. The Trust also manages the reserve in line with its many detailed policies covering environmental management and Health and Safety. These are amended and updated at regular intervals or to reflect legislative changes.

Greno Woods is regularly patrolled by SRWT staff and volunteers. Any problems are logged on a spreadsheet and addressed as soon as possible. Problems and incidents reported by members of the public are also logged on the spreadsheet and are dealt with as necessary. Any known accidents or incidents that occur in Greno Woods are recorded on the relevant accident forms. An accident book is kept at SRWT headquarters.

Tree inspections for the entire site are carried out every six years, with trees adjacent to the A61 assessed every two years. Associated remedial work is undertaken as recommended by the surveyor.

2.6.2 Site security

Greno Woods' boundaries are partially marked and secured by drystone walls and fencing. Major access points to the reserve are provided with boulders, gates, squeezes and/or horse hops as appropriate, to allow access by legitimate users of the site whilst excluding egress by cars (other than management vehicles), quad bikes and motorcycles.

Deer poaching is an ongoing problem on the reserve. All reports or signs of poaching noted on site are immediately reported to South Yorkshire Police, and followed up with the Wildlife Crimes Officer. Likewise, use of the reserve by motor bikes and quad bikes is illegal, and incidents are reported to South Yorkshire Police. A programme of securing the site's boundaries to prevent the entry of vehicles will be continued throughout the course of this plan.

2.6.3 Litter, cleanliness and vandalism

No litter bins or dog waste bins are present on site, rather visitors are encouraged to take their litter/dog waste home for disposal. The installation of litter/dog waste bins has been discounted due to the cost of collections and a desire to keep the reserve as 'wild' as possible.

Fly tipping can be a problem along the periphery of the reserve, both in lay-bys, which attract fly tipping and adjacent to housing in Grenoside where considerable garden waste is tipped. Waste should be cleared quickly when reported. To combat this a programme of public education focused on the households bordering the woods will be undertaken. The use of motion-sensitive cameras in tipping hot spots will also be considered.

A dedicated patrol team visit the site once every two - four weeks to undertake regular litter picks and report issues of vandalism. A dedicated Land Management Team visit the site at least once per month.

2.7 Past and current land use

Archaeological finds and remains show that the land in and surrounding Greno Woods has long been used and modified by human activity. Using information gathered from the historic record, has been used to piece together the life of the woodland from the 15th century to the 1930s (Mel Jones, 2012). This work confirms the existence of Greno Woods for the duration of this period, with its own distinct character and history.

The first evidence of human activity at Greno was the discovery of Mesolithic flint scatter in the woodlands - at this time believed to be wild wood. The presence of the Handlands settlement dating from the Romano-British era and the remains of a fortified medieval hall show that areas of the woodland have been periodically cleared and settled through time, then left to revert back to woodland when these settlements were abandoned.

The historical record confirms that the woodland body has remained largely intact since the 1400s but has undergone substantial management and modification by man, hence its classification as semi natural ancient woodland. Records also show a change in management practise from wood pasture to coppice woodland during the 16th century (**Figure 3**).

During the medieval period, Greno Woods formed part of the estates of the de Furnival family, passing to John Talbot (later Earl of Shrewsbury) in 1410. Subsequently, the woodland became part of the holdings of the Duke of Norfolk. Much evidence can be found both in the historic record and in on-site archaeology to show that Greno was managed as a coppice woodland with standards during the post-medieval period. The coppice industries of this and other local woodlands were very much tied to the local economy during this period, with charcoal-making (used in the smelting of iron, and later, steel), bark stripping (for tanning leather), basket and clog making all utilising the wood harvested from the coppice.

During the 1800s coppicing declined at Greno and the woodland reverted to high forest, which included areas of beech (*Fagus sylvatica*) plantation.

The Forestry Commission acquired the woodland from the Norfolk Estate some time during the 1900s. The first planting of conifers occurred in the 1950s, under an incentive scheme known as Dedication, following extensive wildfires.

In 1988 Greno Woods passed into private ownership once more and was managed as a commercial woodland by Fountain Forestry up until 2010. During this period the woodlands received almost continual management including timely thinning, track maintenance, footpath creation and the construction of timber loading areas. A Woodland Grant Scheme (012004426) was in place between 2004 to 2009, encompassing an Annual Management Grant, Woodland Improvement Grants, Replanting Grants and felling / thinning licences.

Sheffield and Rotherham Wildlife Trust took on responsibility for the woods in 2010 (under a management agreement with the Esmée Fairburn Foundation), subsequently purchasing them to manage as one of their nature reserves in 2012/13.

2.8 Adjacent land ownership and use

The land surrounding Greno Woods is owned, or tenanted by a variety of private individuals and public bodies (details held at Sheffield and Rotherham Wildlife Trust Headquarters). Of particular note are Prior Royd and Wheata Woods which are owned by Sheffield City Council and Wharncliffe Woods which are managed by the Forestry Commission.

The Woods are surrounded by farmland, woodland and residential. To the south, the main agricultural activity is livestock farming and horse stabling. Better soils around the northern area allow cereals to be grown. All the surrounding woodlands are mature with those on the eastern perimeter having Ancient Woodland designation. These woodlands, including Greno Woods, are heavily used by local residents and people across the city for legitimate recreational activities and still provide saleable timber.

The responsibility for Greno Woods' boundaries is complex. Responsibility for the fence adjacent to the Woodhead Road boundary lies with Amey. In general, boundaries adjacent to farmland are the responsibility of the adjacent land owner.

2.9 Services, and site access

An oil pipeline and an oxygen pipeline wayleave runs through the woods (**Figure 4**). Hallwood House has underground utilities running through the woodland to the A61 in cpt 4b north.

The owners of 24 Woodhead Road have the right to access their property via the Trans-Pennine Trail and Greno Gate.

The owners and tenants of the fields within the south-western corner of the woods have a right of access (vehicular) from the A61 across Trust land.

The owners of the fields lying between Hall Wood and Hazelshaw Spring have a right of access (vehicular) from the Woodhead Road across Trust land.

The woodlands enjoy vehicular access via nine points from the A61, Grenoside and the Woodhead Road (**Figure 4**). The four stacking areas can accommodate and provide turning for, an articulated logging truck as shown on Plan 9.6. During wet periods there can be conflict with PROWs which are also located at these truck access points.

There is a good internal road system for forwarding timber, with stacking areas at the logging truck access points. Internal rides are concentrated in the southern area where the underlying sandstone provides good traction for forwarding throughout the year. However, most of these

rides are either definitive or permissive PROWs and are not used for forwarding during very wet periods.

There are no soft rides but harvesting machinery can operate within the woodland for much of the year with acceptable damage to the forest floor. A small number of culverts have been constructed where streams or ditches cross tracks. There are no purpose built bridges.

2.10 Public Rights of Way

A comprehensive network of footpaths and bridleways runs through Greno Woods, with numerous desire lines (non-statutory routes) that link the Public Rights of Way also present (**Figure 5**). There are approximately 5 km of Definitive Footpaths within the reserve, and 3.2 km of Definitive Bridleway.

A section of the Trans-Pennine Trail (TPT) runs through the woods from Greno Gate to Sandy Lane. This was designated and is now maintained by Sheffield City Council. The Permissive Bridleway along the woods south-eastern boundary is part of a larger route linking into Wheata (SCC) and Wharncliffe (FC) Woodlands.

2.11 Current funding schemes, income and grants

The entirety of Greno Woods is certified as being of UK Woodland Assurance Standard and is in receipt of English Woodland Grants Scheme funding covering the period 2011/12 to 2015/16. Heritage Lottery Funding, covering a programme of community engagement and educational delivery is in place until June 2015.

3.0 Environmental Information

3.1 Topography

Greno Woods lies at a relatively low altitude, ranging between 150m and 300m above ordnance datum. Its topography is typified by moderately steep south and east-facing slopes covered by mature trees.

The woods cover the upper, eastern slope of one of the gently undulating hills that surround Sheffield. The highest point of the woodlands is on the western side at an altitude of 300m where it forms a small hill top (Greno Knoll) on which there is an OS Triangulation Point. From here the ground slopes gently northeast and eastwards to an altitude of 150m at the far east of Low Hall Wood.

3.2 Geology and pedology

The Lower Coal Measures Series of the Upper Carboniferous era dominate the area. Rock types range from coal through ganister and fireclay, to sandstones, shales and other clays. The rock strata dip between 5 and 20 degrees to the north-east, becoming progressively younger in this direction.

The massive Grenoside Sandstone dominates the southern half of the woodlands (cpts 6-19). A major geological fault follows the northern edge of compartments 8 and 9 (along the main track) and is possibly responsible for the smooth escarpment edge. Further fault lines occur to the south.

The younger Penistone Flags sandstone, coal seams, shales and clays occur in the remainder of the woodlands to the north-east. Coal seams appear to have outcropped within Compartment 2.

Soils derived from the Grenoside sandstone are mostly thin, well-drained, acidic podzols which are indicative of the NVC W16 distribution seen in **Figure 14**. Brown earth soil is derived from the more basic shales and clays associated with the Penistone Flags, especially where stream action has exposed the beds as seen to the east of the A61. These soils are indicative of the NVC W10 distribution.

3.3 Hydrology

Much of the woodland is free-draining, although water does collect to form ‘boggy’ ground in areas with clay soil deposits. The majority of the site’s small watercourses are present in the northern half of the woodland. They arise as springs from beneath the north-easterly dipping Grenoside sandstone and flow in an easterly direction, forming sections of the woodland boundary (**Figure 6**) and ultimately flow into Charlton Brook and the River Don. Some of these watercourses have only a seasonal flow.

Within the Grenoside sandstone areas (cpts 6-19) these springs and temporary streams are invariably associated with the major geological fault lines. Natural springs have long been associated with the history of the area and some have been named such as Harrison Spring and Robin Hood Well. Springs and streams feed artificial ponds which were constructed during the 19th century in sub cpts 5b and 18b.

Today, four ponds exist within Greno Woods. These are Sharp’s Wood ‘Oyl which lies adjacent to the TPT at SK 333 944, the Woodstack pond (SK327 949), the Old Hall pond (SK 328 961), and a stock watering pond on the heathland (SK328 955). In addition to these, a number of wet areas associated with localised clay pans and seasonal issues are present in hollows throughout the woods.

An adjacent landowner is routinely dumping waste material into the spring and small stream which form the woodland boundary at the south of sub compartment 4b. The residential area of Charltonbrook lies 1km downstream and the Environment Agency are aware of the situation.

Temporary stream crossings are constructed during harvesting operations with plastic culvert pipes and timbers to reduce sediment run off. These structures are dismantled on completion.

3.4 Climate

Temperature	January	July
Average (Celsius)	4.0	16.6
Rainfall	January	July
Average (mm)	88	51

Local sources maintain that the average annual temperature is rising. In addition local plants are also believed to be flowering earlier on average. The rainfall in the region is approximately 800 mm per annum and summer droughts may affect soil water levels in the higher sections of the woodland.

It should be noted that the woodland at Greno, Wheata and Wharncliffe acts to ameliorate the effects of extreme weather on a local level. During hot weather, the woodland helps to temper the effect of the urban heat island created by the density of housing in the vicinity. Equally, the woodland helps to reduce the risk both of flooding and landslide after heavy rainfall. Woodlands soak up and slowly release heavy rains, with the tree roots and other vegetation binding the topsoil and preventing erosion. Additionally, the woodland, and in particular the woodland soils, act as a carbon store, therefore helping to combat climate change.

3.5 Wind

The central western area, on the highest ground, is exposed to westerly and north westerly gales. This can be seen in **Figure 7** where the ‘windiness’ range is described using DAMS (Detailed Aspect Method of Scoring).

The implications of this data for forestry operations is discussed in section 5.2.2.2.

The following sections of the plan describe in detail the background to the management plan aims and the way in which these will be developed across the lifetime of the plan.

4.0 Biodiversity

Aim 1. To safeguard and enhance the woodland’s biodiversity value by increasing the proportion of native oak woodland at Greno, prioritising areas of woodland to the north and west for broadleaf reversion.

Aim 2. To provide a source of sustainable timber, biofuel and revenue by undertaking *at least* one more cycle of conifer production (from planting to felling) in existing conifer areas to the south and west of the area of broadleaf reversion.

Aim 3. To increase the value of Greno Woods for wildlife (see also Appendix 3).

Aim 4. Maintain and create areas of open ground across the woodland, for the benefit of wildlife and for people.

4.1 Biodiversity Action Plans

Greno Woods is a site of considerable importance for wildlife due to its size, location and species composition. Its position as part of a larger woodland complex (700 hectares including Wheata and Wharncliffe Woods) allows it to support a wide variety of animal and plant life.

The Natural England priority habitats – deciduous woodland and heathland – are both present on the reserve.

A number of National Local Biodiversity Action Plan habitats and species have been recorded on site (Table 1). It should be noted that, due to a paucity of site specific data, the true number of BAP species present on site is likely to be considerably higher.

Table 1. National and Local Biodiversity Action Plan priority habitats and species that have been recorded in Greno Woods.

UK BAP Priorities	
Habitats	Species(short and medium list only)
Lowland heath	White Letter Hairstreak, Dusky Brocade
Lowland mixed deciduous woodland	Tree Pipit, Lesser Spotted Woodpecker, Tree Sparrow, Green Woodpecker, Cuckoo, House Sparrow, Wood Warbler, Spotted Flycatcher
Upland oak wood	Hedgehog

The distribution of UK Biodiversity Action Plan Priority Habitats is given in **Figure 8**.

Additional species of conservation interest

Ancient woodland ground flora: bluebell, wood sorrel, wood anemone, woodsage, dog's mercury, wood mellick, wood millet, yellow archangel, common cow wheat, opposite leaved golden saxifrage, ramsons, cuckoo pint.

- Northern wood ant
- Woodcock
- Sparrowhawk
- Nightjar and hawfinch (not currently present on site but work to encourage their colonisation will be carried out during this plan).

4.2 Habitats

Greno Woods support a number of different vegetation communities; chief amongst which are native broadleaved woodland (46.5 ha), sweet chestnut coppice woodland (9 ha), mixed woodland (19.2 ha), conifer plantation (90.1 ha) and dwarf-shrub dominated heathland. (7.6 ha) (**Figure 8**). Each community is described and evaluated below.

4.2.1 Woodland

Woodland is the dominant habitat type over the majority of the reserve. This woodland is a mixture of semi-natural broadleaved woodland, and plantation (both broadleaf and conifer) on the site of an ancient woodland (PAWS). Areas of conifer plantation are extensive, and are managed as a commercial forestry enterprise. This history of forestry has resulted in a canopy where the dominant species varies from compartment to compartment, though the compartments themselves tend to have a very homogenous canopy, especially in coniferised areas (**Figures 9 and 10**).

The structure, species composition and management regime of the woodlands which now comprise Greno Woods have changed many times over the past 1,000 years, in response to the social and economic needs of the time (**Figure 3**). This need – to change with the times – is still relevant to the woodland today. This said, the nature of woodland, the longevity of tree species and the requirement for a stable environment for many of the species it supports, suggests that a change from one system to another should, overall, be a gradual one. This plan then, sets the following long-term aims for the woodland, against which shorter term objectives and work programmes may be set and monitored:

Conifer plantation and forestry

Description

Conifer plantation is the most common woodland type in Greno Woods, covering an area of 90 hectares (54%) in 2015. These plantations were created during the 1950s following a forest fire, so the majority of the trees are currently within 10 years of reaching commercial maturity (**Figure 11 and 12**).

Corsican pine (*Pinus nigra*, YC14) and Japanese larch (*Larix kaempferi*, YC16) are dominant on the higher and lower ground respectively, but stands of lodgepole pine (*Pinus contorta*), and Douglas fir (*Pseudotsuga menziesii*) are also present. The lodgepole pine appears to be the *Pinus contorta* 'latifolia' provenance, which exhibits much better stem form than commonly seen in other plantations where *Pinus contorta* 'contorta' has been planted. Typically these conifers have been managed as single species, even-aged stands but an area of mixed corsican pine/larch is present in Compartment 15 (**Figure 9**). A small percentage of semi-mature beech and oak was present within the larch stands, some of which has been retained to lessen the landscape effect of clear-felling.

As typical in commercial forestry, the areas of conifer have little understory and an impoverished ground flora dominated by bracken (*Pteridium aquilinum*) and bramble (*Rubus fruticosus* spp) in some places, and wavy hair-grass (*Deschampsia flexuosa*) and bilberry (*Vaccinium myrtillus*) in others.

Compartment 14c was clear-felled in 2011/12 and was replanted with Scots pine (*Pinus sylvestris*) in winter 2013/14. Cpt 12b was clear-felled in winter 2013/14.

Species mix and age structure

Both Corsican pine and Japanese Larch are performing well in response to renewed thinning following a seven year lapse between 1996 and 2003. Group clear-felling of the oldest stands began in 2003 as part of a restructuring programme to achieve a more even age class distribution. Some 13 ha were felled by 2011 and restocked with Larch and 5% native broadleaf. The experimental planting of Douglas Fir was also carried out during beat up operations, with considerable success.

However, when factors such as biodiversity value, climate change predictions and the prevalence and spread of fungal disease are considered, Scots pine offers clear advantages over the above species. This native conifer supports a wider range of the British fauna than other conifer species, is adaptable to variations in temperature and rainfall and resistant to infection by *Phytophthora*. Consequently, it is judged to be the most suitable species to grow commercially at Greno over the next 50 years. For this reason, **felled coniferous areas will be replanted with Scots pine** over the period covered by this plan.

Forestry Commission guidelines do not recommend restocking with single species stands as these are too vulnerable to infection and disease, therefore a more mixed planting regime will be considered. Corsican Pine is a possible secondary species but there are risks involved with the possible infection of Red Band Needle Blight. Douglas Fir and Scots Pine may need to be considered along with a line mix of four species to cover the risk of disease. All secondary species will be thinned out over time (if conditions allow) to produce a pure crop of Scots Pine.

A projection of the species mix present on site in 2035 is given in **Figure 13**. The resulting age structure in 2035 will be a more even distribution of coniferous age classes than currently present. This structure will even-out long term timber revenues yet provide enough leeway to clear-fell crops before or after their maximum mean annual increment (MMAI) to take

advantage of better timber markets. The management prescription to achieve this restructuring is described in below under **Silvicultural Systems**.

Unfortunately the felling and restocking programme cannot make up for the small area of conifer planting between 1970 and 2000 which will leave a 30 year period of reduced final cropping following the period of this plan. Timber revenue during this period will need to concentrate on returns from conifer thinning and the removal of improved broadleaved stems through continuous cover forestry (CCF).

Wind damage

The Forestry Commission ForestGALES programme was run on the woodlands to predict at what age (and therefore which calendar year) the sub-compartments within the highest Detailed Aspect Method of Scoring (DAMS) range attained Wind Damage Risk Status (WDRS) 6, as described below :-

<u>WDRS</u>	<u>RETURN PERIOD</u> *
1	>100 years
2	100-50 years
3	50-33 years
4	33-20 years
5	20-10 years
6	<10 years

* The return period is the *average* interval between gales that will damage the crop, taking into consideration its growth rate.

The programme showed that most of the crops within the DAMS range of 15-18 have already attained a value of WDRS 6, indicating that they are most likely to suffer gale damage within the next 10 years. Vertical tree growth will further increase the likelihood of damage. In addition, the existence of wet flushes throughout the woodland increases the WDRS score and many such areas already exhibit localised windthrow (e.g. in the east of Cpt 12). Unfortunately, most of these high risk crops need to be felled later than optimal due to their sheltering effect upon the woodlands to the east. As shown in Plan 9.8, there is generally a westerly progression of clear-felling so as to prevent the windthrow of adjacent crops.

