Sheffield & Rotherham

Reserve Management Plan

Moss Valley Woodlands

April 2021 - March 2031

Bluebells at Moss Valley Woodlands ©Claire Taylor

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For nature, for everyone

Acknowledgements

Sheffield and Rotherham Wildlife Trust would like to thank the many individuals who have contributed to the formulation of this management plan. In particular, thanks go to the Data for Nature volunteers who collected data from across the reserve as part of the monitoring programme. The Trust also extends thanks to the Moss Valley Wildlife Group whose members have provided much information regarding the wildlife of the Moss Valley Woodlands over many years.

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Summary

Moss Valley Woodlands nature reserve covers 26.3 hectares of woodland, grassland and scrub. It lies on the southern fringes of the city, adjacent to Norwood and Owler Carr Wood, within the Moss Valley. The woods are the property of Sheffield City Council and have been managed by the Sheffield and Rotherham Wildlife Trust (SRWT) since 2001.

Moss Valley Woodlands is a semi-natural ancient woodland. Historical research and archaeological evidence suggest that the woodland was managed as coppice with standards in the post-medieval period, reverting to mature woodland with a beech and sycamore component by the Victorian period. Today the woods are designated as a Local Wildlife Site and contain a Public Rights of Way network, including both footpaths and concessionary bridleways, which provide access across the site. The reserve has long been used as a place for recreation, and is enjoyed by local people for walking, picnicking and horse riding.

Moss Valley Woodlands nature reserve has numerous features of (biological) conservation interest, including its areas of semi-natural ancient woodland, the ancient woodland ground flora, the relic wood pasture of Dowey Lumb and several birds of conservation concern. Together with adjacent woods, 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 from April 2021 to March 2031. Physical works contained in the plan are aimed at conserving and improving the 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 the reserve through the Reserve User Forum. On site information provision will be limited, rather the site will be promoted through the Trust's website. An annual programme of volunteer work days and guided walks will be held to promote public understanding of its wildlife and history and offer opportunities to participate in its management.

1.0 Introduction

Sheffield and Rotherham Wildlife Trust is part of a national association of 46 local Wildlife Trusts, which work with communities throughout the UK to protect wildlife in town and country. Sheffield and Rotherham Wildlife Trust aims to promote conservation, advance education in environmental matters, and improve the quality of life in Sheffield and Rotherham, through the development and promotion of sustainable land management practices, linked directly to both rural and urban regeneration.

Moss Valley Woodlands nature reserve covers 26.3 hectares of semi-natural ancient woodland, scrub and grassland. The reserve lies on the southern fringes of city, adjacent to Norwood and Owler Car woods, within the Moss Valley area of Derbyshire. The woods are the property of Sheffield City Council and have been managed by the Sheffield and Rotherham Wildlife Trust (SRWT) since 2001, for the purposes of conservation and public recreation. The woods form part of the South Sheffield Greenway Living Landscape area and act to combat climate change by acting as a carbon store and prevent flooding and soil erosion by retaining and slowly releasing rainfall.

Purposes and formulation of the plan

This management plan has been formulated for the following reasons:

- To provide comprehensive and cohesive information about the Local Nature Reserve in one document, with reference to other documents where necessary.
- To outline the key long-term aims and the associated objectives that 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 what form that management will take.
- To provide a key document from which projects are developed and associated funding sought.
- The plan allows 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. Therefore, the full annual work programmes are kept and updated electronically at the Sheffield and Rotherham Wildlife Trust-office.

Structure of the plan

This management plan is divided into sections.

Section 1 gives an overview of the plan

Section 2 provides a detailed description of the reserve.

Section 3 of the plan gives the Trust's **vision** for the reserve: the condition we are aiming to achieve by 2070. It then lists the reserve's **features**, the most valued elements of the site for which it is managed.

For each feature, a number of **attributes** and **factors** are then identified. **Attributes** are measurable qualities of a feature, against which its condition will be monitored in order to judge the effectiveness of management. **Factors** are anything that has the potential to influence or change a feature, or to affect the way in which it is managed.