Lodgepole Pine attains WDRS 6 within the lower DAMS ranges of 13-18 due to the wind breakage of the stem rather than blowing over.

Japanese Larch and Corsican Pine within the DAMS range of 11-14 do not appear to be at risk within the lifespan of the crops, except in the few areas of predominantly wet ground conditions.

All crops at high risk will be monitored, with clear-felling brought forward where possible. It is estimated that **clear-felling will need to continue at a rate of approximately 19 ha every 5**

years to ensure that crops do not grow too far beyond their MMAI, thus becoming more liable to wind damage and disease.

Disease

Scattered areas of young larch in Greno have succumbed to suspected fungal attack by *Meria laricis* which is presenting a challenge to economic stocking. A different fungal disease of larch, *Phytophthora ramorum*, is currently spreading through the UK at the time of writing. This disease has not yet reached the Sheffield area. Should it do so, then the felling programme for larch on the reserve will need to be brought forward.

One of the major constraints on future planting regimes is the uncertainty regarding the spread of Red Band Needle Blight and *Phytophthora ramorum* across the UK, which will restrict the planting of Corsican Pine and Japanese Larch respectively.

Wildlife and recreation

The conifer-dominated areas of Greno Woods require more intensive and regular management works in the form of planting, spraying, thinning and felling than native broadleaf woodland. These operations have the potential to disturb wildlife.

During public consultation in 2014, reservations were expressed about the rate and extent of woodland management and forestry operations (both carried out to date and proposed). It was felt by many that a more gradual approach would be beneficial for the wildlife and for public enjoyment of the reserve. Unfortunately, previous patterns of planting in the 1950s and 60s, have resulted in a very even-aged coniferous canopy on the reserve, which is now of a maturity to place it at increasing risk of wind damage (see above). Consequently, the ability of the Trust to slow down conifer harvesting is constrained. However, in order to limit the disruption to the site caused by felling operations, **felling and thinning operations will be grouped and carried out on a biennial basis** for the period covered by this plan. Additionally, by spreading the felling and restocking programme over a 20 year period, SRWT will reduce the need for such intensive felling in the future.

When felling stands of conifer, care will be taken to retain fringe broadleaf vegetation on the periphery of compartments. Likewise, when replanting areas of conifers **a 5m boundary will be left between the areas of planting and the edge of rides** or the site boundary in order to retain space for a natural ecotone to develop.

During forestry operations care is taken to avoid damage and disturbance to badger setts. **Where trees favoured by sparrowhawks and other birds of prey for nesting are known, these will be clearly marked and retained, with current survey data informing this practise. Watercourses will be protected from damage and run-off during all forestry works (see Appendix II)**

It should also be remembered that, for certain of the species found in Greno Woods, conifers provide a valuable habitat and food source. Birds such as Siskins, Crossbills, Goldcrests and the Coal Tit breed mainly in conifers. The small birds living in such woodlands then provide food for predators such as Sparrowhawk, which also prefers to nest in conifers. **The mostly**

coniferous sub-compartments 6b, 6e and 16a, as shown on Figure 9 will be managed as long term conifer retentions. This is intended to add structural and habitat diversity within areas dominated by broadleaved woodland. Several bird species, which inhabit broadleaved woodland, also benefit from the winter feeding of conifer seeds. These retentions will be reviewed if the risk of windthrow increases.

The biodiversity value of coniferous areas at Greno will increase as Scots pine is introduced because this species has the greatest value for British wildlife.

The relatively low value of areas of conifer plantation for wildlife (compared to broadleaf areas) has led to these areas of Greno being targeted for the development of recreational facilities such as the downhill bike routes and orienteering trails. Although no further wide-scale development of such facilities is proposed for the period covered by this plan, the principle (that such developments be confined to coniferised areas) will be upheld in any future development.

Silvicultural system

Two silvicultural systems – clear-fell and restocking, and continuous cover forestry (CCF) - have been considered for the coniferous areas of Greno Woods. Clear-fell forestry involves the removal of single age stands of conifers and restocking by replanting young trees to form another single age block. Continuous cover forestry is a system whereby the forest canopy is maintained at one or more levels without clear-felling.

Under continuous cover, the stands in the forest are seen as the framework for an ecosystem from which timber is harvested at intervals but where other aspects such as landscape or wildlife habitat are of equal importance. The impact of the harvest on this framework is considered and the quantity of felling adjusted to ensure that the changes brought about do not impair the wider system. The use of natural regeneration is often a key component of such systems, although underplanting is allowed.

Where small patches of open canopy (caused by wind-throw) have occurred within coniferous areas of Greno Woods, these have been colonised by silver birch (*Betula pendula*) with little (sometimes no) coniferous content. Conifers do however seed into the heathland and on ride edges. Consequently, the potential to use natural regeneration within a CCF regime on this site is unclear, and it is possible that extensive restocking (at least 2500/ha) with associated weed control costs would be required. Additionally, CCF would result in a more complicated series of small production areas thereby increasing management costs.

Under clear-fell systems, many of the same considerations can be applied e.g. clear-fell areas can be important for a range of wildlife but greater homogeneity within stands and within the landscape is typical. Management in such a system is periodic but can cause great change within a short timescale (when clear-felling operations take place).

Given the need to avoid windthrow, and the Trust's aim for the production of timber and biofuel to be sustainable (and therefore revenue generating) during the course of this plan, **coniferous areas of the reserve will be managed under a clear-fell and restocking system,**

to maximise economic returns. Certain aspects of CCF will, however, be employed in the planning of felling coupes which have been positioned to take advantage of prevailing winds in an attempt to reduce restocking and beat up costs.

During the 2014 public consultation, concerns were expressed about the impact of clear-felling on the wildlife, visual amenity and ‘peace and quiet’ of the woods. Despite its apparent drawbacks, CCF would address many of these concerns, although introducing others such as the need for continuous low level woodland management activity that can appear more intrusive. Consequently, **the Trust will explore the benefits and drawbacks of moving towards CCF management of coniferous areas of the woods in the medium or long-term.**

Figure 14 shows the woodland management plan for the period covered by this management plan. This rate of felling is required for the gradual removal of the maturing coniferous plantations to comply with Forestry Commission guidelines for adjacent restocking age and landscaping. The former strategy of **clear-felling approximately 18-19 hectares of conifer (10% of woodland) within each 5 year period will be continued within this plan.** A large amount of consideration has been given to the effects of windthrow in relation to the self-seeding potential from adjacent crops. In addition the impact on landscape has been taken into account, especially for the most noticeable areas around compartments 12, 13 and 14.

The **coniferous crops will be felled slightly earlier than their age of MMAI** as there is presently no price/size advantage of stems larger than 0.8-0.9m³ and/or DBH greater than 36cm. Many felling coupes will have their adjacent crops felled within the next five year period. This will only be carried out in accordance with UKFS when the young trees are 2m in height or, for planning purposes, are between 5-15 years old.

Clear-felling operations will take place every two years to increase the parcel value and reduce the conflict between wildlife and recreational use. Conifer and broadleaf thinning operations will be carried out at the same time depending on the geographic location of the felling coupes. Coniferous crops will be thinned no earlier than five years prior to clear-felling. The practise of retaining the small percentage of semi-mature broadleaved trees present within areas of conifer clear-fell to lessen the landscape effect of clear-felling has been successful and will continue.

Most mature Japanese Larch crops fall within the area designated for broadleaves and will be restocked with sessile oak (90%), and a selection of the following: rowan (*Sorbus aucuparia*), field maple (*Acer campestre*), yew (*Taxus bacatta*), hazel (*Corylus avellana*), goat willow (*Salix capraea*), wild cherry (*Prunus avellana*), crab apple (*Malus sylvestris*) and wych elm (*Ulmus glabra*), at 2.6m spacing in 60cm shelters or spiral guards (see Broadleaved Woodland below).

Semi-natural broadleaved woodland

Description

The second largest habitat type in Greno Woods are the areas of semi-natural broadleaved woodland. This includes areas of semi-natural ancient woodland (typified by a canopy

including oak trees over 50 years of age), and areas of new planting (typified by seedling English oak (*Quercus robur*), rowan and holly (*Ilex aquifolium*) that have replaced previously coniferised areas.

The semi-natural broadleaved woodland at Greno is distributed across the north and western parts of the site. When ground flora is analysed, the majority falls within the NVC W10 (lowland oak) category, with some small areas (including the areas of broadleaf reversion) characteristic of upland oak W14 woodland (**Figure 15**). A small beech-dominated area displays characteristics of NVC W14 and has developed well, partly by virtue of the exposure of more basic shales, in cpt 2.

The species composition of this broadleaved woodland is characteristically varied. Many areas are heavily modified by the historic planting of species such as sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*) and sweet chestnut (*Castanea sativa*), which dominate the canopy in places. The oak itself is variable in form, and includes many fine examples of old worked trees (ex-coppice stools), some of which have been ‘singled’ and allowed to grow on to the canopy, as well as standard trees.

The understory is well-developed, with bramble and holly hags present throughout the woodland. Sweet chestnut is frequent, whilst hazel, goat willow and rowan are present but occasional. In non-beech areas, the ground flora is dominated by creeping soft-grass (*Holcus mollis*) with abundant bracken across many areas. Bluebell (*Hyaconthoides non-scripta*) is locally abundant, and a variety of ancient woodland indicator species including common cow wheat (*Melampyrum pratense*), honeysuckle (*Lonicera periclymenum*), wood sorrel (*Oxalis acetosella*), wood anemone (*Anemone nemorosa*), ramsons (*Allium ursinum*), wood melick (*Melica uniflora*) and dog’s mercury (*Mercurialis perennis*) have been recorded, being concentrated in relic areas of ancient semi-natural woodland (ASNW). Of these, the 6.6 ha of ASNW in sub-cpt 2b appears to be the most species rich, reflecting the greater age of its canopy (and so relative lack of disturbance) and proximity to watercourses (**Figure 9**). Relic ground flora indicative of stream side vegetation is present along the water courses within cpts 1 – 6. In areas where the holly understory is very dense, the ground flora is species poor and often absent.

A system of CCF appears to have been carried out within the ASNW areas for at least the last 30 years whereby the majority of the upper canopy has remained intact in accordance CCF management. Compartment 2b comprises 6.6 ha and was selectively thinned in 2004 and 2011 to remove non-native sycamore, beech and larch in addition to invasive saplings. Many semi-mature sycamore remain adjacent to the road and will gradually be removed. Most of this compartment, near to the streams, will be designated as natural reserves with only minimal intervention (as per UKFS) through the further removal of non-native saplings. Canopy gaps created in 2004 will need managing to ensure the regeneration of native species, including the establishment of permanent open ground.

Crown thinning was carried out in all the native woodlands between 2004 and 2015 to create gaps for natural regeneration. This included 36 hectares of PAWS restoration area, amounting to some 20% of the woodland. Mostly non-native species were removed such as sycamore

(*Acer pseudoplatanus*), beech (*Fagus sylvatica*), conifer and sweet chestnut in the form of both trees and underwood, however, the non-native species component was too high to be removed in one operation. A small amount of oak (*Quercus* sp.). (YC 4-8) was felled by singling to produce better quality final crop stems. Oak stems of average timber quality are only present within the NVC W10 and W14 areas.

Compartment 6f was planted with NBL in 2004. Regenerating Corsican pine is acting as a nurse crop but will need removing during the course of the plan.

The small clear-fell area of cpt 2a has been left to regenerate naturally following clear-felling in 2004. It may require planting if more broadleaves do not appear within the next 2 years.

In 2013/14 a 5% thin of native broadleaf areas took place in cpt 15, 16, 17 and 18. This thin again favoured oak and other locally native species. Substantial PAWS restoration was carried out in Compartments 4, 6, 15, 17 and 18 during the past five year period.

Part of the woodland is listed as Area of Semi-Natural Ancient Woodland (6.6 ha) with the remainder as PAWS (162.4 ha; **Figure 15**). As seen from the figure, much of the adjacent woodland also has these designations which must be taken into consideration when selecting PAWS restoration areas. The ASNW site represents the oldest woodland with a matrix of NVC W10, W14 and W16 woodland. For the purpose of management the ASNW area forming sub cpt 2b is designated as p1940.

Sylvicultural system

Broadleaved areas of woodland require periodic management in order for them to reach their sylvicultural and biodiversity potential. At Greno, these areas will be managed under a system of continuous cover forestry, whereby biodiversity is prioritised but where other aspects, such as landscape, recreation and timber quality are also considered. Trees of best timber form will be nurtured whilst allowing for veterans, standing dead wood and a percentage of misshapen stems. The improvement of these broadleaved stands during the period of this plan is particularly important considering that they may need to provide the bulk of timber revenue during the 30 years following on from the year 2031.

Under continuous cover, the stands in the woodland are seen as the framework for an ecosystem. Timber will be harvested at intervals, to improve wildlife habitat or increase structural regeneration by thinning, dead-wooding and (long-term) glade creation. The impact of management on this framework as a whole is considered and the quantity of felling adjusted to ensure that the changes brought about do not impair the wider system.

Whilst native natural regeneration will be the favoured option for restocking all the CCF areas, if this does not occur at densities of at least 1100 stems per ha (sph) within five years, or if such regeneration is dominated by beech, sycamore or other undesirable species, underplanting will be employed using native stock of local provenance (for species mix see below). This will be maintained until 1100 sph is achieved.

Approximately five ha of the original PAWS restoration area had a high content of semi-mature sweet chestnut and, to a lesser extent, sycamore. Further non-native trees will be thinned from these areas in addition to the removal of invasive saplings. Veteran sweet chestnut trees, of low stature, will be retained and left to die naturally, whereupon they will be made safe and remain as standing deadwood. Most of the chestnut will again be removed to ride side by either forwarder or skidder and chipped on site for the wood fuel market.

PAWS restoration

PAWS restoration work was carried out between 2003 and 2015 where large areas were selectively thinned to remove non-native trees and saplings. The initial phase of PAWS restoration, between 2004 and 2006, extended to 36 ha of mixed broadleaves through the removal of non-native species, with further restoration occurring between 2011 and 2015.

Oak was thinned and singled during these operations to promote better stem quality. This woodland was very similar to the NVC definitions of W16 and W10 with much of the associated ground flora present. As such, most of these original sites only require minimal intervention as described for ASNW above, to remove or thin out non-native and/or fast growing species and allow the oak component to develop.

Oak woodland, of a type intermediate between the lowland (W10) and upland (W16) communities, is characteristic of the Sheffield area and represents the natural vegetation community for the Greno Woods area. This type of woodland is particularly beneficial for the wildlife of Sheffield, as well as being aesthetically appealing, and is therefore the obvious choice for the 'end point' of restoration. However, Greno Woods has been managed under several woodland systems and the canopy has been modified by the addition of non-native and non-locally native species (sweet chestnut and beech). These now comprise too high a component of the canopy to be removed in a single operation. Consequently, these areas will revert to native woodland over a longer time frame than that covered by this plan.

Reversion to, and restoration of, oak woodland will continue throughout the course of this plan. This will be achieved by **thinning/cleaning areas of broadleaved woodland to favour oak, ash and other components of W10/16 woodland** and also by the **removal of conifers and replanting with oak and other native broadleaves (Figure 14).**

Planting mix

When re-vegetating areas of conifer clear-fell, **a high proportion of Sessile Oak will be included in the planting mix, along with a variety of other broadleaved species** comprising some of the following: rowan, yew, goat willow, field maple, hazel, crab apple, wild cherry and wych elm. A component of the native conifer yew would also be appropriate but, as with the above, the exact composition of any planting area should depend on local ground conditions. Holly and silver birch should not be planted – both are widespread at Greno and will naturally colonise clear-fell areas. Likewise, the planting of ash is not currently recommended due to its susceptibility to *Chalara fraxinea* and *Phytophthora* which are currently sweeping their way across Britain.

Natural regeneration

The use of natural regeneration rather than replanting may be considered preferable in areas of clear-fell with oak woodland immediately adjacent to them and within areas of mixed broadleaf woodland. The lack of rabbits within Greno Woods makes natural regeneration a realistic option with many oak seedlings already in existence prior to opening the canopy (but see below). However, in Low Hall Wood where beech is dominant in large parts of the canopy, this approach is not recommended. Bramble control is also a challenge to successful establishment following canopy opening.

Roe deer were first seen within the woodlands in June 2008 and are now established throughout the area. This population may present severe challenges to regeneration within the woodland, with the browsing of broadleaved planting already visible in sub-cpt 6f. However, with an increase in the deer population has come an increase in poaching and it is not, at the current time, possible to establish whether the Roe population is increasing to problematic levels or verging upon extinction – and this is a situation that may alter rapidly. Deer control measures are already in place on adjacent land holdings and this too may impact on the population size in Greno Woods.

The Trust is working with South Yorkshire Police to prevent poaching, and hunting of deer with dogs, within Greno – for both wildlife and public safety reasons. Additionally, the impact of browsing on regenerating tree stock will be monitored over the course of the plan.

Streamside vegetation

A 3-5m riparian zone either side of water courses will be maintained as a natural reserve with minimal intervention to remove non-native saplings. Remaining coniferous trees within these zones may be removed, if circumstances allow, in accordance with UKWAS minimal intervention guidelines. The riparian zones in many areas will be greater than 5m due to steep gullies. The presence of wet flushes will be reviewed during the course of the plan and addressed through the allocation of broad leaf planting and open ground during conifer restocking operations.

Non-native broadleaves

Beech is a locally non-native species which also casts a dense shade, suppressing the understory, ground flora and regeneration of other tree species beneath its canopy. For this reason it tends, in time, to dominate oak woodland causing the loss of diversity in canopy, understory and ground flora alike. However, mature beech trees provide food for a variety of birds and mammals, particularly in good mast years, as well as supporting a good fungal community.

Early research suggests that beech will fare well if the climate of the UK warms over the coming century, moving the natural distribution of this species to the north. For this reason **a beech element will be retained at Greno** (particularly in compartments 1, 2 and 19) **but not be allowed to increase, and beech will be targeted and selected against during thinning operations to prevent this.**

Sycamore is currently present in many compartments throughout Greno Woods. This non-native species supports a high biomass of invertebrates, as well as providing large amounts of leaf litter for detritic communities. Conversely, its tendency to dominate woodlands with its heavy canopy and prolific seeding makes it a long-term threat, which can undermine native species such as oak and rowan and structural diversity by suppressing the development of an understory. Any domination of sycamore over parts of Greno Woods is therefore considered to be unfavourable and **sycamore will be selected against during thinning operations**, with a (possible) view to its ultimate removal from the reserve.

Sweet Chestnut is well established throughout Greno Woods. This species is native to southern Europe and North Africa but, as with sycamore, is now naturalised into the UK. The flowers provide an important source of nectar and pollen to bees and other insects. A large number of micro-moths feed on the leaves and nuts, which are also enjoyed by squirrels. However, its rapid rate of establishment and growth, which makes it ideal for coppice, means that it can outcompete slower growing species such as oak.

It is thought that **sweet chestnut** will fare well if the climate of the UK warms over the coming century, although its susceptibility to the fungus *Cryphonectria parasitica* (chestnut blight), which is active in the south of the UK at the present time, may limit this success in the future. Nevertheless, it **constitutes an important and attractive component of the woodland at Greno and will be retained**, although action will be required on a compartment by compartment basis to ensure that it does not prevent the establishment of the slower growing oak.

Rhododendron is occasional in the understory of Greno Woods. Its growth form and habits are such that it forms an invasive monoculture, which, if unchecked, will spread completely through woodland. For this reason **rhododendron will be removed as soon as it is encountered**.

Holly

Holly is a native British understory shrub that is widespread through Greno. Historically, it would have been cut to provide winter feed however this practise has long since stopped. Without management Holly is coming to dominate quite large areas of several compartments in the woodland, to the detriment of other understory and ground flora species. This is particularly the case under the beech canopy, where holly is one of only a few species that can tolerate the heavy shade. Conversely however, the dense hags are favoured as nesting sites for many of the reserve's songbirds.

The spread of holly will be checked at Greno. Where old hags exist these will be retained for their historic value and conservation interest, but the spread of young growth in areas with rich ancient woodland ground flora will be removed before it becomes established.

Deadwood habitat

In the UK up to a fifth of woodland plants and animals depend on dead or dying trees for all or part of their lifecycle and many of these species are rare or threatened. The current dead wood resource in Greno's woodlands is low (standing dead wood) to moderate (fallen dead wood). It

is therefore recommended that opportunities to increase the deadwood provision on the reserve are taken as they present themselves, in areas away from paths and Public Rights of Way (see also section 4.1)

Sweet chestnut coppice

A 3.9 ha area of abandoned sweet chestnut coppice is found in cpt 17 (**Figure 9**). Whilst previously supporting a varied ground flora including many woodland flowers, the density of growth reached by this area has resulted in a sweet chestnut monoculture with a sparse or absent ground flora.

The Trust is reintroducing a management regime of coppicing with standards to this area, to which end it has been nominally divided into 10 compartments or coupes of approximately 0.26ha. The sweet chestnut within these areas will be coppiced in rotation, with oak/birch retained as standards. Two of these were re-coppiced in winter 2013/14 and one in 2014/15. A further six coupes will therefore be coppiced within the period covered by this plan.

This area of coppice woodland is intended to provide an open habitat for wildlife, in contrast to the areas of high broadleaf forest that will (eventually) surround it. It will also provide a working example of the historical management system under which Greno Woods was managed for centuries, as well as providing a steady revenue stream through the production of timber. The length of rotation has not yet been decided but will be between 15 and 30 years, depending on the coppice products for which markets are found.

Broadleaved plantation

Two areas of mixed broadleaf plantation occur at Greno, as two main blocks in cpt 17 and one in cpt 7. (**Figure 9**). These comprise native broadleaves plus a high proportion of beech and sweet chestnut. Their understory is often dense, and dominated by holly hags. The ground flora is generally poorer than in native broadleaved areas and, in areas where the beech growth is densest, is almost totally suppressed.

These areas were crown thinned at the same time as the adjacent native woodland was selectively felled to create regeneration gaps (2004 and 2006).

As discussed previously, beech is a non-locally native species which also casts a dense shade, suppressing the understory, ground flora and regeneration of other tree species beneath its canopy. For this reason it tends, in time, to dominate oak woodland causing the loss of diversity in canopy, understory and ground flora alike. However, mature beech trees provide food for a variety of birds and mammals, particularly in good mast years, as well as supporting a good fungal community.

Early research suggests that beech will fare well if the climate of the UK warms over the coming century, moving the natural distribution of this species to the north. For this reason **a beech element will be retained at Greno** (particularly in compartments 1, 2 and 19) **but not be allowed to increase and beech will be targeted and selected against during thinning operations to prevent this.**

Mixed conifer and broadleaves

Several areas of Greno are wooded by a mixed canopy of coniferous and broadleaved species. This woodland type is represented by a range of age classes with the dominant species being larch and beech with sweet chestnut and pine (**Figure 9**). Their ground flora is generally poorer than in pure broadleaved areas and in areas where the larch growth is densest (such as Low Hall Wood) is almost totally suppressed.

The areas of mixed broadleaf in cpt 15 and 16 were thinned out to remove conifers during the winter of 2013/14.

Compartments 15 and 16 will act as a diminishing amenity buffer between the pure conifer and broadleaf areas. **These areas will be thinned heavily to favour native species** where possible, with the canopy gaps allowing natural regeneration. Elsewhere the removal of the chestnut will be carried out gradually under Continuous Cover Forestry (CCF) as part of the PAWS restoration programme.

The small area of pure beech in cpt 18b will be retained to add diversity to the area and provide a more dramatic backdrop to the wood 'oyl.

The plan allows for the removal of conifers from areas of mixed broadleaves through CCF. Approximately 19ha of the remaining mature larch stands in cpts 1-7 contain varying proportions of beech and, to a lesser extent oak. Such woodland is associated with bluebells and the beech/oak component occurs at between 60-130 stems per ha. Those areas for felling within the 2011 plan with broadleaved densities < 100 stems/ha were described as clear-felling whereas those in this plan, with > 100/stems ha, are described as selective felling within the long term CCF management of the beech / oak overstory. Following the removal of all the larch, an assessment will be made of the retained beech and oak trees to see which ones will realistically survive future wind and light exposure damage. Those broadleaves which appear too weak will be felled.

Prior to clear or selective felling, thinning operations will continue within these stands to favour all broadleaves of best form.

Restocking will be carried out within all plantable gaps, with NBLs at 2.6m spacing in 60cm shelters or spiral guards (moving to 1.2m shelters will be considered if deer browsing is causing too much damage). Although the FC planting grant requires trees to be at a maximum spacing of 3m, it is considered better practice to plant at a closer spacing to benefit both tree form and timber quality. Consideration must be given to the height of the retained broadleaves and some gaps may be too small to warrant planting. The planting mix will be as for PAWS restoration areas (see above)

4.2.2 Heathland

7.6ha of heathland is present in cpt 10c (**Figure 15**). This heathland is co-dominated by heather (*Calluna vulgaris*), with bracken (*Pteridium aquilinum*) and silver birch. Oak (*Quercus* sp.) saplings are frequent across the heath and some willow and pine are also present. Wavy

hair-grass grows amongst the heather, and bilberry is found in patches across the area. Gorse, broom, raspberry and bramble are also present in small amounts along the southern edge of the heath.

The heathland was traditionally one of the strongholds for Greno's population of Northern Wood Ant, but its value as a habitat has declined over time as the height of the heathland vegetation has increased and as scrub has encroached the area, resulting in a more shaded environment for the ants.

Lowland heathland is a priority habitat in both Sheffield and the UK. The heathland at Greno cannot be said to be truly lowland in character, nor is it upland but rather an intermediary form typical of the Sheffield area. Regardless, this habitat supports a community of plants and animals that require more open conditions than those found in the adjacent woodland. Equally, in the context of Greno, this heathland has additional value due to its difference from the other habitats present on site and should therefore be retained.

This area of heathland was formed following the incidence of forest fires during the 1950s, then began the succession back to broadleaved woodland during the 1960s and 70s as increasingly large numbers of birch and sweet chestnut seedlings took root. A first attempt at scrub clearance occurred between 2004 and 2006, and bracken was controlled during the same period. Subsequently, management of the heathland ceased again until 2011. At this time the heathland was enclosed by stock fencing (with a view to future grazing) and scrub and bracken control began again and continue to the present day.

Currently the majority of heather on the heath is in the over-mature/senescent stage of its life-cycle. This makes it vulnerable to succession to bracken and scrub and the density and height of the vegetation on the heath as a whole makes it unsuitable for use by ground nesting birds and limits the amount of habitat actually available for species such as wood ant.

SRWT will put the heathland under conservation grazing, during the course of this plan, to retain its open character. Cattle are preferred for this area, although mixed grazing by cattle and sheep will be considered if necessary. Poaching action by grazing animals will also improve the establishment of heather and other plants by creating slots in the turf. Trampling by cattle can also help to break up bracken beds. A stock watering pond has already been created on the heath, and **a gravity-fed water pipeline will be installed during the course of this plan**, to safeguard its water levels.

The control of birch regeneration and bracken are the greatest management challenges in preserving the heathland on site. If these can be controlled, the heather will regenerate through layering and open grassy areas will take the place of bracken beds (and eventually cede to pioneer bilberry and heather). **Manual/chemical control of bracken and scrub will continue for at least the first half of this plan, until conservation grazing is well established.**

An opportunity exists to extend the heathland area of the site following felling works in an adjacent compartment 10a in 2017/18. **This compartment will be added as an extension to the heath bringing it up to an area of 10ha**, thus making it large enough to support species

such as Tree Pipit (*Anthus trivialis*) and Nightjar (*Caprimulgus europaeus*) – see also section 4.3.5.

4.2.3 Rides, glades and open ground

The woodland's open ground takes the form of heathland, and also rides, tracks and vistas which are managed as non-woodland habitats. Temporary areas of open ground are also created by clear-felling operations.

The edges of rides, particularly those that are wider and not under a full canopy, provide a valuable habitat for a wide variety of plants and animals. Here the ruderal vegetation, scrub and grassland forms an ecotone between the high forest and bare ground of the tracks. These ride sides are particularly important for species such as hairy wood ant which utilise south facing banks for their nests.

In order to preserve their open aspect, rides require periodic management and, in places, the control of invasive species such as bracken. Management will involve the coppicing of scrub, bracken pulling or spraying (particularly in the vicinity of wood ant nests) and strimming, all carried out with the intention of preserving open ground, although areas of bracken will be retained to provide structural diversity. The timing of this management will be such that disturbance to invertebrates is minimised.

A rolling programme of ride side management will be carried out year on year throughout the plan, with particular emphasis on rides adjacent to the heathland and Trans-Pennine Trail (TPT). Ride sides will be widened following felling operations, with new planting being set at least 5m back from the edge of paths.

The reintroduction of coppicing in compartment 17 will create a network of glades on site. Given the large amount of clear-felling happening across the site (providing temporary glades and clearings) additional glade creation will not be carried out at this time.

The creation of temporary clearings through forestry operations provides an excellent opportunity to attract ground nesting birds such as woodcock and nightjar to the reserve. In order to be utilised by nightjar, **clear-fell areas will be windrowed to leave strips of bare ground at least 3m wide between adjacent rows, with bracken control if necessary.**

Two small 0.1ha vistas were created in 2004 in sub cpts 6d and 8b. **These will be retained throughout the period of this plan.**

4.3 Species

Aim 1. To safeguard and enhance the woodland's biodiversity value by increasing the proportion of native oak woodland at Greno, prioritising areas of woodland to the north and west for broadleaf reversion.

Aim 3. To increase the value of Greno Woods for wildlife (see also Appendix 3).

Aim 4. Maintain and create areas of open ground across the woodland, for the benefit of wildlife and for people.

4.3.1 Fungi

No systematic study of the wood's fungal communities has been carried out. However, recording through fungi walks and surveys, plus historic records, show that Greno supports a diverse array of woodland fungi. This diversity can be supported by good woodland management practise, including the creation of more standing and fallen dead wood.

4.3.2 Fish

A small shoal of trout has been previously recorded in Low Hall Wood but disappeared following heavy rainfall.

4.3.3 Invertebrates

The invertebrate fauna of Greno is not well understood and (with the exception of its northern wood ant population) has not been the subject of systematic survey. From what is known from casual recording over the years, the species found are typical of the geographic region and habitats present on site. Given Greno's size, antiquity and surroundings, and the recording of other adjacent woodlands such as Wheata, it is not unreasonable to suppose that the woodland is an important habitat for a wide variety of woodland insect life. However, its lack of veteran trees and dead wood habitat will limit the presence of the saphrolytic specialists often associated with ancient woodland.

The Northern Wood Ant, a carnivorous ant that lives in colonies, is widespread throughout Greno Woods though only occasional on other sites in the region. This species was historically used by game keepers to reduce insectivorous pests and it is possible that the population at Greno is the result of one such introduction.

The Northern Wood Ant population has been surveyed on two occasions in recent years (1984 and 2012, Sorby Record) and the general distribution and number of nests was not found to have altered between the two surveys. **A further survey is planned for 2015, to assess the effect of the current programme of management works on the ant population.**

Northern Wood Ants have a specific association with Common Cow Wheat which is also found at Greno and whose seeds they help to spread. They also cater for the needs of the Shining Guest Ant, a UK BAP Priority species previously recorded at Greno. They also form a major component of the diet of Green Woodpecker. This network of interactions makes them a keystone species for the woodland.

This ant does not have many natural predators, rather its national decline is due to its habitat being destroyed by urban and industrial development. At Greno, the greatest threat to the population comes from the loss of sunny spots in the woodland and along rides where ants create their mounds. **The loss of these spots, through dense canopy/understory cover or the scrubbing up of ride sides, will be countered by the programmes of woodland, heathland and ride management works detailed elsewhere in this plan. Particular care will be taken in woodland areas where ants are present after clear-felling operations when bracken growth can swamp out existing nests.**

In general terms, woodland management practises that promote structural and botanical diversity will benefit many woodland invertebrates. Dense bramble clumps in sunny locations are of particular value and should be retained, where this is compatible with the resident ant population. **A rolling programme of ride management and scalloping the woodland edge will also create valuable habitat for butterflies and wood ants.**

Further invasion of the woodlands by beech, holly, sycamore and rhododendron will be prevented. Dead wood, and in particular dead standing and fallen trees, will be retained on site wherever possible, as they provide a primary habitat for species such as the wood-boring beetles, and a secondary habitat for fungal-feeding species, whilst the development of water-filled rot holes in tree trunks benefit hoverflies such as *Myathropa florum*. **The discreet creation of habitat piles, using brash produced by woodland management, will be encouraged,** as these piles provide a valuable habitat for many invertebrates, such as spiders. The retention of large pieces of dead wood in more open areas, such as woodland glades or moorland areas, is of particular benefit to several invertebrate groups. However, brash piles should not be retained within heathland areas, due to the risk of fire.

White-letter Hairstreak (*Satyrrium w-album*) has been recorded in Greno Woods in recent years, though little is known about its extent and distribution. This elusive butterfly is often under-recorded due to its preference for woodland canopies, and is rarely spotted at ground level. Elm is the sole foodplant of the caterpillar, consequently this species suffered a national decline as a result of Dutch elm disease in the 1970s and early 1980s.

This butterfly forms discrete colonies which are sometimes very small containing only a few dozen individuals. Colonies are typically focused on a small clump of trees or even an individual tree. **SRWT will work to increase the proportion of Wych Elm at Greno Woods, by including it in woodland planting mixes, to support this species.**

It is hoped that the increase in open ground will attract greater butterfly numbers which have decreased in and around woodland habitats over recent years.

4.3.4 Amphibians and reptiles

Little is known about the herpetofauna of Greno Woods, although Common Frog (*Rana temporaria*), Common Toad (*Bufo bufo*), Common Lizard (*Zootoca vivipara*) and Grass Snake (*Natrix natrix*) have all been recorded. The generally dry nature of the site limits its habitat potential for amphibians, although its ponds may be used for breeding. Common Lizard are occasionally seen on ride sides, particularly adjacent to the heath. Grass snake is rarely recorded but is thought to favour areas near ponds where their prey (amphibians) are to be found. No newt species have been recorded on site although Palmate Newts (*Litotrichon helveticus*) are present at adjacent Wharncliffe.

Information about the diversity and extent of the site's herpetofauna will be gathered during the course of this plan. The pond at the Woodhead Road woodstack will be dredged to improve it as a breeding ground for amphibians. The walls of Sharp's Wood 'Oyl will also be repaired and suitable aquatic vegetation introduced to improve its potential as a suitable breeding habitat. The management proposals contained elsewhere in this plan should prove beneficial to the reserve's herpetofauna.

4.3.5 Birds

No systematic breeding bird or general bird survey has been carried out in Greno Woods in recent years, so what is known about the reserve's avifauna is based on casual records. From these it can be seen that the reserve supports a diverse range of woodland birds, including species such as Great Tit (*Parus major*), Coal Tit (*Periparus ater*), Blue Tit (*Cyanistes caeruleus*), Long-tailed Tit (*Aegithalos caudatus*), Blackbird (*Turdus merula*), Wood Pigeon (*Columba palumbus*), Tree Creeper (*Certhia familiaris*), Nuthatch (*Sitta europaea*) and Great Spotted, Lesser Spotted and Green Woodpeckers (*Dendrocopos major*, *D. minor* and *Picus viridis*). Jay (*Garrulus glandarius*) are common in areas of broadleaved woodland. Bullfinch (*Pyrrhula pyrrhula*), a shy bird favouring dense undergrowth, has been recorded in Low Hall Wood and may well be present across the woodland.

Between April and October, the woods support populations of summer migrants, including Blackcap (*Sylvia atricapilla*), Chiffchaff (*Phylloscopus collybita*) and Cuckoo (*Cununculus canorus*). Conifer specialists such as Crossbill (*Loxia curvirostra*) are regularly recorded during the winter months.

The past 60 years have seen increasing afforestation across the Sheffield area. In consequence, and in comparison to those species of upland meadows, heathland or wetland, the city's woodland bird population is generally doing well, with the populations of most woodland species stable or increasing. Exceptions which are recorded in Greno Woods include the following species: Common Cuckoo, Tawny Owl (*Strix aluco*), Dunnock (*Prunella modularis*), Redstart (*Phoenicurus phoenicurus*), Spotted Flycatcher (*Muscicapa striata*), Willow Tit (*Parus montanus*), Tree Pipit (*Anthus trivialis*) and Tree Sparrow (*Passer montanus*), all of which have suffered declines over the past 30 years.

Redstart, Willow Tit and Tree Sparrow have not been recorded in the woodland since 1985. Consequently, no specific actions for these species are to be undertaken until their presence in

the area is reconfirmed through survey. Bird species for which specific actions are planned are listed below, with further detail given in the following text.

Table 2. Birds of conservation concern for which specific actions are planned

Bird Species	BTO birds of conservation concern status	Action
Lesser Spotted Woodpecker	Red listed	<ul style="list-style-type: none"> • Creation of standing dead wood • Broadleaf reversion
Tree Pipit	Red listed	<ul style="list-style-type: none"> • Heathland management and expansion
Nightjar	Red listed	<ul style="list-style-type: none"> • Management of clear-fell areas to provide strips of open ground. • Heathland management and expansion
Hawfinch	Red listed	<ul style="list-style-type: none"> • Broadleaf reversion, introduction of wild cherry, hornbeam and yew into planting mix.
Spotted Flycatcher	Red listed	<ul style="list-style-type: none"> • Preservation of a diverse woodland structure including well managed rides and glades.
Cuckoo	Red listed	<ul style="list-style-type: none"> • Broadleaf reversion and heathland management will benefit host species, thereby supporting Cuckoo numbers.
Woodcock	Amber listed, long term decline in Sheffield area	<ul style="list-style-type: none"> • Instigation of woodland zones, to provide quiet areas of woodland. • Clear-felling and coppicing to provide open areas suitable for breeding.
Sparrowhawk	Green listed, Greno Woods is recognised as an important site for this species.	<ul style="list-style-type: none"> • Recorded nest sites protected from felling during clear-felling operations.

Lesser Spotted Woodpecker is present at Greno and in adjacent Wheata Woods although the size of the population in the area is unknown. This species has suffered large population declines nationwide and in Europe over the latter part of the twentieth century and is red listed as of being of high conservation priority.