Once the attributes and factors affecting a feature have been identified, each feature is then **evaluated**. During evaluation, the current condition of the feature is compared to that contained in the vision and its performance against the attributes identified discussed. The impact of factors – which can be positive or negative – on the feature, or its management, are likewise evaluated. From this evaluation **management objectives** are then set.

Section 4 comprises the work programme where the management prescriptions for the features are listed.

Section 5 of the plan comprises the **Figures**: maps that accompany the text.

Section 6 of the plan are the **Appendices**, where supporting information is given.

2.0 Site Description

2.1 General Information

Location and extent

The Moss Valley Woodlands nature reserve is a narrow, linear group of woods extending in an arc from Jordanthorpe to Norton, within the Moss Valley in the county of Derbyshire (**Figure 1**). The reserve covers 26.3 hectares and includes Coalpit Wood (centred at SK 372 807, 3.6 ha), Long Wood (centred at SK 378 808, 13.19 ha) and parts of Newfield Spring Wood (centred at SK 372 807, 6.5 ha) and Bridle Road Wood (centred at SK 374 813, 0.94 ha), but is continuous with other woods in the area. It also includes 1.4 ha of grassland known as Dowey Lumb (centred at SK 376 805).

Landscape value and context

Moss Valley Woodlands nature reserve falls inside Natural England's Natural Character Assessment (NCA) Profile 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield. This NCA is characterised by underlying shallow coal measures and consists of the relatively low-lying land to the east of the Peak District National Park and the wool and engineering towns (in this case Sheffield) of the South Pennine Fringe to the west.

The Moss Valley, including the nature reserve, lies on the Lower Coal Measures Series, and is so underlain by bands of sandstone with (relatively) few coal seams. The result is a landscape of broadly undulating wooded hills, valleys and small ridges. The valley soils are predominantly heavy and seasonally wet. Crops are grown in free-draining areas, with cow pasture in wetter areas. Remnants of ancient semi-natural woodland on steeper slopes or wet valley bottoms are characteristic of the valley, which provides a number of ecosystem services for the area, notably in terms of carbon sequestration, flood mitigation and recreational provision.

The Moss Valley is situated to the south of the city of Sheffield, with housing development to the north and west. This contrasts sharply with the character of the valley itself, which has retained a diverse mosaic of topographic features and vegetation types. The Moss Brook meanders through a largely arable landscape, dissected by old hedgerows, ditches and scrub belts. Linear belts of woodland, of which the reserve forms part, define the valley bottoms and stream-sides. Together with the old lanes and packhorse routes, these woodlands now act as corridors for the passage of people and wildlife across the modern-day, arable landscape.

The whole of the Moss Valley contains 280 hectares of woodland, which is 10% of the total of woodland in lowland Derbyshire. Of this, 150 hectares is Ancient Semi Natural Woodland (ASNW) or Plantation on Ancient Woodland Sites (PAWS).

Site ownership and tenure

Moss Valley Woodlands nature reserve is owned by Sheffield City Council, but was let to Sheffield and Rotherham Wildlife Trust on a long lease in 2002.

Designations and policy context

The Moss Valley, including the area covered by the reserve, is designated as the Moss Valley Conservation Area (source: Derbyshire County Council). A Conservation Area is defined as "an area of special architectural and historic interest, the character or appearance of which it is desirable to preserve or enhance". In the execution of its duties as a planning authority, North East Derbyshire District Council is required to pay special attention to the character and appearance of its conservation areas when considering applications for planning permission.

The reserve's woodlands have also been designated as a Wildlife Site by Derbyshire County Council and Derbyshire Wildlife Trust. This local government designation is used to identify sites of importance for nature conservation that lie within Derbyshire but outside of the Peak District National Park and to offer them protection under the planning system. Long Wood and Coalpit Wood are part of the Owler Car Wood Complex Wildlife Site (number N233), Dowey Lumb is Wildlife Site number N270, and Newfield Spring Wood is Wildlife Site number N269. In addition, the adjacent Whinacre Wood, to the south of Long Wood, is part of Moss Valley Woods Site of Special Scientific Interest.