Lesser Spotted Woodpecker numbers have risen in Sheffield in recent years, bucking the national trend. The species is strongly associated with broadleaved woodland, and will therefore benefit, long-term, by the broadleaf reversion work carried out in this plan. In the short-term, the creation of standing dead wood across the woodland will benefit this species by increasing its nesting and feeding habitat.

Tree Pipit have been recorded on the heathland at Greno. This species, which has declined in the Sheffield area (and nationally) over the past 30 years, utilises open habitat with scattered trees and bushes for song posts. Preserving and enlarging the heathland, as outlined in Section 4.2.2, will benefit Tree Pipit as the heathland represents the only area of suitable habitat for this species at Greno.

Nightjar are nocturnal and insectivorous birds and are ground-nesting, utilising heathland, moorland and open woodland clearings to breed. Nightjar are red listed due to national declines but the population of this species is actually increasing in the Sheffield area. Breeding populations of this species are found in the vicinity of Greno Woods and it is hoped that the woodland may eventually be able to attract and support breeding pairs of this species. However, their requirements are extremely specific, and include open areas of at least 2 hectares with 150m to the nearest tree line. Within these areas patches of bare ground are chosen for nesting.

Through the course of this plan, large areas of clear-fell will be windrowed to leave strips of bare ground at least 3m wide between adjacent rows to encourage colonisation by Nightjar. In the long-term, it is anticipated that management and enlargement of the heathland will return this habitat to a condition suitable for the birds but this is unlikely to happen during the period covered by this plan due to the timeframe required for the heather growth to move from the mature/senescent phase to the pioneer phase, and for grazing to control scrub encroachment.

Hawfinch (*Coccothraustes coccothraustes*) have been lost to the Sheffield area over the last 30 year period and are declining nationally. Although management at Greno alone cannot hope to restore the species, wild cherry, hornbeam and yew will be added to the planting mix in areas of broadleaf restoration. These species are an important food source for Hawfinch and, it is hoped, will increase the suitability of the woodland for this species as they begin to recolonise the area.

Spotted Flycatcher (*Muscicapa striata*) utilise woodland glades and edge habitats. Maintaining a diverse woodland structure, through the management outlined in section 4.2.1 above should benefit this species.

Cuckoo is a migrant species that visits the UK to breed. Numbers of this species have been declining, especially in the southern part of the UK, since the 1980s. The species is regularly recorded in the woodland at Greno and is thought to breed there, with Meadow Pipit and

possibly Dunnock as its host species. The decline in Cuckoo numbers is believed to be the result of climate change, with warmer springs resulting in a mismatch between the time of the Cuckoo's arrival and the egg laying dates of its host species. Consequently, conservation action for the Cuckoo at Greno can only be indirect – with broadleaved reversion work benefitting the Dunnock population and the provision of open areas to favour Meadow Pipit.

Woodcock (*Scolopax rusticola*) have been recorded in the vicinity of newly felled compartment 14. Their secretive nature makes them hard to survey and the numbers present on the reserve, and their distribution are not known. They are thought to breed on the reserve but this has not been confirmed. This species is largely nocturnal, spending most of the day in dense cover but requiring more open areas in which to breed. They are insectivorous, preferring woodland with damp patches and wet flushes in which to forage.

Sheffield's breeding population of Woodcock is undergoing a long-term decline, perhaps due to restrictions in suitable breeding habitat as conifer plantations become too mature for them to find suitably open areas. This being the case, the ongoing felling work at Greno will benefit the species, introducing as it will, a network of more open areas. However, Woodcock are vulnerable to disturbance and are likely to favour the quieter areas of mature woodland away from the central recreational 'hub'.

Sparrowhawk (*Accipiter nisus*) breed on the reserve annually. In 'Breeding Birds of the Sheffield Area', Greno Woods, along with Wharnccliffe and Wheata, are recognised as an important woodland area for this species, due to their size and variety of woodland habitats. The forestry works at Greno, and in particular the current high rate of felling, may make areas of the woodland less attractive to sparrowhawk – at least in the short term. It is intended however, that the woodland will, in the long-term, retain a thriving sparrowhawk population, with at least two breeding pairs. To this end, the Trust will liaise closely with local bird recorders who monitor the breeding success of sparrowhawk in the area. Additionally, known sparrowhawk nest sites will not be felled during forestry operations due to the high fidelity for nest sites shown by this species.

Hawfinch, another woodland bird, is declining nationally and is now believed to be extinct in the local area. This secretive species requires high forest with dense cover, and feeds on the large, hard seeds of hornbeam, beech, yew, cherry and other *Prunus* species. Long-term, the habitat of Greno should prove ideal for this species, although regional efforts may be necessary to achieve recolonisation. However, in an effort to be 'hawfinch ready' **the planting mix at Greno will be diversified to contain species such as wild cherry, wych elm and yew**, to provide good feeding territory for this species in the future. Hornbeam will not be widely planted due to its vulnerability to *Phytophthora* infection, however an element of hornbeam will be added to planting mixes in areas where broadleaves are being restocked.

Nightjar breed in the vicinity of Greno Woods and may have utilised the reserve in the past. With careful habitat management it may be possible to encourage recolonisation of this species at Greno. In the long term a breeding pair may be established on the heath at Greno, although its current state of dense vegetation make it unsuitable. In the shorter term, **careful aftercare of felling coupes to provide access to bare ground may attract breeding pairs and will be attempted**. However, the preference of this species for areas of more than 2ha with a minimum distance of 150m to the nearest treeline may limit the suitability of these areas.

Greater information about the woodland's avifauna, will be collected during the course of this plan. As part of this work the status of the rare and declining species listed above in the woodland will be clarified, and specific management prescriptions added to this plan to support them, as appropriate.

4.3.6 Mammals

A wide variety of common British mammals, including roe deer, badger, fox, stoat, grey squirrel, wood mice, short tailed vole, shrew and hedgehog have been recorded on the reserve.

Grey squirrels are ubiquitous throughout the reserve and are the most often seen mammal. Several badger setts are known and badger roam widely across the area. The roe deer population has grown in recent years but is now threatened by poaching. Likewise set snares have been found in the woods and poison bait laid down (presumably for foxes).

Several bat species have been recorded on the reserve and adjacent sites. These include common pipistrelle and some bats of the *Myotis* genus. Given the general paucity of mature and veteran trees on site, it is unlikely that any bats are roosting in the woods, although this possibility cannot be entirely discounted. More probable is that the local bat population roosts in neighbouring buildings and utilise the woods as a feeding area. In order to better understand the local bat population, and **in order to provide roosting habitat on the reserve bat boxes were installed in late 2014 and will be monitored in partnership with the South Yorkshire Bat Group.** In the absence of detailed survey data, good practice guidelines are followed to reduce the impact on their habitat during management works.

The management proposals contained elsewhere in this plan should prove beneficial to the reserve's mammals long-term, though temporary disruption from forestry operations should be expected. These will be minimised by careful planning of extraction works, especially with regard to avoiding disturbance to badger setts or potential bat roosts.

4.4 Survey and monitoring

The collection of accurate and informative biological data is of prime importance when assessing the condition of the reserve and its habitats, and when evaluating the success of management practises. Once collected this data forms the basis of an 'early warning system' to alert of deleterious changes, as well as a baseline against which the success of conservation practise can be measured.

Previous years have seen the collation of existing biological records for Greno Woods, where available, plus the collection of new data through survey and recording days (e.g. the Sheffield Bioblitz). The data gathered from this now needs to be supplemented with a number of stand-alone surveys of specific groups and by the initiation of simple, long-term monitoring programme focusing on areas of change in the woodland (such as the heathland, coppice and PAWS restoration areas).

Over the course of this plan **SRWT aims to collect additional biological data for Greno Woods, focusing on the habitats and species of conservation concern (see table in section 4.1). A monitoring scheme, including photo monitoring, will also be implemented in coppicing and PAWS restoration areas,** to track the revegetation and general regeneration of

these areas. **Emphasis will also be placed on the collection of biological records for groups where this is lacking, in particular invertebrates, herpetofauna, lower plants and fungi.**

5.0 Infrastructure

Aim 5. Secure, maintain and restore the reserve's infrastructure.

5.1 Walls and fencing

A comprehensive boundary survey was carried out as part of the archaeological survey of the woodland in 2013. This shows the woods are bounded by a variety of different structures, including drystone walls, wetstone walls and fencing. In places these structures are found in conjunction with other, often earlier features, such as ditches and banks. The reserve's boundaries are not intact and access can be gained at many points (in addition to official entrances).

Within the site, remnants of walls and banking can be found but these are historic remains rather than current infrastructure.

The heathland within the woods is enclosed with composite fence of sheep netting and a top strand of barbed wire. Two wooden field gates and three stiles allow access into this area.

The fence which runs along the reserve's western boundary (adjacent to the Woodhead Road) is in a poor state of repair north of the main entrance on Woodhead Road, with many gaps caused by wind-blown beech. It is recommended that this fence be replaced by a species-rich native hedgerow.

A number of the reserve's entrances are secured, by means of horse-hops, gates and squeezes, to ensure only legitimate users have access. Although **such protection** is not currently necessary on all site entrances, it **will be extended to those where illegal egress is known to be a problem.**

5.2 Trackways and stacking areas

Greno Woods has an extensive network of surfaced tracks, allowing vehicular access across the reserve. Many of these are dedicated as footpaths or bridleways.

Low Hall Wood has one very short stretch of surfaced trackway, leading from the A61 to the stacking area.

Four stacking areas are present within the woods – on Woodhead Road (Stacking Area 1), on Sandy Lane (Stacking Area 2), on the A61 (Stacking Area 3) and in Low Hall Woods (Stacking Area 4). These are shown in **Figure 4**.

5.3 Access furniture (signposts, benches, gates, stiles)

A 2014 survey of access furniture within the woodland recorded the location and description of benches, stiles, gates and way-markers. This survey showed that the style of way-markers used varied considerably. Rights of Way were clearly marked where they entered the woodland but less clearly marked within it – with some junctions clearly way-marked and others not way-marked at all. **A more consistent and unified approach to way-marking will benefit users to the reserve and help prevent conflicts caused by incorrect use of paths.**

The majority of benches and picnic benches on the reserve are located on or adjacent to the Trans-Pennine Trail. Benches are also present at key vista points. The Trust considers benches made of sustainably sourced native hardwood with back rests to be most in keeping with the aesthetic and recreational needs of the site and future benches will be of this type.

Two wheelchair accessible picnic benches are present on site. One is located on the Trans-Pennine Trail and is fully functional. The second overlooks the heath but requires a ramp to make it accessible for wheelchairs. **This will be installed as part of a wider package of works to open up this side of the site to wheelchair users.**

5.4 Interpretation boards

Three interpretation boards are present within the woodland. One lies at the crossroads known as ‘Spaghetti Junction’ and provides information about Greno’s wildlife and ecology. A second lies within Stacking Area 1 and details the sustainable growth and harvesting of timber and biofuel from the woodlands. A third, older board, is found on the heathland. A fourth board, which will interpret the woodland’s history, is planned and will be located on the Trans-Pennine Trail adjacent to Sharp’s Wood ‘Oyl.

6.0 Cultural Context

Aim 6. Protect, preserve, research and communicate the reserve's archaeological and historical interest and significance.

Aim 7. Improve and maintain public access to the woods.

Aim 8. Promote and encourage participation in the management of Greno Woods to inspire people to value and care for nature and wildlife.

6.1 Site archaeology

Greno Woods contain one Scheduled Monument (Handlands) and at least 400 other archaeological features. These range in scale from the (possible) remains of a fortified medieval hall, to a vast array of quarry holes, walls and features associated with the woodlands working past. Whilst a 2013/14 survey of the reserve logged and briefly described these features, many would benefit from further study in order for their composition and origins to be fully determined and understood. Consequently, their preservation and, in particular, protection from damage or disturbance is of paramount importance.

Public consultation demonstrated a great enthusiasm for further exploration and interpretation of the reserve's history and archaeology. The conservation and safeguarding of already known artefacts was however considered to be of the highest priority. **Consequently, the Trust will refer to the results of the archaeological remains present in the woods when planning forestry and other operations and will work to avoid damage to sensitive features.**

Handlands SM, a small Romano-British settlement, comprises a network of earth and stony banks demarking old field enclosures and the foundations of a number of huts, and date to the same period as similar remains in Wheata Wood. The nature of the archaeology here is fragile and has, in part, been destroyed by generations of forestry works and erosion. For this reason, **the Handlands site will be taken out of commercial forestry and reverted to oak woodland which will be managed employing a more sensitive regime.** This change will be implemented by replacing conifers with oak and native broadleaved tree species following felling. **Action will also be taken – through education and the blocking of alternative routes – to confine downhill mountain biking to the 'Pub Run' trail in the vicinity of the SM.**

In addition to Handlands, several other archaeological features require specific attention in the period covered by this plan. **The distribution of 'living archaeology' - worked trees (old coppice stools), and veteran and ancient trees - will be mapped as a matter of priority,** to increase knowledge of this resource and so better ensure their preservation during future forestry operations

Sharp's Wood 'Oyl is a post-medieval pond used by the Sharp family for soaking wood for the production of spelk baskets. The 'Oyl takes the form of a rectangular tank, with stone lined sides. These sides have been damaged by tree roots over the years and **SRWT will work with the Greno Conservation Society to source the necessary money to carry out repairs.**

The Trig Point at Greno Knoll is another historic artefact that will benefit both from restoration and interpretation. The trig point, standing at the highest point in the woodland and surrounding countryside, marks a place where signal beacons were formerly set. **During the period covered by this plan, SRWT will repaint the trig point, and carry out work to open up the views to surrounding countryside and a archaeology plaque interpreting the point will be erected.**

The 2013/14 archaeological survey identified the possible remains of a fortified medieval hall in Hall Wood. **SRWT propose to seek funding and a suitable partnership to carry out further investigation of the site, clarifying its function and purpose if possible, with a view to its future interpretation (either on or off site).**

The Trust also plans to carry out an oral history project amongst local communities, to capture and record the history of the woods through local eyes. This will help to capture the post-war history of the woodland, which is currently not collated nor recorded, and changes in use (such as the development of downhill mountain-biking in the area).

6.2 Recreation

6.2.1 Recreational facilities

Greno Woods contain an extensive Public Rights of Way network, including a bridleway loop, on surfaced tracks. Three dedicated downhill mountain bike trails were installed in 2013. A permanent orienteering course was installed in 2014, which includes three courses of varying levels of challenge (from beginners to intermediate).

The woods also have a dedicated den building area, two fire pit and seating areas for use by youth groups (by prior arrangement only) and a geocache site. Benches and picnic benches are available within the main body of the site (excluding Low Hall Wood).

The main parking facility is the Forestry Commission car park on Woodhead Road, although laybys on both the A61 and the Woodhead Road are occasionally used by visitors.

6.2.2 Recreational usage

Greno Woods are well used as a place of recreation. Walking, including dog walking, running, orienteering, wildlife watching, horse riding and mountain biking are the chief recreational pursuits here, and the woods are also used by local children for play. At least two riding schools regularly use the woods for hacking.

Public consultation has shown that the woods are popular due to their natural character, the opportunities for peace and tranquillity they provide and their network of tracks and paths. Although the majority of visitors use Greno Woods *only*, during a single visit, others use it in combination with the adjacent areas of Wheata and Wharncliffe Woods, for example by riding a route that passes through all three.

Different areas of Greno Woods receive different amounts of visitor ‘traffic’. Low Hall Wood receives low visitor numbers, and visitors are generally locals who walk in the woodland, reaching it on foot from nearby housing. Visitor numbers in this part of the woodland have decreased in recent years, due to a decline in the quality of the footpaths following woodland work. Work to reverse this decrease will be carried out during the period covered by this management plan (see sections 6.2.5 and 6.3.1 below).

In contrast, the main body of the woodland (west of the A61) receives far greater visitor numbers. Here southern and central areas of the woodland (in particular the Trans-Pennine Trail, and the area including and within the bridleway loop) are most used. This area of the woodland is the most easily accessed (both from Grenoside village and the FC car park), and contains the majority of the recreational features, so attracts visitors from the local community and the wider city. Outside of this area, the northern and eastern portions of the woodland are crossed only by footpaths or desire lines and are much quieter.

A visitor survey, conducted in 2012, showed that the woods are predominantly used by local people, who access them on foot, or horseback, on a regular basis. However, the work of the Trust - improving access, installing dedicated mountain bike trails and running a wide range of walks and events - has resulted in an increase in the number of people visiting Greno, and the number of visitors from outside the S35 postcode area. In particular, the number of mountain bikers in the wood is increasing – both as a result of the popularity of the sport regionally and because of the construction of dedicated trails within the woodland. However, a new visitor survey (planned for summer 2015) will be necessary to fully elucidate and confirm these changes.

A table showing the access protocol for Greno Woods is given below:

Table 3

Walkers	<p>Are <i>generally</i> permitted to roam freely throughout the woodland but must observe signage warning of temporary closure to areas for management or wildlife reasons.</p> <p>For safety reasons, walkers should not walk on the bike tracks, but instead use the desire lines immediately adjacent to them.</p>
Dog walkers	<p>Are <i>generally</i> permitted to roam freely throughout the woodland but must have dogs under control at all times and especially in areas where livestock (including horses) are present.</p> <p>Professional dog walking services where walkers are accompanied by more than three dogs should stay on the Rights of Way network to minimise disturbance to wildlife and must leash animals near livestock.</p>

Horse riders	Are permitted to use the reserves network of bridleways (both statutory and permissive).
Cyclists	Are permitted to use the reserves network of bridleways (both statutory and permissive) and the three dedicated downhill bike trails.
Motorcyclists, quad bike riders and off road drivers	Are not permitted to use any part of the woodland.

As well as these and other legitimate uses of the woods, motorcycle, quad biking and off roading activity has also been reported.

6.2.3 Disturbance and damage

Concern regarding the potential disturbance to wildlife, and damage to habitat, by increasing use of the reserve was raised during the public consultation of 2014. The Trust’s charitable objectives include encouraging and supporting the appropriate recreational use of green space across Sheffield and Rotherham. Its Living Landscapes strategy lists, as one of its three main outcomes, “Helping local people to visit, understand, enjoy, value and be inspired by nature.” Consequently, the promotion of Greno Woods as a place for nature-based recreational activities to the people of Sheffield and Rotherham is central to its work. This support and promotion must however, be carefully balanced with other priorities – such as protecting and enhancing the woodland’s wildlife – and must also ensure that the peace, tranquillity and natural character for which people visit the woods is not unduly compromised. Careful visitor management will be required to achieve this.

In consideration of this, **the Trust will adopt a zoning strategy when considering recreational developments in Greno Woods.** Under this, the central southern area of the site, which is already most heavily used, should be the area where such use is most heavily promoted and provided for, with areas to the north and east (including Low Hall Woods) and adjacent to Grenoside village remaining undeveloped for recreation, other than maintenance of the existing bridleway and footpaths network (**Figure 16**). However, care will be taken to ensure that sensitive areas – such as Handlands Scheduled Monument – are not included in recreational developments.

Additionally, when considering recreational development on the reserve, consideration will be given to whether proposed activities are compatible with the peace, tranquillity and wildlife value of the woods. Again, a balance needs to be sought, but activities requiring the use of motorised vehicles (e.g. motorcycle scrambling, off-road motoring, quad biking), or that are otherwise noisy (e.g. model aircraft flying), or that are damaging or disturbing to wildlife or archaeology (e.g. hunting, metal detecting) will not be permitted. When necessary, the Trust will also take action to prevent or limit these activities occurring.

The growth of mountain biking as a sport is a national phenomenon, and one that is likely to impact increasingly on the Greno Woods/Wheata/Wharncliffe area due to the focus on developing an ‘Outdoor Economy’ for the city. Whilst this development brings recreational and economic opportunities for the area, capacity for growth is not unlimited without impacting adversely on the woodland’s ecology and tranquillity. Three downhill mountain bike trails have been developed at Greno, to formalise provision for this recreational pursuit in the woods. **Additional development of mountain biking trails in Greno Woods will not occur during the course of this plan.** However, the Trust will work closely with the Forestry Commission, Sheffield City Council and other local landowners and recreational groups to encourage the appropriate development and management of this sport in the area.

6.2.4 Barriers to recreation

A number of barriers to positive recreational use of the woodland were identified through public consultation. These are discussed below:

Lack of facilities

Car parking in the vicinity of the woodland is inadequate, especially given the size of the woodland block (Greno, Wheata and Wharncliffe) and its proximity to a major centre of population. Consequently, the car park on Woodhead Road is often full, even on week days, with vehicle parking along the Woodhead Road becoming a regular feature at weekends.

Parking opportunities in Grenoside village are limited and those that are available are rarely utilised, with visitors preferring to park closer to the main entrance of the woodlands, where information and clear routes in to the woods are available. Public transport links to the woodland are likewise limited, and restricted to walkers only. Potential visitors must take the bus either to Grenoside or to High Green and walk into the woods from there.

This paucity of parking particularly impacts user groups who require larger vehicles than the standard car. This group includes horse riders requiring space for a vehicle plus horse box, and special interest groups (e.g. youth groups) who wish to access the area by minibus or coach. It is also limiting when large events are held in the woods – these require the provision of additional parking by local landowners – an option only suitable in dry conditions.

As well as car parking, the absence of facilities such as toilets in the vicinity of the woodland conflicts with the intention of the Trust and the Forestry Commission to increase public access to the area. Consequently it is recommended that visitor facilities at the main (Woodhead Road) entrance be improved (see also section 7.3).

Conflict between user groups

Conflicts between the three main user groups (walkers, horse riders and mountain bikers) exist at Greno and have the potential to worsen as visitor numbers to the area increase. A summary of the main areas of conflict are given below:

- **Conflicts between legitimate and illegitimate users of Rights of Way** occur when members of one user group mistakenly or intentionally use Rights of Way or desire lines where they are not permitted i.e. horse riders and mountain bikes on footpaths (where only walkers/mobility vehicles) are permitted.
- **Conflicts between legitimate users of bridleways/tracks** occur when individuals of one user group behave in such a way that endangers or decreases the enjoyment of the woods for other groups. At Greno, the commonest conflict in this category occurs when (a minority of) mountain bikers either speed down bridleways, or exit the downhill trails onto the bridleway network at speed. Excessive speed can startle other users (particularly horses) and risks a collision. Another conflict in this category is the use of downhill bike tracks by walkers – which again risks a collision.
- **Conflicts involving dogs** occur when some dog owners do not have their animals under control or more commonly when they allow said animals to foul the woods (especially entrances and paths). The behaviour of some of the dog walking services which use the woods came in for particular criticism from other site users in this regard during the public consultation.

The Trust considers that the size and nature of Greno Woods is sufficient to allow all the legitimate pastimes listed above to be carried out concurrently and in harmony, provided that visitors to the woods show respect and consideration to other woodland users and the site itself. **Information will be provided at site entrances to clarify the rights and responsibilities of the different user groups**, and throughout the woods Rights of Way should be clearly way-marked to show their status and **SRWT will work closely with the Public Rights of Way Unit to improve way-marking in the woods**. As not everybody who enters the woods is aware of the typical Rights of Way symbols (blue and yellow arrows) these will also be explained, or, alternatively, pictograms used to clarify the correct user groups for each route. **Information about the woods and their facilities will also be disseminated via local user groups such as the Ramblers, Ride Sheffield and the British Horse Association.**

Where individuals from one user group persistently disregard the rules governing site usage, the Trust will, where possible, look for engineering solutions, such as gates or barriers, to control access. Illicit jumps or tracks through the woodland will also be removed or blocked. It will be made clear to all woodland users that only pedestrians are permitted to leave the bridleway/bike track network.

Where conflicts arise, the Trust will work to resolve them, working with individual users, representative groups, the reserve advisory group and others (as necessary). Best practise solutions – both to design out conflict and to resolve it – will also be sought from other land managing organisations and specialist recreational groups.

6.2.5 Opportunities for improvements to access provision

As the footpath network at Greno is extensive, and walkers are permitted to walk ‘off piste’, there are no current plans to increase the number of footpaths on site. Instead efforts will be made to ensure that only walkers use footpaths and desire lines in the woods. **In Low Hall Wood**, which is criss-crossed with footpaths, locals have cited the condition of footpaths as a barrier to recreational use of the woods and **work will be carried out to improve the way-**

marking of the rights of way footpaths, to improve their condition as necessary, and to mark out a circular walking trail around the woodland.

Horse-riders have access to a 3km bridleway loop within Greno Woods, plus a number of bridleways (both permissive and statutory) that feed into this. There are no plans to further extend the statutory bridleway network within the woodland. However, **the Trust will work with riders, adjacent land owners and other woodland users to explore the possibility of designating a permissive bridleway northwards from the loop, through Hall Wood and Hazelshaw Spring to the A61 near Crown Inn Farm.** If this is possible, the northern-most 50m of footpath leading to the site boundary will be surfaced to make it sustainable for riding. In the meantime the portion of this route that passes through Greno Woods will be closed to horses to protect its surfacing.

It should be noted that, should the designation of this route as a permissive bridleway lead to encroachment of riders into adjacent woodland areas, it will be immediately and permanently closed.

Cyclists currently have access to both the bridleway network in the woods and to three downhill bike routes. There are no plans to increase the number of bike routes available in Greno Woods (see also section 6.2.4 above).

The Trust will work with adjacent land owners and others to improve the provision, connectivity and promotion of a sustainable access network across the area for walking, horse-riding and cycling.

6.2.6 Vistas and views

Aim 4. Maintain and create areas of open ground across the woodland, for the benefit of wildlife and for people

Much of the tranquillity enjoyed recreational use of Greno Woods comes from the feeling of solitude and being enclosed by woodland that the reserve brings. Nevertheless the few vantage points that the woodland offers are much appreciated and will be retained.

6.2.7 Disabled access

The accessibility of Greno Woods to people with mobility disabilities is unavoidably limited by the nature of the terrain and, in particular, by the gradients present on site. Access by wheelchair or mobility scooter along the Trans-Pennine Trail is possible, with limited parking possible in Grenoside village. The Trans-Pennine Trail is an all ability route which links into the adjacent Wheata Wood. This 1,190m trail is popular with wheelchair users, families on bicycles and as an easy walk route.

Wheelchair/mobility scooter access to the western end of the site, via the Woodhead Road entrance, is currently not possible due to the gradient of the main bridleway. **Access to this end of the site will be improved. In conjunction with this, wheelchair access to the picnic**

bench at SK 325 953 (above the heathland) will also be created. Information giving the length and gradient of routes will also be provided.

The network of surfaced tracks within the site makes it suitable for many with limited mobility, although gradient can still be an issue. An number of benches are already available on site and **two more will be added to uphill sections of main tracks to increase accessibility.**

6.3 Community

6.3.1 Community profile

Greno Woods are located in the north of Sheffield and lie within the electoral ward of West Ecclesfield. Several local communities have access to the woods – Grenoside, Burncross, High Green and Charltonbrook, all of which are included within the West Ecclesfield ward. In addition, High Green and Grenoside are also included within the authority of Ecclesfield Parish Council.

In 2012, the total registered population for West Ecclesfield Ward was 18,495 with the following distribution: Burncross 3,935 registered residents, Grenoside 4,413 and High Green 10,043.

The overwhelming majority (97.1%) of the residents in the West Ecclesfield ward ethnically identified as White and Mixed White – significantly higher than the Sheffield average of 83.7%. The three largest Black and Minority Ethnic groupings in the ward comprised individuals of Black Caribbean, Indian, and Pakistani descent. All three neighbourhoods had a higher proportion of people aged 45+ (56.6% Grenoside, 54.1% Burncross and 45.1% High Green) compared to the Sheffield average of 38.7%. Burncross and Grenoside are also notable for the large size of their 65+ age group which is notably higher than the Sheffield average.

Data on economic activity is not available at a neighbourhood level, but is available for the West Ecclesfield ward as a whole. Based on the statistics from Census 2011, it shows that out of 69.8% of residents aged 16-74 who are economically active, 63.7% are employed, and the remaining are either full-time students or unemployed. Of the 30.2% who are economically inactive, 18.8% are retired, 3.8% have a disability or long-term illness, and the remaining percentage are either students or looking after home or family. In terms of economically active percentage of population, West Ecclesfield ward comes 12th out of 28 wards for the city.

Conversely, West Ecclesfield is ranked 18th out of 28 in Sheffield for deprivation, with 9% of people living in areas classified amongst the top 10% most deprived in England. High Green's score for deprivation is much higher than that of the other two areas (24.7% compared to 11.7% for both Burncross and Grenoside) but, in general, the communities surrounding the woodland are less deprived than the city average.

As a ward, West Ecclesfield has significantly worse than average scores in several areas measured by the Comprehensive Health and Wellbeing profiles compiled by Sheffield City Council. While several characteristics on the ward level are the same across all three

neighbourhoods (in particular rates of cancer admissions and elective admissions), a closer look at individual neighbourhood profiles shows that Burncross has a significantly higher level of hospital admissions for Stroke and Asthma and for Cancer. The same is true for High Green, where rates for admissions for Asthma, Chronic Diseases and Circulatory Diseases are also significantly higher. Both Burncross and High Green also fare significantly worse than the city average on modelled adult obesity and High Green also has a significantly lower ration of adults eating five or more vegetables and/or fruit a day .

Grenoside in general fares better than the other two neighbourhoods health-wise: it has a significantly higher than the Sheffield average five a day fruit and vegetable consumption and its adult obesity rate, while still higher than the city average, is lower than that of Burncross or High Green.

On a ward level, 63.4% of pupils achieved Key Stage 2 Level 4+ (including English and Maths), which is higher than the Sheffield average of 56.1%. Conversely, in the attainment of 5 or more GCSEs with the grades C or above (including Maths and English), the ward fared worse than Sheffield average – 77.9% compared to 82.2%. Within the ward, the level of GCSE attainment varied greatly, with Burncross having the highest rate (76%), while Grenoside and High Green had only 61% and 60%, respectively. Finally, regarding post-16 education, only 5.4% of 16-18 year olds were not in education, employment or training, which was lower than the Sheffield average of 9.9%.

Community services

Grenoside village supports a good range of community services, including shops, a post office, pubs, a primary school, a community centre and the Reading Rooms. Many community organisations are active within the village which has a thriving and varied social scene.

Unlike Grenoside, the populations of High Green and Burncross are not placed around a single centre or hub. Although shops, schools and community facilities are present within these communities they are more dispersed (or in adjacent Chapeltown) and tend to be on the eastern side of the area away from the woods. For this reason, they provide a less suitable interface for disseminating information to local people about the woods, and other methods (such as on-site advertising) are required.

Two community newspapers/letters cover the area. In Grenoside this is the ‘Grenoside News’ and in High Green and Burncross ‘Look Local’. Both provide a helpful medium for communicating with local people.

To summarise, when compared with others in the city, West Ecclesfield can be regarded as a moderately affluent ward, whose households score well in terms of wealth, employment, housing, health and child wellbeing. The ward’s population is mostly white or mixed white, and is characterised by a significantly higher than Sheffield average number of people aged 45+. In addition, it has a higher than average proportion of couple households. Data indicate that households in the vicinity of the woods are, on average, wealthier than the Sheffield average.

The most serious problems within the ward are health (high rates of cancer admissions, adult obesity, etc.), and anti-social behaviour. However, high rates of cancer admissions in particular are likely to be the result of a higher proportion of elderly within the ward.

On the neighbourhood level, however, there are some differences between the three communities. Data shows that High Green is often at a disadvantage when compared to Burncross or Grenoside, which is especially evident when looking at the Indices of Multiple Deprivation data, where it has the lowest rank. High Green also has a higher proportion of people living in social housing.

In terms of available services, Grenoside probably has the highest number of local community oriented services (groups, churches, community centres, etc.), followed by High Green, while Burncross has the least, probably due to its proximity to Chapeltown. Out of the three neighbourhoods, Burncross can be classified as the least deprived among the three communities in terms of education and safety.

This variety in household composition presents a variety of community engagement project opportunities for Greno Woods. For example, family-friendly projects targeting couples with children, or activities specifically aimed at older people. Since the majority of the population in the ward are home owners, the community is a stable one and provides a good opportunity for long-term projects (especially in Grenoside, where the sense of community is particularly strong). During the course of this plan, **the Trust will develop projects to engage new audiences for the woods from amongst local people, particularly focusing on the populations in Burncross and High Green where participation is currently low.**

6.3.2 Communities of interest

As well as local people, Greno Woods serves a number of ‘communities of interest’ from across the city/region. These include:

The **walking community**, represented by organisations such as the Ramblers and other local walking groups. The majority of walkers are local, but people also travel from across the surrounding area (Sheffield, Barnsley) to walk in the Wharncliffe/Greno woodlands.

The **horse-riding community**, represented by organisations such as the British Horse Association. Due in part to lack of parking for vehicles towing horse boxes, most riders are local or ride the woods in conjunction with one of the local stables.

The **mountain-biking community**, represented by organisations such as Ride Sheffield. Local mountain bikers use the woods but many bikers travel from across the city/region to access the trails at Wharncliffe/Greno. This is a well known area for downhill mountain bike racing due to the development of the sport in the area, the profile of national champion (and local boy) Steve Peat and latterly due to the development of trails in the area. This community is experiencing rapid growth in the Sheffield area and nationally.

The **orienteering community**, represented by Sheffield Orienteers, whose membership is taken from across the city.

The **wildlife community**, represented by a variety of organisations including the Wildlife Trust, Sorby Natural History Society, Sheffield Bat Group, Sorby Bird Study Group and the Sorby Breck Ringing Group. Members of these and other groups travel to the woods from across the city to enjoy and record wildlife. A number of excellent naturalists are also resident in the communities surrounding the woods.

Societies such as the Grenoside Conservation Society have adopted sections of the woodland as the focal point of their energies which include ornithology, nature conservation and local history.

6.3.3 Community engagement

Community work days

Monthly community work days have been held at Greno Woods since April 2013. These give community volunteers a chance to get involved with, and make an important contribution to, conservation management on the reserve. The number of volunteers attending the days was initially small and confined to volunteers from Grenoside plus regular sites team volunteers but is now increasing, with volunteers coming from across the city. These work days are advertised on site and through the sources listed above.

Reserve management

Rather than run an independent group to allow individuals to discuss and input into the management of Greno Woods, the Trust attend every second meeting of the Grenoside Conservation Society where it presents an up-date on management of the reserve, events and related matters. At these meetings, which are open to the public, the Trust's representative also answers any questions regarding the reserve and seeks the meeting's opinion on management activities.

Should matters arise that require greater or wider public consultation or engagement, such as the production of a management plan, then independent meetings for that purpose are held on site, or in Grenoside village.

Events and activities

A large variety of walks, events and activities have been held at Greno Woods since its purchase by the Trust. The majority of these have been small in scale and aimed at interested individuals from across the city, although a couple of larger events have also been successful.

Three types of event are generally run in the woods:

Guided walks – generally with an ecological theme, these walks last a couple of hours and are aimed at adults and older children.

Family activities – these concentrate on encouraging wild play and discovery and are suitable for families with young children (under 8).

Wild Side events – aimed at children aged 8-13 and their families, these events also encourage wild play and are often offer the opportunity for the children to learn bush craft skills such as fire-lighting, rope-making and den building. These events are run regularly during school holidays.

In addition to Trust-run events, a number of external organisations run, or have run, events in Greno Woods. Most significant of these is the annual ‘Steel City Downhill Mountain Bike’ race organised by Steve Peat. This event sees approximately 200 competitors and 500 spectators from across the region. The South Yorkshire orienteers have also previously run events at Greno.

Events at Greno Woods are advertised in several locations. Temporary posters are put up at reserve entrances, on the village green at Grenoside and at the Community Centre and Reading Rooms there. Events are also publicised in the Wildlife Trust e-newsletter (which anyone can subscribe to) and on the Trust’s website, Facebook page and Twitter account. Copies of the general events programme covering all SRWT nature reserves are sent to Sheffield Central Library, who then distribute it to other libraries in Sheffield. Events are also advertised via the Greno Woods exhibit at Weston Park museum.

Evaluation

The events and community engagement programme at Greno Woods has proved successful, attracting people from neighbouring communities and from the city as a whole. This success can, in part, be attributed to the scope, diversity and frequency of engagement opportunities, which has been extensive.

The events and engagement process have brought a new audience to Greno Woods and led to increased appreciation of their wildlife and historical value amongst an existing audience. Additionally, it showcases the work of the Trust and offers interested individuals the opportunity to learn more about its work - either through membership or by signing up for our e-newsletter. The community work days and archaeological survey programme have also contributed substantially to the delivery of works on site.

The size and nature of Greno Woods makes it a suitable location for a wide range of events and engagement activities. However, running such a busy and diverse programme requires a considerable resource, particularly in terms of staff time. In future years, should the resources available decrease (as is likely), **SRWT will focus on delivering a varied programme of guided walks, community work days, family activities** (including Wild Side events), which require relatively few resources other than staff time.

The large events (attracting in excess of 100 people) occasionally held in the woodland provide an excellent opportunity to reach a wider audience, however, their size makes them disruptive and potentially expensive. Consequently, **large events will only be held infrequently and then only within the central recreation ‘zone’ (Figure 17).**

The partnership with the Reading Rooms in Grenoside (whereby the venue is hired to provide indoor learning/resting space during heritage or ecology skills courses) has proved successful, and will be continued where opportunity and resources allow.

SRWT will enlarge and redevelop the Greno Woods section of its website, which will then contain details of up and coming works, to increase the potential for members of the public to learn about, comment on and become involved in, management of the woodland.

6.4 Outdoor learning

6.4.1 Local educational provision

There are seven primary schools in West Ecclesfield: Angram Bank Primary, Greengate Lane Primary, Grenoside Primary, High Green Primary, St. Mary's Catholic Primary, St. Thomas More Catholic Primary, and Windmill Hill Primary. West Ecclesfield has no secondary schools; the closest school is Ecclesfield School, located on Chapelton Road in the nearby East Ecclesfield ward, and is the largest school in Sheffield. Children in Grenoside generally attend Bradfield Secondary and Yewlands Secondary in Parson Cross which is also close to the ward boundary. The Paces School for Conductive Education – which focuses on providing education for children with cerebral palsy – is also present in High Green.

6.4.2 Outdoor learning

Since 2013 SRWT has been working to develop and deliver outdoor learning sessions, working with primary schools, secondary schools and youth groups. Uptake by youth groups has been good and the Trust has brought young people from across the city to the woods. The uptake of school sessions was slower, with travel costs (coach hire) proving prohibitive for some schools but a dynamic and varied programme has now been established.