The lower (southern) section of Dowey Lumb is within the Moss Valley Floodzone (source: Derbyshire County Council).

The reserve contains a complex network of Public Rights of Way (PROW), and a concessionary bridle route (**Figure 2**). Both footpaths and bridleways pass through the reserve, linking it to a much larger network covering the whole of the Moss Valley. The nature reserve falls under the jurisdiction of Derbyshire County Council (DCC) in relation to Public Rights of Way.

The '**Rights of Way Improvement Plan for Derbyshire (2007)**' sets out the Council's approach to PROW. Under this document, the Council recognises the health and recreational benefits provided by access to the countryside, and the benefits to tourism and local economy. It aims to have an integrated, well managed and inclusive rights of way and access network which:

- Encourages responsible enjoyment by residents and visitors alike.
- Is a sustainable and safe network in keeping with the County's heritage, landscape and wildlife interests.
- Promotes healthier lifestyles.
- Helps support tourism and the local economy.

In the '**Statement of Action (2013-2017)**' the Council highlights the need to provide a connected, safe and accessible network, especially of bridleways, for users. The need to prevent illegal use of the network is also recognised, as is the need to improve way-marking and promote responsible use of the network.

Site safety, security and maintenance

A site specific risk assessment has been written for the Moss Valley Woodlands 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 polices covering environmental management and health and safety. These are amended and updated at regular intervals or to reflect legislative changes.

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

Tree inspections for the entire site are carried out every six years. Associated remedial work is undertaken as recommended. An annual ash (*Fraxinus excelsior*) monitoring programme is also in place.

The reserve's boundaries are largely open and marked by physical features (such as the stream) or a change of habitat type (from woodland to farmland). The boundaries of Coalpit and Long Woods are partially marked and secured by drystone walls or fencing. Major access points to the reserve are provided with gates, squeezes, and stiles as appropriate, to allow access by legitimate users of the site whilst excluding entry by cars (other than management vehicles), quad bikes and motorcycles.

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.

Littering and fire-lighting with associated littering can be a problem in both Coalpit and Bridle Road Wood. Waste is cleared when reported and during regular litter picks.

Adjacent land ownership

Moss Valley Woodlands nature reserve lies on Sheffield's urban fringe. Much of the land surrounding the reserve is under cultivation and is owned or managed by various local farmers (**Figure 3**). To the south and east, the reserve boundary abuts woodland. Cook Spring Wood, Owler Car Wood and Nor Wood are owned and managed by the Woodland Trust, with Whinacre Wood and Newfield Spring Wood being privately owned (by two separate owners). The farmland to the north of Coalpit Wood and Long Wood is owned by Sheffield City Council, and farmed by a tenant farmer.

Past, recent and present land use

The land within and surrounding Moss Valley woodlands nature reserve has long been used and modified by human activity.

Evidence for Anglo-Saxon occupation of the Moss Valley and surrounding area can be inferred from the frequency of Anglican suffixes in local place names, for example 'ham' meaning manor, 'ton' meaning farmstead and 'ley' or 'leah' meaning a glade or clearing.

In c.1183, Beauchief Abbey was founded by Robert Fitz Ranulph, Lord of Alfreton and Norton. The Abbey was located some distance to the north-west of the reserve, on a site now on the southern edge of Sheffield, but appears to have held land in the vicinity of the survey area. A site at Hazelhurst, to the east of the survey area, was being used for iron smelting as early as the late 12th century.

The history of Moss Valley, from the medieval period onwards, has been traced through document and field evidence (EDAS, 2001). Much of the survey area was owned and managed by the occupants of Hazelbarrow Hall (which preceded the farm on the same site) during the early post medieval period, and it may be that the same arrangement was present during the medieval period. In addition to the iron smelting activities of Beauchief Abbey, there is also evidence to suggest that coal and/or ironstone was mined in and around the reserve (Coalpit Wood) during the medieval period. Both coal and ironstone were mined here from bell-pits though coal was later mined via horizontal adits and shallow open-casting in the vicinity.