Outdoor learning is a key area of development for SRWT. Our education service was set up over 10 years ago and has developed over that time to provide numerous opportunities for local people to engage in the outdoor environment. This has been achieved through working with schools, youth groups and families. The Trust provide environmental education sessions which support the national curriculum, as well as accredited/non accredited training to support young people and adults to develop life skills, and gain skills and experience in the environmental sector. We also provide learning opportunities for all the family.

The size, location and variety of habitats within Greno Woods provide many opportunities for outdoor learning not available on other Trust reserves. For example, the coniferous and broadleaved woodland, heathland and freshwater which allow comparative habitat surveys, forest school sessions and woodland craft skill sessions.

In 2014, the Trust put together a business case which identified key sites for developing outdoor learning sessions. Greno Woods was identified as one of these sites. It is easily accessible by road by all schools across Sheffield, Rotherham and Barnsley, with several primary schools within walking distance.

However, there are some barriers which make it more difficult to engage schools and groups. These include:

Parking – as many schools bring the children and young people by coach there needs to be clear parking, which is safe and allows coaches to turn easily. Ideally, coach parking would be available at several points around the woods, so children can easily access a suitable area for their activities, without crossing a busy road.

Toilets/shelter – ideally we want to encourage groups to come out to Greno for the day throughout the year. In order for this to be workable, these groups would need access to toilets and shelter. Currently the Grenoside Reading Rooms are being used to provide these. However, although the facilities are good, space is limited for groups of more than 25, and children are required to leave the site to access the venue. This also constrains the area of the reserve that schools can reasonably access during the course of a session.

Damage/disturbance – in order to manage potential damage or disturbance to the reserve, a network of suitable areas for outdoor learning needs to be developed across the reserve to prevent over-use of any one particular area.

During the period covered by this plan, the Trust will work with the Forestry Commission, SCC and other partners to investigate the potential for improving recreational and educational facilities in and in the vicinity of the woodland, to address these barriers (see also Section 7.3)

6.4.3 Lifelong learning: workshops and short courses

Over the past 18 months the Trust have been trialling the use of Greno Woods and the Reading Rooms for running a series of one day workshops and short courses on a variety of ecological and heritage skill themes. Examples of these include: photography, bat ecology, woodland bird identification, winter tree identification, wood-carving and constructing basic garden structures.

The trial has shown that the woods provide excellent scope for running these type of courses. The partnership with the Reading Rooms works well and this facility provides an excellent indoor space for classroom sessions, or respite from cold weather.

Uptake on the courses has been high for the ecological based courses and high/moderate for the heritage skills courses. Individuals from across the city (and beyond) have participated, including many Trust members. Courses have, to date, been subsidised by the Heritage Lottery Fund, with only a small charge to participants. The opportunity exists for courses to be developed on a more sustainable and self-funding basis. Any such development would best be carried out in the context of the Trust's wider outdoor learning development strategy.

7.0 Economic

Aim 9. Continue to develop ongoing sources of grant aid to support the management of the nature reserve.

Aim 10. Continue to develop productive land use and other income to support management of the nature reserve.

Aim 11. Increase public support for SRWT's through our work in Greno Woods.

Greno Woods has received considerable investment over the past five years. The majority of this investment has been in woodland management works, including thinning, felling and replanting (conifer harvesting has also raised revenue for the Trust). Infrastructure improvements have also been carried out, including the creation of a new stacking area, the creation/upgrade of the bridleway loop, the creation of three cycle tracks and the enclosure of the heathland.

In order that such investment can continue to be made, the economic opportunities offered by the reserve are considered below.

7.1 Past, present and future grant funding

The initial purchase of Greno Woods was funded from various sources; chiefly by Viridor Tax Credits, Heritage Lottery Fund and private subscription.

The woods are in receipt of English Woodland Grants Scheme funding, which contributes to the woodland management programme and paid for the installation of the orienteering trail.

The Natural England 'Paths for communities' fund and a Sheffield City Council Public Rights of Way grant contributed to upgrade and construction of the new bridleway loop.

SRWT will seek to secure additional grant funding throughout the period covered by this plan, to support the delivery of its aims and objectives.

7.2 Productive land use

Greno Woods' greatest source of income for future years is the timber crop which is grown there. This crop, when harvested, is sold for timber and biofuel. Commercial forestry will generate a regular income stream over the course of this plan as many of the conifer stands are reaching maturity. However, the costs of replanting and the nursing of young stock will also be high for this period and will reduce the amount of surplus realised.

In addition to the sale of softwood, careful management of the reserve's hardwood will allow the sale of selected specimens in the future.

The reintroduction of sweet chestnut coppice to Greno Woods will, in time, it is hoped, provide another saleable timber product. Currently however, the reinstatement process has a

net cost associated with it – although this is in part ameliorated by sale of the current, over-mature wood product. **The Trust will work to develop a marketing plan for the sale of coppice products over the course of this plan and investigate the possibility of obtaining Rural Development Programme England funding to support this work.**

There is potential for Greno Woods to supply fuel wood for sale either to suppliers or directly to households. Setting up such a business would require an investment of time and effort on behalf of the Trust, as questions over extraction, storage, drying and collection would need to be answered and a full marketing plan drawn up in order to ensure such a business would be viable. **The Trust will work to develop a marketing plan for the sale of fuel wood products over the course of this plan.**

7.3 Recreational services

The growth in climbing, mountain-biking and other recreational activities across Sheffield and in the countryside surrounding it, has led to the rebranding of the city as a destination for outdoor pursuits. Keen to capitalise on this growth, Sheffield City Council is pursuing plans to develop the north of the city – from Parkwood Springs to the Wharncliffe/Grenoside complex as a centre for mountain biking, with plans to open a biker’s hub and café at the site of the old ski village.

Whilst recognition of the importance that green spaces such as Greno Woods in contributing to the city’s economy are welcome, SRWT will carefully consider the likely impact of this scheme on the environment of the woodland (in terms of damage and disturbance) and also how it might benefit from this boom. In particular, steps should be taken to ensure that the Trust (and likeminded organisations) are not left bearing the brunt of the cost in providing facilities, whilst remuneration for the growth in this industry flows solely to others.

In light of this, SRWT will work with the Forestry Commission, Sheffield City Council and other interested groups (including local residents) to explore the feasibility of providing enhanced visitor services in the vicinity of Greno Woods – be these in the form of additional parking, café facilities, an information/education centre or chargeable events – and to ensure that any such development is beneficial to the environment and economy of the area.

Large events held in the woods will be run to, at the very least, cover their costs, and ideally will generate revenue to support the management of the reserve.

7.4 Membership recruitment

Greno Woods, as one of the Trust’s largest and most active reserves (in terms of management operations and public events), has the potential to raise the Trust’s profile and to showcase its work (the installation at Weston Park Museum being one example of this).

Wildlife Trust membership across the city is steadily increasing, and a pro-active approach has been adopted by the Trust to ensure the trend continues. The work at Greno, if perceived positively by members and the public, can support membership recruitment both locally and across the city. Conversely however, any negative publicity or public perception about the

management of the reserve could work to hinder the same. Consequently, the work carried out in Greno Woods must not only be of the highest standard but must be communicated well to the general public (and in particular to the communities surrounding the woods) in order to have a positive effect on membership.

The Trust will therefore continue to use local and city-wide media to publicise its work at Greno Woods (and the rationale behind it), and to encourage engagement with its work. This publicity will aim to reach existing and potential members.

When recruitment campaigns have been targeted at communities neighbouring the Trust's reserves, they have met with a large degree of success. There is great potential to recruit members in the Grenoside, High Green and Burncross areas, and through events held on site.

7.5 Employment and training

Greno Woods currently provide employment or part-employment to five people directly (through the Trust), and also contributes indirectly to many others e.g. forestry contractors, local suppliers. The capacity to increase employment opportunities is not great, rather the challenge will be to sustain the current level of activity as the number of people employed depends directly on the revenue available to carry out work on site.

Unemployment levels in the communities surrounding the reserves are relatively low, whilst academic achievement is generally above the city's average. This suggests that local training and employment initiatives are not as much of a priority for the communities immediately adjacent to Greno Woods as for other reserves. However, in a more regional context, the woods provide a variety of opportunities for skills development, in terms of practical conservation techniques, habitat management, ecological identification and forest management. To date, the Trust's practical conservation work teams, which include trainees and volunteers, work regularly in the woods. A number of ecological and heritage skills workshops have also provided opportunities for people across the city to acquire new skills.

7.6 Communication and marketing

7.6.1 On-site presence

At the current time, welcome signage, in the form of the Trust's standard wooden 'Welcome to Greno Woods' sign, is present at four of the entrances to the woods. The main entrance to the woods has recently been improved by surfacing, new fencing and the installation of a notice board.

Despite these measures, many visitors to the site enter and leave without realising they are moving on and off a Trust managed nature reserve. As viewed from the car park, the main entrance, although improved, is not eye-catching and does not make it clear that a visitor is entering a distinct area of woodland with its own identity. Rather, paths from the car park lead directly into Wheata and Wharncliffe Woods and the entrance to Greno Woods appears an adjunct to these.

It is recommended that the Trust works to improve its on-site presence at Greno. This can be achieved firstly by ensuring that **all** entrances into the reserve are marked in some way – at the very least welcoming the visitor to Greno Woods and giving contact information for the Trust. Secondly, it is recommended that further steps are made to improve the main entrance to the reserve and distinguish it from the many additional paths in the vicinity.

Finally, the Trust should ensure it better utilises the opportunities offered by large, externally-run events in Greno Woods (such as the Steel City race) to raise its profile to a new audience.

7.6.2 Environmental interpretation and reserve information

Four notice boards have been installed next to the main entrance on Woodhead Road, at Greno Gate, Sandy Lane and Springwood Lane (spider gate). These are used to provide general user information for the woods, to advise visitors of up and coming works, and to advertise events. To increase communication with other users, **an additional three notice boards will be installed: at Woodside Lane, Woodhead Road north and Hallwood Road to reach visitors accessing the woods at these points.**

Within the last few years a variety of approaches have been tried to provide interpretation about the woods on and off site for visitors and the general public. The on-site interpretation has taken the form of three notice boards (see section 6.4 above). Off-site interpretation includes a reserve leaflet and an installation about the woods hosted by Weston Park Museum. Information about the woods is accessible from the Trust's website. A mobile phone App, which allows visitors to download a series of walks around Greno onto their smartphone then use them on site to guide themselves around the woods, is available online.

Public consultation has confirmed an appetite for more interpretation of Greno's ecology and in particular, the wood's history and archaeology. However, there is also a feeling that the naturalistic feel of the woods should not be compromised by a proliferation of information boards. For this reason, future interpretation is either to be unobtrusive and 'in keeping' with the site e.g. wooden sculptures, discreet plaques, or off-site, such as information on websites or downloadable leaflets. As technological approaches to interpretation become more widespread (and therefore affordable) the possible use of these should be investigated thoroughly, particularly for the interpretation of archaeological sites.

7.6.3 Printed materials

An information leaflet about Greno Woods is available in paper form, and as a PDF from the Trust's website. It includes a map of the site, details about access and wildlife information. The leaflet is available from SRWT headquarters, at the Reading Rooms in Grenoside and from Weston Park museum. It is also given out at events. Greno Woods is also included in SRWT's Nature Reserves booklet, which gives details on where the site is located and how it can be reached, in the Trust's Living Landscape brochure, and in the Yorkshire Wildlife Trust book "Discover Yorkshire's Wildlife"

News and articles about reserves are printed in the SRWT Kingfisher magazine, which is sent to members three times a year. Press releases are sent regularly to the Sheffield Star, the

Sheffield Telegraph and other regional media. A monthly update on our work in the woods is included in the Grenoside News and (from Dec 2014) Look Local.

The Trust will continue to utilise these approaches (at varying frequency) during the course of this plan.

7.6.4 Websites

Greno Woods has a number of pages on the Sheffield Wildlife Trust website which give general information about the reserve and access to electronic versions of information leaflets. [www.wildsheffield.com/nature-reserves/our-reserves/greno woods](http://www.wildsheffield.com/nature-reserves/our-reserves/greno-woods)

The events programme at Greno Woods is also advertised on the Reading Rooms website: www.grenosidereadingrooms.co.uk

The location and extent of the bike trails at Greno are advertised on the Ride Sheffield website www.ridesheffield.org.uk/

7.6.5 Events

Events are dealt with under the Community Engagement section of the plan.

7.6.6 'Natural Connections' installation

The 'Natural Connections' installation, produced in co-operation with and hosted by Weston Park Museum provides information about the wildlife of Greno Woods and the work of the Trust to a wide audience. In order for this exhibit to function fully as a link between museum visitors and the woods **it will be kept fully stocked with leaflets about the woods, membership leaflets and fliers for up and coming events.**

8.0 Management aims and objectives

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 4)		
<p>1. To safeguard and enhance the woodland's biodiversity value by increasing the proportion of native oak woodland at Greno, prioritising areas of woodland to the north and west for broadleaf reversion.</p>	<p>1.1 Diversify the woodland structure by reducing the proportion of non-native broadleaf woodland whilst creating opportunities for natural regeneration of native species, restocking where necessary.</p> <ul style="list-style-type: none"> • Selectively fell conifers and beech in Compartments 1b, 2c, 4a, 4b and 5a and restock with native broadleaved species. • Hand thin (clean) Compartments 2a, 6f, 8c, 8d, 9b, 16b, 19a and 19b to favour the development of oak • Restock Compartment 2a with native broadleaved stock. • Thin Compartments 5c, 8c, 15b, 16d, 18d and 17c to favour the development of oak. • Reduce the proportion of holly in the understory of compartments 2b, 9b 16b, and 16c to favour the ancient woodland ground flora. • Clear-fell Compartment 8b and 9d and restock the northern/western sections of each with native broadleaved species, including a high proportion of oak. • Clear-fell compartment 14a and 14b and restock with native broadleaved species. 	<p><i>Sec 4.2.1; 6.1 Figure 17</i></p>	<p>HIGH HIGH MEDIUM HIGH MEDIUM HIGH HIGH</p>
	<p>1.2 Control encroachment of rhododendron and laurel into native woodland.</p> <ul style="list-style-type: none"> • Remove rhododendron and laurel whenever encountered on the reserve. 	<p><i>Sec 4.2.1</i></p>	<p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
2. To provide a source of sustainable timber, biofuel and revenue by undertaking <i>at least</i> one more cycle of conifer production (from planting to felling) in existing conifer areas to the south and west of the area of broadleaf reversion.	<p>2.1 Manage coniferous areas to maximise long-term yields of high quality timber</p> <ul style="list-style-type: none"> • Clear-fell Compartments 8b, 9d, 13c restock the southern/eastern sections of each with Scots Pine. • Thin Compartments 9c, 9d, 10b, 10d, 11a, 12a, 13a, 13b and 15a to allow remaining timber to develop. • Monitor all crops at high risk of wind damage and bring forward clear-felling if necessary. • Monitor spread of <i>Phytophthora ramorum</i> in the region and bring forward the felling of larch, if necessary • Explore the possibility of managing some or all of the woodlands' coniferous areas into a CCF system 	<i>Sec 4.2.1; Figure 14</i>	<p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p>
3. To increase the value of Greno Woods for wildlife	<p>3.1 Re-introduce coppice cycle to areas of abandoned sweet chestnut coppice in Compartment 17</p> <ul style="list-style-type: none"> • Cut 2 0.26 ha coppice coupes every two years 	<i>Sec 4.2.1; Figure 14</i>	HIGH
	<p>3.2 Retain and increase the reserve's stock of fallen and standing deadwood, and veteran trees.</p> <ul style="list-style-type: none"> • When undertaking safety/thinning works, retain felled trees on site in large pieces and where possible, retain deadwood and snags (where this does not pose a safety risk) and reduce the visibility of habitat piles. • Ring bark selected trees across the reserve to create standing dead wood. • Allow the natural deterioration of trees throughout the woodland when this is compatible with public safety. 	<i>Sec 4.2.1; 4.3.1; 4.3.3; 4.3.6</i>	<p>MEDIUM</p> <p>LOW</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>3.3 Extend measures to reduce the impact of forestry operations on the site's aesthetic appeal and wildlife value.</p> <ul style="list-style-type: none"> • Following clear-felling operations, arrange brash in windrows with 3m clear space between each to create habitat for ground nesting birds. Spray off bracken cover if necessary. • When restocking with conifers, retain clear margins of 5m between the edge of rides, or the site boundary, and planting areas to allow a fringe of natural vegetation to develop. • Plant native broadleaved trees adjacent to the main entrance and bridleway following thinning operations. • Where possible, retain a small percentage of semi-mature broadleaved trees, and standing dead wood, within clear-fell areas (Figure 14). • Concentrate any future recreational developments and large scale events in coniferous areas of the woodland. • Create at least three broadleaf 'corridors' linking the heathland with the broadleaf woodland to the north, east and west 	<p><i>Sec 4.2.1; 4.2.3; 4.3.3 ; 4.3.5; 6.2.3</i></p>	<p>MEDIUM</p> <p>HIGH</p> <p>MEDIUM</p> <p>MEDIUM</p> <p>HIGH</p> <p>MEDIUM</p>
	<p>3.4 Gather biological data to inform and refine conservation management on site</p> <ul style="list-style-type: none"> • Carry out an extended Phase 1 vegetation survey to include entire woodland. • Gather data about wintering and breeding bird numbers and distribution to inform site management prior to large-scale felling works. • Survey the reserve's ponds for amphibians, and rides for the presence of Common Lizard. • Work with Sorby, the SBSG and other natural history groups to encourage recording on the reserve, particularly of invertebrate groups, lower plants and fungi. 	<p><i>Cross ref Sec 4.2.1, 4.2.2, 4.3</i></p>	<p>LOW</p> <p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>3.4 Cont.</p> <ul style="list-style-type: none"> • Work in partnership with South Yorkshire Bat Group to monitor bat boxes and gather more data about bat usage of the reserve. • Monitor the effect of deer browsing and grey squirrel damage to sapling establishment and tree regeneration. • Monitor tree stock for signs of Phytophthora, Red Band Needle Blight and other infestations. • Set up a scheme of photo monitoring at key points across the reserve. • Collate biological data for the reserve in a systematic manner and share with the Sheffield Biological Records Centre annually 	<p><i>Cross ref Sec 4.2.1, 4.2.2, 4.3</i></p>	<p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p>
<p>4. Maintain and create areas of open ground across the woodland, for the benefit of wildlife and for people</p>	<p>4.1 Retain, restore and extend the heathland area in Compartment 10.</p> <ul style="list-style-type: none"> • Control the increase of regenerating woodland and scrub on the heathland through cutting, ring-barking and pollarding. • Control the spread of bracken across the heathland by pulling and spraying. • Introduce conservation grazing to the heathland to maintain its open nature. • Clear-fell Compartment 10a and incorporate area into the heathland • Run a pipeline into the heathland to provide water for livestock. • Pollard six oak trees within the heathland 	<p><i>Sec 4.2.2; 4.2.3; 4.3.3; 4.3.6</i></p>	<p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p> <p>LOW</p>
	<p>4.2 Maintain vistas out of and across the woodland.</p> <ul style="list-style-type: none"> • Maintain vistas in Compartments 6d and 8b, and 11b (across the heath from the picnic bench) • Create a new vista from the trig point on Greno Knoll out to adjacent high points to the north west. 	<p><i>Sec 4.2.3; 6.2.6</i></p>	<p>MEDIUM</p> <p>LOW</p>
	<p>4.3 Manage the reserve's rides for the benefit of wildlife.</p> <ul style="list-style-type: none"> • Annual control of bracken and scrub in a rolling programme of ride management, focusing particularly in areas colonised by wood ants and adjacent south-facing slopes. 	<p><i>Sec 4.3.3</i></p>	<p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>4.4 Manage the reserve's ponds for the benefit of wildlife.</p> <ul style="list-style-type: none"> • Dredge the Woodstack Pond to improve water quality and depth • Repair Sharp's Wood 'Oyl and plant with aquatic vegetation to improve its potential for aquatic wildlife. 	<i>Sec 4.3.3</i>	<p>MEDIUM</p> <p>MEDIUM</p>
	INFRASTRUCTURE (Aim 5)		
<p>5. Secure, maintain and restore the reserve's infrastructure.</p>	<p>5.1 Secure, maintain and rebuild the reserve's boundaries.</p> <ul style="list-style-type: none"> • Demarcate the wood's boundary with the A61 with a native shrub planting. • Install 12m heavy duty fencing plus heavy duty squeeze on northern entrance to Hall Wood to prevent access by quad bikes, cyclists and horses. • Install 3.5m gate plus squeeze and fencing (add. 3.5m total) on western trackway into Hall Woods • Secure western boundary to Low Hall Wood (adjacent to A625) with post and rail fencing. • Ensure infrastructure is checked as part of the patrolling routes • Install squeeze plus fencing (3.5m total) on southern entrance into Low Hall Woods 	<i>Cross ref Sec 5.0, 6.2</i>	<p>LOW</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>LOW</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
CULTURAL CONTEXT (Aim 6-8)			
6. Protect, preserve, research and communicate the reserve's archaeological and historical interest and significance.	<p>6.1 Protect and preserve the reserve's archaeological heritage.</p> <ul style="list-style-type: none"> ▪ Return Handlands SM to broadleaved woodland following conifer removal. • Work with English Heritage and the South Yorkshire Archaeological Service to protect and conserve on-site archaeology during felling operations and other management works. • Protect Handlands from 'off piste' erosion by mountain bikes • Work with the Grenoside Conservation Society to repair the stonework of Sharp's Wood Oyl • Map the location of worked, veteran and ancient trees on the reserve 	<i>Cross ref Sec 6.1</i>	<p>HIGH</p> <p>HIGH</p> <p>HIGH MEDIUM</p> <p>HIGH</p>
	<p>6.2 Research and communicate the reserve's history and archaeology to woodland users and the wider public.</p> <ul style="list-style-type: none"> • Repaint the Trig point and provide interpretation about the history of Greno Knoll at this site. • Carry out further investigation of possible remains of medieval hall in Hall Wood and interpret findings as appropriate • Provide on-line information about the reserves archaeology and history via SRWT website and History App. 	<i>Cross ref Sec 6.1</i>	<p>MEDIUM</p> <p>LOW</p> <p>HIGH</p>
7. Improve and maintain public access to the woods.	<p>7.1 In partnership with Sheffield City Council and the Forestry Commission, improve the parking capacity on the Woodhead Rd.</p> <ul style="list-style-type: none"> • Enlarge, resurface and add drainage to the Woodhead Road wood stacking area to provide parking for coaches and cars. • Work with SCC, the FC and others to increase parking capacity on or adjacent to the Woodhead Road car park. 	<i>Cross ref Sec 6.2.1, 6.2.2, 6.2.3</i>	<p>MEDIUM</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>7.2 In partnership with the Highways Authority, restore and maintain the Public Rights of Way network (footpaths and bridleways) around the reserve.</p> <ul style="list-style-type: none"> • Conserve the network of surfaced trackways within the reserve, avoiding damage caused by timber extraction or other management works wherever possible, and effecting timely repairs if damage is caused. • Work with the Trans-Pennine Trail authority to maintain the surface of the TPT within Greno Woods. • Add eight waymarker posts in Greno and Low Hall Wood indicating status of footpaths and permissive bridleways • Install 6m of post and rail including a squeeze on south entrance to footpath through Hall Wood to prevent egress by horses • Way-mark and maintain a circular walking route through Low Hall Wood. • Work with the Ramblers Association, Ride Sheffield and the British Horse Society and other interested parties to decrease access conflicts and improve access for all • Resurface footpath running between Cpt 14 and 15. 	<p><i>Cross ref Sec 4.2.1; 6.2.4; 6.2.5, 6.2.7</i></p>	<p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p> <p>MEDIUM</p>
	<p>7.3 Improve the accessibility of the reserve for those with restricted mobility including wheelchair users.</p> <ul style="list-style-type: none"> • Create a parking facility, including disabled parking spaces, on or adjacent to the Woodhead Road woodstack • Allow for wheelchair/mobility vehicle access to the reserve along the footpath leading through the woodstack • Install a ramp to allow wheelchair access from the bridleway to the picnic bench overlooking the heathland • Install two benches on the steepest sections of tracks leading from the Trans-Pennine Trail to the main entrance. • Provide information about the length and steepness of different route options to site users. 	<p><i>Cross ref Sec 6.2.7</i></p>	<p>MEDIUM</p> <p>MEDIUM</p> <p>MEDIUM</p> <p>MEDIUM</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
<p>8. Promote and encourage participation in the management of Greno Woods to inspire people to value and care for nature and wildlife.</p>	<p>8.1 Involve the Greno Conservation Society and local people, agencies and organisations in the management of the woods.</p> <ul style="list-style-type: none"> • Ensure partners are kept informed and/or involved in management decision-making as appropriate. • Attend meetings of the Greno Conservation Society regularly to discuss reserve management. • Provide information on meetings, updates and information on site, locally and on the Trust website. • Support and develop local capacity to record and report incidents/damage on the reserve. • Develop projects specifically to engage people in High Green and Burncross in the management of Greno Woods. • Encourage and provide opportunities for individuals to get involved in biological recording and survey work on the reserve. • Encourage and provide opportunities for individuals to get involved in practical work days on the reserve. • Deliver a range of outdoor learning activities for people of all ages. • Advertise all events and work days on site and on the Trust website. 	<p><i>Cross ref Sec 6.3.2; 6.3.; 7.6</i></p>	<p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>MEDIUM</p> <p>MEDIUM</p> <p>HIGH</p> <p>HIGH</p> <p>HIGH</p>
	<p>8.2 Prevent damage to the woodland wildlife and ensure woodland safety</p> <ul style="list-style-type: none"> • Provide information about permitted and non-permitted uses of the Woods, and about user rights and responsibilities, at all major entrances • Ensure information about the location of wildlife e.g. setts is used to inform woodland management • Raise public awareness of the damage caused by tipping garden waste in the households bordering the woods in Grenoside village. • Work with South Yorkshire Police and local people to prevent illegal use of the site by poachers, quad bikes and motorcycles. • Carry out tree safety inspection for the roadside trees. (2016, 2018-full survey). 	<p><i>Cross ref Sec 2.6; 6.2.3; 6.2.4.; 4.4; 4.2.1;</i></p>	<p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>8.3 Encourage and facilitate the use of the woods as part of the Trust’s outdoor learning programme</p> <ul style="list-style-type: none"> • Create two new education circles in Greno Woods. • Create a (removable) fitness trail in the woodland, for use by school groups. • Facilitate and support the use of Greno Woods for outdoor learning by schools, colleges and youth groups. • Provide work experience opportunities for GCSE students, and college and university students, and encourage students to give copies of their work to SRWT. 	<i>Cross ref Sec 6.3.1; 6.4.2</i>	<p>MEDIUM MEDIUM</p> <p>LOW</p> <p>LOW</p>
ECONOMIC (Aims 9-10)			
<p>9. Continue to develop ongoing sources of grant aid for the management of the nature reserve.</p>	<p>9.1 Continue to make grant applications and associated claims for revenue and capital works.</p> <ul style="list-style-type: none"> • Submit claims for EWGS, Viridor and Heritage Lottery Fund as required. • Investigate additional funding, including RDPE funding, for projects and capital works. 	<i>Cross ref Sec 7.1</i>	<p>HIGH</p> <p>HIGH</p>
<p>10. Continue to develop productive land use and other income to support management of the nature reserve.</p>	<p>10.1 To support the management of the Woods and the Trust through the sale of woodland products and the development of visitor services.</p> <ul style="list-style-type: none"> • Continue to harvest and sell coniferous timber sustainably from the woodland in line with this management plan. • Research the chestnut product markets to find a sustainable and revenue-generating (or at least cost-neutral) way of coppicing the areas of woodland marked out for this purpose. • Draw up a marketing plan for the supply of fuel wood from Greno and other Trust reserves. 	<i>Cross ref Sec 7.2, 7.3, 6.2.1; 6.2.5</i>	<p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>10.1 cont.</p> <ul style="list-style-type: none"> • Work with SCC and the FC to look at the provision of Pay and Display parking on the Woodhead Road. • Work with SCC, the FC and local people to examine the economic potential of a seasonal café/information point/visitor centre in the vicinity of the woods. • Generate revenue for the reserve through events. 		<p>LOW</p> <p>HIGH</p> <p>MEDIUM</p>
<p>11. Increase public support for SRWT's through our work in Greno Woods.</p>	<p>11.1 Increase the on-site presence of the Sheffield and Rotherham Wildlife Trust in Greno Woods</p> <ul style="list-style-type: none"> • Continue regular patrols by SRWT staff and volunteers. • Install 'welcome' plaques at all site entrances (18) • Ensure SRWT has a high profile at the Steel City and other large 3rd party events held in the woods. • Improve the main entrance to the reserve, increasing its attractiveness and distinguishing it clearly from entrances into Wheata and Wharncliffe Woods (although it should be in keeping with these). • Publicise all activities and events run by SRWT in the woods at site entrances 	<p><i>Cross ref Sec 7.6</i></p>	<p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>MEDIUM</p> <p>HIGH</p>

Aims	Objectives and prescriptions	Cross Ref	Priority
	<p>11.2 Ensure that the objectives of the management work at Greno are clearly communicated to members, the communities surrounding the woods and the wider public.</p> <ul style="list-style-type: none"> • Attend meetings of the Greno Conservation Society regularly to provide updates of the work being planned and carried out in the woods. • Update the Greno Woods pages of the website regularly, making sure details of up and coming events are clearly listed. • Post regular update about the management of Greno Woods in the Grenoside News, Look Local and Kingfisher magazine. • Produce news releases when key management milestones are reached, or new initiatives are begun and distribute to local media. • Install an additional three notice boards at Woodside Lane, Woodhead Road north and Hallwood Road to reach visitors accessing the woods at these points. • Utilise the ‘Natural Connections’ installation at Weston Park to distribute the Greno Woods leaflet and to advertise events on the reserve. 	<p><i>Cross ref Sec 7.6</i></p>	<p>HIGH</p> <p>HIGH</p> <p>HIGH</p> <p>MEDIUM</p> <p>HIGH</p> <p>HIGH</p>

9.0 Work Programme

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
1.1	Selectively fell conifers and beech in Compartments 1b, 2c, 4a, 4b and 5a and restock with native broadleaved species	HIGH					x		
1.1	Selectively fell conifers and beech in Compartment 14a and 14b and restock with native broadleaved species	HIGH							x
1.1	Hand thin (clean) Compartment 2a, 16b, 19a and 19b to favour the development of oak	HIGH			x				
1.1	Hand thin (clean) Compartments 6f, 8c (part), 8d and 9b to favour the development of oak	HIGH	x						
1.1	Restock Compartment 2a with native broadleaved stock, if necessary	MEDIUM			x				
1.1	Thin Compartment 5c to favour the development of oak	HIGH					x		
1.1	Thin Compartments 15b and 16d to favour the development of oak	HIGH							x
1.1	Thin Compartment 17c (eastern half) and 18d to favour the development of oak	HIGH			x				
1.1	Thin Compartment 17c (western half) and 8c (partial) to favour the development of oak	HIGH	x						
1.1	Reduce the proportion of holly in the understory of compartment 2b	HIGH	x	x					x
1.1	Reduce the proportion of holly in the understory of compartments 16b and 16c	HIGH			x	x			
1.1	Reduce the proportion of holly in the understory of compartment 19a and 19b	HIGH					x	x	

1.1, 1.2	Clear fell (parts of) Compartment 8b and 9d and restock the northern/western sections of each with native broadleaves.	HIGH	x						
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Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
1.1	Clear fell compartments 14a and 14b and restock with native broadleaved species.	HIGH							x
1.2	Remove rhododendron and laurel whenever encountered on the reserve.	HIGH	x	x	x	x	x	x	x
2.1	Restock Compartments 8b (south) and 9d (east) sections of each with Scots Pine.	HIGH		x					
2.1, 4.1	Clear fell Compartments 10a and 13 (eastern part)	HIGH			x				
2.1	Restock Compartment 13 with Scots Pine.	HIGH				x			
2.1	Thin Compartments 8a (part), 8c (part), 9c, 9d, 10d and 15a to promote good conifer growth	HIGH	x						
2.1	Thin Compartments 11a, 12a, 13 (part) and 10b to promote good conifer growth	HIGH			x				
2.1	Monitor all crops at high risk of wind damage and bring forward clear felling if necessary.	HIGH	x	x	x	x	x	x	x
2.1	Monitor spread of <i>Phytophthora ramorum</i> in the region and bring forward the felling of larch, if necessary	HIGH	x	x	x	x	x	x	x
2.1	Explore the possibility of managing some or all of the woodlands coniferous areas into a CCF system	MEDIUM			x				
3.1	Re-coppice 0.52 ha of sweet chestnut (2 coops)	HIGH	x		x		x		x

3.2	When undertaking safety/thinning works, retain large pieces of deadwood, standing deadwood and snags where this does not pose a safety risk and reduce the visibility of habitat piles, where possible.	HIGH	x	x	x	x	x	x	x
3.2	Ring bark 10 selected trees within the woodland	LOW		x		x		x	

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
3.2	Allow the natural deterioration of trees throughout the woodland when this is compatible with public safety.	HIGH	x	x	x	x	x	x	x
3.3	Following clear felling operations, arrange brash in windrows with 3m clear space between each to create habitat for ground nesting birds. Spray off bracken cover if necessary.	MEDIUM	x		x				x
3.3	When restocking with conifers, retain clear margins of 5m between the edge of rides, or the site boundary, and planting areas to allow a fringe of natural vegetation to develop.	HIGH		x		x		x	
3.3	Plant native broadleaved trees adjacent to the main entrance and bridleway following thinning operations.	MEDIUM			x				
3.3	Retain a small percentage of semi-mature broadleaved trees and standing dead wood within clear fell areas where possible	LOW	x		x		x		x
3.3	Concentrate any future recreational developments and large scale events in coniferous areas of the woodland.	HIGH	x	x	x	x	x	x	x

3.3	Create at least 3 broadleaf 'corridors' linking the heathland with the broadleaf woodland to the north, east and west	MEDIUM	x		x				
3.4	Carry out an extended Phase I vegetation survey to include entire woodland.	LOW						x	
3.4	Survey reserve for amphibians and reptiles	MEDIUM		x					x
3.4	Gather data about wintering and breeding bird numbers and distribution to inform site management prior to large-scale felling works.	HIGH	x	x	x				
Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
3.4	Work with Sorby and other natural history groups to encourage recording on the reserve, particularly of invertebrate groups, lower plants and fungi.	MEDIUM	x	x	x	x	x	x	x
3.4	Work in partnership with South Yorkshire Bat Group to monitor bat boxes and gather more data about bat usage of the reserve.	HIGH	x	x	x	x	x	x	x
3.4	Monitor the effect of deer browsing and grey squirrel damage to sapling establishment and tree regeneration.	HIGH	x	x	x	x	x	x	x
3.4	Monitor tree stock for signs of <i>Phytophthora</i> , Red Band Needle Blight and other infestations.	HIGH	x	x	x	x	x	x	x
3.4	Set up scheme of photo monitoring at key points across the reserve	HIGH	x						
3.4	Carry out photo monitoring across the reserve	HIGH		x	x	x	x	x	x
3.4	Collate biological data for the reserve in a systematic manner and share with the Sheffield Biological Records Centre annually	HIGH	x	x	x	x	x	x	x
4.1	Control the increase of regenerating woodland and scrub on the heathland	HIGH	x	x	x	x	x	x	x

4.1	Reduce the of bracken across the heathland by 50%	HIGH	x		x		x		
4.1	Use conservation grazing to manage the heathland	HIGH	x	x	x	x	x	x	x
4.1	Incorporate compartment 10a into the area into the heathland with fencing	MEDIUM				x			
4.1	Run a pipeline into the heathland to water stock	HIGH	x						
4.1	Pollard 6 oak trees within the heathland	LOW							x

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
4.2	Maintain vistas in Compartments 6d and 8b, and 11b	MEDIUM				x			
4.2	Create a new vista from the trig point on Greno Knoll out to adjacent high points to the north west.	LOW			x				
4.3	Control bracken and scrub in a rolling programme of ride management, focusing particularly in areas colonized by wood ants and adjacent south-facing slopes.	HIGH	x	x	x	x	x	x	x
4.4	Dredge the woodstack pond	MEDIUM			x				
4.4	Repair Sharp's Wood 'Oyl	MEDIUM		x					
5.1	Demarcate the reserve boundary with the A61 with native shrub planting	LOW					x		
5.1	Install 12m heavy duty fencing plus heavy duty squeeze on northern entrance to Hall Wood	HIGH	x						
5.1	Install 3.5m gate plus squeeze and fencing, Hall Wood West	HIGH	x						
5.1	Secure western boundary to Low Hall Wood (adjacent to A61) with post and rail fencing.	HIGH				x			

5.1	Ensure infrastructure is checked routinely as part of the patrolling routes	HIGH	x	x	x	x	x	x	x
5.1	Install squeeze plus fencing (3.5m total) on southern entrance into Low Hall Woods	LOW		x					
6.1	Return Handlands SM to broadleaved woodland following conifers removal	HIGH							x

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
6.1	Work with English Heritage and the South Yorkshire Archaeological Service to protect and conserve on-site archaeology during felling operations and other management works, as required	HIGH	x	x	x	x	x	x	x
6.1	Protect Handlands from erosion by mountain bikes	HIGH	x	x	x	x	x	x	x
6.1	Repair the stonework of Sharp's Wood Oyl	MEDIUM	x						
6.1	Map the location of worked, veteran and ancient trees on the reserve	HIGH	x	x	x				
6.2	Repaint the Trig point and provide interpretation about the history of Greno Knoll	MEDIUM				x			
6.2	Carry out further investigation of possible remains of medieval hall in Hall Wood and interpret findings as appropriate	LOW					x		
6.2	Provide on-line information about the reserves archaeology and history via SRWT website and Wild Sheffield app.	HIGH	x	x	x	x	x	x	x
6.2	Capture recent history of the woodland (1940-present) through a 'In Living Memory' project	MEDIUM	x	x					
7.1, 7.3	Enlarge, resurface and add drainage to the Woodhead Road wood stacking area to provide parking for coaches and cars, including disabled parking.	MEDIUM	x		x				
7.1	Work with SCC, the FC and others to increase parking capacity on or adjacent to the Woodhead Road car park.	HIGH		x	x	x			

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
7.2	Conserve the network of surfaced trackways within the reserve	HIGH	x	x	x	x	x	x	x
7.2	Work to maintain the surfacing of the TPT within Greno Woods	MEDIUM	x	x	x	x	x	x	x
7.2	Add 2 waymarker posts in Greno and Low Hall Wood indicating status of footpaths and permissive bridleways	HIGH		x		x		x	x
7.2	Install 6m of post and rail inc. squeeze on south entrance to footpath through Hall Wood to prevent egress by horses	HIGH	x						
7.2	Way-mark and maintain a circular walking route through Low Hall Wood.	MEDIUM						x	
7.2	Resurface 100m footpath (b/w Cpt 14 and 15)	MEDIUM					x		
7.2	Work with the Ramblers Association, Ride Sheffield and the British Horse Society and other interested parties to decrease access conflicts and improve access for all	HIGH	x	x	x	x	x	x	x
7.3	Allow for wheelchair/mobility vehicle access to the reserve along the footpath leading through the woodstack	MEDIUM			x				
7.3	Install a ramp to allow wheelchair access from the bridleway to the picnic bench overlooking the heathland	MEDIUM			x				
7.3	Install 2 benches on the steepest sections of tracks leading from the Trans Pennine Trail to the main entrance.	MEDIUM				x			
8.1, 10.2	Ensure partners are kept informed and/or involved in management decision-making as appropriate	HIGH	x	x	x	x	x	x	x

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
8.1, 10.2	Attend meetings of the Greno Conservation Society to discuss reserve management.	HIGH	x	x	x	x	x	x	x
8.1, 10.2	Provide information on meetings, updates and events on site, locally and on the Trust website.	HIGH	x	x	x	x	x	x	x
8.1	Support and develop local capacity to record and report incidents/damage on the reserve	MEDIUM	x	x	x	x	x	x	x
8.1	Develop projects specifically to engage people in High Green and Burncross in the management of Greno Woods.	MEDIUM						x	
8.1	Encourage and provide opportunities for individuals to get involved in biological recording and survey work on the reserve	MEDIUM	x	x	x	x	x	x	x
8.1	Encourage and provide opportunities for individuals to get involved in practical work days on the reserve.	HIGH	x	x	x	x	x	x	x
8.1	Deliver a range of outdoor learning activities for people of all ages	HIGH	x	x	x	x	x	x	x
8.2	Provide information about permitted and non-permitted uses of the Woods, and about user rights and responsibilities, at all major entrances	HIGH	x	x	x	x	x	x	x
8.2	Raise public awareness of the damage caused by tipping garden waste in the households bordering the woods in Grenoside village	MEDIUM	x	x	x	x	x	x	x
8.2	Work with South Yorkshire Police and local people to prevent illegal use of the site by poachers, quad bikes and motorcycles	HIGH	x	x	x	x	x	x	x
8.2	Carry out tree safety inspection for the roadside trees for reserve.			x		x		x	
8.3	Create new education circles in Greno Woods.	MEDIUM	x		x				

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
8.3	Create fitness trail at Greno	MEDIUM	x						
8.3	Facilitate and support the use of Greno Woods for outdoor learning by schools, colleges and youth groups.		x	x	x	x	x	x	x
8.3	Provide work experience opportunities for GCSE students, & college and university students.	HIGH	x	x	x	x	x	x	x
9.1	Submit claims for EWGS, Viridor and Heritage Lottery Fund as required	HIGH	x	x	x	x	x	x	x
9.1	Investigate additional funding for projects and capital works.	HIGH	x	x	x	x	x	x	x
9.1	Continue to sustainably harvest and sell coniferous timber from the woodland in line with this management plan.	HIGH	x		x		x		x
9.2	Research the chestnut product markets to find a financially sustainable way of coppicing the areas of woodland marked out for this purpose.	HIGH	x	x	x				
9.2	Draw up a marketing plan for the supply of fuel wood from Greno and other Trust reserves.	MEDIUM	x						
9.2	Work with SCC and the FC to look at the provision of Pay and Display parking on the Woodhead Road.	LOW				x			
9.2	Work with SCC, the FC and local people to examine the economic potential of seasonal café/information point/visitor centre in the vicinity of the woods	HIGH		x	x	x			

Objective	Prescription	Priority	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
9.2	Generate revenue for the reserve by through events.	MEDIUM	x	x	x	x	x	x	x
10.1	Continue regular patrols by SRWT staff and volunteers.	HIGH	x	x	x	x	x	x	x
10.1	Install 'welcome' plaques at all site entrances (18)	HIGH			x				
10.1	Ensure SRWT has a high profile at the Steel City and other large 3rd party events held in the woods.	MEDIUM	x	x	x	x	x	x	x
10.1	Improve the main entrance to the reserve	MEDIUM			x				
10.1	Publicise all activities and events run by SRWT in the woods at site entrances	HIGH	x	x	x	x	x	x	x
10.2	Post regular update about the management of Greno in the Greno News, Look Local and Kingfisher magazine	HIGH	x	x	x	x	x	x	x
10.2	Produce news releases when key management milestones are reached, or new initiatives are begun and distribute to local media.	HIGH	x	x	x	x	x	x	x
10.2	Install an additional 3 notice boards at Woodside Lane, Woodhead Road north and Hallwood Road to reach visitors accessing the woods at these points.	HIGH	x						
10.2	Utilize the 'Natural Connections' installation at Weston Park to distribute the Greno Woods leaflet and to advertise events on the reserve	HIGH	x	x	x				

10.0 Figures and tables

Figure 1. Location and Boundaries

Figure 2. Location of Handlands Scheduled Monument

Figure 3. Historic Woodland Types

Figure 4. Way-leaves and Access Rights

Figure 5. Public Rights of Way

Figure 6. Hydrology

Figure 7. Wind Frequency (DAMS)

Figure 8. Distribution of UK Biodiversity Action Plan Habitats

Figure 9. Distribution of Canopy Species by Area

Figure 10. Main Species Distribution (2015)

Figure 11. Age Class Distribution

Figure 12. Age Class Distribution by Area

Figure 13. Projected canopy composition by 2035

Figure 14. Planned Woodland Management Operations (April 2015 to March 2022)

Figure 15. Designated Areas and National Vegetation Classification Distribution

Figure 16. Area of reversion to broadleaved woodland

Figure 17. Area of Greno Woods designated for recreational usage

APPENDIX I: GLOSSARY

ASNW	Ancient Semi Natural Woodland
CCF	Continuous Cover Forestry
COSHH	Control of Substances Hazardous to Health
DAMS	Detailed Aspect Method of Scoring (Wind)
DBH	Diameter at Breast Height
FC	Forestry Commission
FWM	Forestry Works Manager
HAP	Habitat Action Plan
HSE	Health and Safety Executive
LTR	Long Term Retention
MAI	Mean Annual Increment
MMAI	Maximum Mean Annual Increment
MB	Mixed Broadleaves
MC	Mixed Conifers
NCA	National Character Assessment
NBL	Native Broadleaves
NVC	National Vegetation Classification
PAWS	Plantation(s) on Ancient Woodland Sites
SBSG	Sheffield Bird Study Group
SNW	Semi Natural Woodland
SRWT	Sheffield and Rotherham Wildlife Trust
TPT	Trans-Pennine Trail – a long distance cycle route
UKFS	United Kingdom Forestry Standards
UKWAS	United Kingdom Woodland Assurance Scheme
WDRS	Wind Damage Risk Status
W10 woodland	<i>Quercus robur</i> - <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> woodland
W14 woodland	<i>Fagus sylvatica</i> – <i>Rubus fruticosus</i> woodland
W16 woodland	<i>Quercus petrae</i> – <i>Betula</i> – <i>Deschampsia flexuosa</i> woodland
WHC	Wind Hazard Class
YC	Yield Class

APPENDIX II: OPERATIONAL TECHNIQUES

Protection and control

All clear-felling operations will be designed to minimise the risk of damage from wind, fire, pests and diseases through individual coupe sizes not exceeding 21 ha and the appropriate treatment of waste (lop and top) from thinning and felling operations.

Minimising wind damage

Assessment using the ForestGALES modelling system can further limit the risk from wind damage. The model can be used to calculate the probability of damage of using a variety of silvicultural treatments and also the probability of damage after the felling of adjacent crops. The models can assist in the decision making process, especially in cpt 8 prior to any felling of the Lodgepole pine.

All restructuring will make use of wind firm edges, where available, to minimise the risk of damage from wind.

Minimising fire risk

A fire plan is in place and is reviewed annually. Although there are several vehicular access points for local emergency services, most have been blocked with boulders or gates to prevent motorbike and quad bike access. Local emergency services will be issued with a combination lock number. Due to the generally dry ground conditions, age class distribution and the location of the site, the fire risk is moderately high. Fire warning signs are maintained on site. During periods of high risk (early spring and late summer), restrictions are not put on public access through the wood, as it is accepted that public access leads to better reporting of fire.

Pests and diseases

There are no rabbits present in the woodlands. Hares have been sighted by the Forest Manager in cpt 8 and there is a healthy population of grey squirrel. Squirrel numbers and damage will be monitored during quarterly inspections.

The first Roe deer was observed in June 2008 within cpt 8. Browsing has subsequently occurred on the oak in the p.2004 broadleaves in cpt 6 which are protected by 60cm shelters. Whilst deer numbers will be monitored closely, the use of 1.2m shelters may be required in future broadleaved planting.

Tree health will be monitored through an annual inspection by the forest manager and the results recorded. Where necessary, foliar samples, etc, may be sent to Forest Research for analysis. During the 1990's, Sweet Chestnut samples were sent for analysis to indicate the presence of *Phytophthora* causing die back in the older trees. Samples of young restock larch may need to be sent for analysis to confirm the presence of *Meria laricis* fungus which is

causing die back in cpts 1, 2, and 4. Sporadic mature larch had died along the northern boundaries of cpts 1 and 2 due possibly to the larch canker fungus *Lachnellula willkommii*. All the affected trees have since been removed during harvesting but monitoring of the area should continue.

Phytophthora ramorum (and a similar but distantly related disease *Phytophthora kernoviae*) was first recorded in the UK in 2002. Since 2009 *Phytophthora ramorum* has been affecting Japanese Larch in the west of England. The affected foliage is visible as wilted, withered shoot tips with blackened needles which are shed prematurely. Trees with branch dieback may have numerous cankers on their branches and upper trunk that can bleed resin. In some cases the FC has enforced the felling of infected stands to control the spread of the disease. Rhododendron exhibits wilting and dieback to the same disease and acts as an indicator to its presence. The distribution *Phytophthora ramorum* will be monitored and a decision taken on restocking with Japanese Larch.

Ramichloridium Shoot Dieback (*Ramichloridium pini*) has been recorded in 2008 on the western edge of the Lodgepole pine in cpt 8a. This fungal pathogen is confined mostly to Lodgepole pine and only affects the needles of the current year's growth. The first sign is yellowing of the needles from the base to the tip, which gradually turn orange or red-brown prior to death. However this fungal attack does not spread back into older growth. Little can be done to counter the disease except to avoid use of susceptible provenances.

Red Band Needle Blight of Pine *Dothistroma pini* has not reached Grenoside woodlands but the aggressive nature of the pathogen may force the Forestry Commission to withdraw grant aid from restocking with Corsican Pine in a bid to reduce the long term impact of the disease. Corsican Pine appears to be most susceptible at the age of 15 – 30 years old although it is thought that stand manipulation techniques to reduce the humidity at the base of the crown will make the microclimate less favourable to the pathogen. Such operations include timely first thinnings, removal of dense understory shrubs and even pruning to improve the airflow within the stand.

Monitoring for other more serious insect pests will be done during quarterly inspections and during harvesting operations. Beech bark disease caused by the aphid *Cryptococcus fagisuga* and fungus *Nectria coccinea* is common within cpts 1 – 6.

The occurrence of butt rot will be recorded on during harvesting operations. Mature larch was clear-felled on the more alkaline sites in cpts 1 and 2 between 2003-06 and there appear to have been signs of butt rot observed by the harvesting contractor.

The Common Leaf Weevil *Phyllobius pomaceas* and *P. argentatus* may attack broadleaved restock sites during early May and June. A site, approximately 12km to the south-west, owned by Sheffield City Council was decimated by the insect in 2005, necessitating an additional 4,000 beat ups. The insect requires adjacent grassland during the larval stages and little can be done to prevent the attacks without the use of insecticides.

During future restocking of pine sites there is a small risk of infestation by of *Hylobius abietis*. Suspected incidents will be reported to the Forestry Commission and also managers of

neighbouring forests. Restocking may be delayed by two planting seasons to allow the weevil to complete its life cycle and move on.

Water Management

The natural and man-made watercourses/features can be seen in Figure 6 and are restricted mainly to the lower areas of the woodlands by virtue of the site geology. Planning for operations in the vicinity of water features is in accordance with the Forestry Commission (UKFS) Forest and Water Guidelines (2011).

The following UKFS buffer widths apply at Grenoside from forest edge to watercourse/body.

Buffer Width	Situation
10m	Along permanent watercourses with a channel less than 2m wide.
20m	Along watercourses with a channel more than 2m wide and along the edge of large ponds.

The largest stream in Grenoside is the one forming the northern boundary of Low Hall Wood at around 1-2m wide.

In view of the above buffer areas, most riparian areas at Grenoside are not managed for forestry.

All water features within the vicinity of harvest operations will be highlighted within the Hazard Assessment with regard to fuel storage and possible spillage. Only minimal intervention of forest operations will take place within the above Natural Reserves to further reduce any impact of soil erosion, sedimentation and harvest pollution.

The Environment Agency are to be alerted to any possible contamination of watercourses. They visited cpt 4 on 16/8/2004 when an adjacent landowner blocked the stream with rubble/manure/soil. However no action was taken by the EA to remove the blockage and an artificial pond has formed, killing the trees which were flooded.

Acidification of the watercourses is unlikely as most water arises from deep ground springs and conifer production will be reduced over the long term.

There are no plans to use fertilizers or herbicides within the above buffer areas.

Domestic stock and fencing

The condition of boundary fences and walls will be inspected annually. Where fence repair is required, negotiation will begin with the neighbouring landowner, to contribute either partially or fully towards the cost of fence repair to ensure exclusion of stock. There have been no incidents of stock incursion during the last eight years.

Use of pesticides and fertilisers

The range of pesticide use has been kept to a minimum at Grenoside with only two chemicals, glyphosate and asulox in use since at least 2003. No fertiliser has been applied.

Work will be carried out in accordance with SRWT procedure, which undertakes to reduce the use of all synthetic chemicals where possible either by use of less harmful products or where appropriate, the use of an integrated pest management system, e.g. mounding on restock sites to minimise weevil hatching/use of larger plants with autumn planting to improve tree hardiness etc.

COSHH assessments and completed pesticide reports are held on file for the woodland.

All pesticide applications will be carried out in accordance with Forestry Commission Field Book 8 - The Use of Herbicides in the Forest. The choice of pesticide selected for the site will be monitored by a BASIS qualified manager. All operators will be competent to apply pesticides. Warning signs will be erected on treated sites and local people informed of the operations in advance.

Pesticide report forms are completed on a daily basis by operators and held on file.

All pesticide and fertiliser applications will be kept to a minimum within the constraints of good crop establishment and maintenance. Hand weeding and mechanical weeding will be used instead of herbicide treatments where they are practically and economically viable methods of weed control. Fertiliser application will be kept to a minimum by selecting appropriate species for the soil conditions present on site.

Assessments will be made as to whether pesticide or fertiliser treatments are required. An environmental appraisal will be carried out to select methods of application that minimise the risk of detrimental effects of pesticides and fertilisers.

Waste disposal and pollution

No significant waste from forest operations has been identified.

The Environment Agency and SCC Environmental Enforcement Officer will be informed of all illegal activities as appropriate. The encroachment of landfill into the watercourse in sub-cpt 4b is known to both agencies.

The dumping of oil drums, car batteries and asbestos has been an issue at Grenoside. These will continue to be removed by a specialised disposal service including the issue of a removal certificate.

Fly-tipped waste and garden refuse will be removed and deposited by a licensed waste carrier.

Fuel and chemical containers will be removed from the site by operators and disposed of through a licensed tip or a specialist waste disposal contractor.

Surplus fuels and chemicals will be returned to the SRWT store.

Procedures and equipment will be in place during operations for control of any oil or chemical spill in the woodland, see section Emergency Procedures below.

Control of harvesting operations

Varied ground conditions and silvicultural treatments require a range of harvesting methods. Most conifer operations can be completed with mechanised harvesters and forwarders. Broadleaved areas mostly require felling by chainsaw and extraction by forwarders. Mobile chippers can enter and operate in the woodlands where the removal of timber is uneconomic.

Most of the woodland will be thinned silviculturally by both line and selective thinning. Control of the thinning yields will be undertaken through sample marking and management tables from appropriate yield models. Records of thinning yields will be maintained to help with future monitoring.

Stands that are designated to be treated under CCF systems will be thinned on a more selective basis later in the rotation, in order to enable regeneration. It is anticipated that later thinning operations during the stand re-initiation stage will be fully marked in order to ensure a sustainable cut from each management unit.

The presumption in the plan is that all timber will be sold on a standing sale basis. The buyer of the standing timber will be selected not only for the price offered for the timber, but also for their quality of work and safe working practices.

Harvesting operations will be limited to periods outside of bird nesting times when the ground conditions are suitable to support, without significant damage, the machinery and level of activity expected for the operation. Harvesting sites will be organised and will employ the use of brash mats.

Emergency procedures

Chemical and oil spill

A chemical and oil spill emergency plan will be in place for all operations. Where a third party is taking the responsibility of Forest Works Manager (FWM), such as in a standing sale, they will be required to have a robust procedure in place.

Fire plan

See Section 7.1 – Grenoside Woods is a high risk property, becoming higher as more sites are restocked. Emergency services have often been to the site and all will be informed of the proposed single access point and lock combination number.

Accident plan

All harvesting operations will have a harvesting plan providing emergency procedure details in case of accident or injury, including nearest A & E hospital, main access grid reference and details of mobile telephone signal. Other work operations will include emergency details on the risk assessment for the work.

The SRWT telephone number is clearly indicated on site signage to allow members of the public to make contact in case of accident and emergency. The forest manager and/or SRWT personnel will attend as quickly as possible when an accident or injury occurs, unless very minor

Emergency services have often been to the site to put out car and truck fires within the woodlands. There have also been accidents associated with the old quarries and potential accidents with mountain bike jumps. For this reason all the emergency services will be informed of the new single access point and lock combination number.

Road, track and ride maintenance

Most of the tracks in Grenoside Woods are PROWs and special care is required, especially following harvesting, to ensure there is no hazard to the public.

Routine side drain and culvert road maintenance will be carried out during periods of dry weather to avoid run-off. Post harvesting maintenance will be required to be completed soon after harvesting so as to avoid ponding in wheel ruts and run off of suspended solids.

Management of health and safety

The management of health and safety underpins all operational activities. A framework of responsibility as set out in 'Managing Health and Safety in Forestry Operations' (HSE, 1999) will be established in all operations. When standing timber is sold, SRWT will mostly take on the role of the Landowner, with the purchaser taking on the role of Forest Works Manager (FMW).

Vendors and sub-contractors will be selected after being audited for health and safety compliance.

APPENDIX III: Biodiversity Targets

The following biodiversity targets have been set for this management planning period:

1. To increase the resource of standing deadwood.
2. To maintain the diversity and extent of the ancient woodland ground flora across the woodland, with an increase in spring ground flora in areas of coppice woodland.
3. To improve the quality of the heathland habitat at Greno by reducing the combined coverage of bracken and scrub to <30%.
4. To maintain or increase the population of Northern Wood Ant.
5. To establish and maintain the herpetofauna of the woodland.
6. To establish the extent of, and maintain or increase the populations of bird species listed in Table 2 on the reserve.