Despite the evidence for earlier medieval industry both within and around the survey area, there is little evidence for intensive or large-scale exploitation in the period after c.1500. However, some evidence indicates early post-medieval industrial activity to the north–east of Hazelbarrow Farm.

The exploitation of the reserve for coal appears to have ceased by the late medieval period but was replaced by woodland management. Documentary evidence suggests that woodland management formed an important industry in the Norton area from the mid 15th century onwards. The numerous archaeological sites relating to the woodland management and exploitation identified by the current survey suggest that this activity was most intense in Long Wood, with outliers in parts of Newfield Spring Wood. The 35 'ackers' of 'Springe Wood', together with the 'Tymber and Poles' mentioned in the 1635 survey of Hazlebarrow Hall suggest that woodland management was well established within the reserve and surrounding woodland by the early 17th century. The use of the word 'Springe' in 1635 also indicates that this managed woodland would have been coppiced. Archaeological evidence, place name evidence, historical records and the reserve's current ecology strongly suggest that coppicing was the traditional management for these woodlands (coppice with standards was the management regime most commonly practised in the Sheffield area). In South Yorkshire this was usually a coppice-with-standards, which replaced wood pasture as the dominant form of economic exploitation of woodland in south-west Yorkshire after the mid 15th century, although the use of wood for herbage continued until at least the 18th century.

Although the extent of any woodland within the reserve is unclear before the early 19th century, two sites associated with post-medieval woodland activity were found within a 500 m

radius of the boundary. These, together with the presence of ancient woodland indicator species, suggest that the reserve's woodlands are ancient in origin.

Following its management as coppice for white coal production, the woodland was greatly modified by the extensive planting of beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*), sycamore (*Acer pseudoplatanus*) and sweet chestnut (*Castanea sativa*) during the latter parts of the nineteenth century and the early twentieth century.

Today, the Moss Valley Woodlands nature reserve lie within a largely agricultural landscape (arable and pasture). Following a 1980s campaign by local conservation bodies and groups the biological value of the Moss Valley was recognised and the woodlands came into conservation management. However, it was also at this time that many of the unimproved meadows of the Moss Valley were lost, with arable farmland extending onto the valley bottoms (I.*Rotherham, pers.coms*). The woodland complex itself is predominantly important as an area for nature conservation and ancient woodland heritage, as well as for providing ecosystem services for the surrounding area and supporting recreational activities, such as walking and horse riding. It is a popular site for local naturalists who provided many of the records summarised in this report.

Services and site access

An overhead mains electricity line runs in a north-south direction that bisects the two limbs of the reserve (**Figure 4**). This has some management implications; the statutory undertakers for this are Yorkshire Electricity Group plc. The areas that are affected include the northern section of Newfield Spring Wood, and the middle of the Long Wood. Trees are removed as part of the maintenance directly under the power lines.

A high-pressure mains gas line in runs north-west to south-east through Dowey Lumb.

Water supply lines and fibre-optic telephone cables are not present on the reserve.

The original utility maps should be referred to before site works take place that may impact the services. An on the ground check should also take place with a cable detector. Care should be taken when using machinery within the woodland that work areas and access routes are carefully planned to avoid damage to sensitive areas of ecological or archaeological importance e.g. areas of wet woodland.

Public Rights of Way

A comprehensive network of footpaths and bridleways runs through Moss Valley Woodlands, with numerous desire lines (non-statutory routes) that link the Public Rights of Way also present **(Figure 2).** There are approximately 1 km of definitive footpaths within the reserve, and 0.7 km of definitive or permissive bridleway.

The reserve is well linked in to the wider footpath and bridleway network in the valley.

2.2 Environmental Information

Topography

The reserve lies on the northern and western side, and along the bottom of the Moss Valley, which runs east to west between the River Rother and Batemoor. The woodlands are low lying, sloping down from a high point of 195 m above ordnance datum (AOD) at their northern tip, to 100 m AOD at the southern end of Bridle Road Wood.

Geology and pedology

The underlying geology of the Moss Valley is typical of the Lower Coal Measures Series, with alternating beds of sandstones, and shales and mudstones, irregularly interspersed with coal seams of varying depth.

The reserve's pedology reflects the underlying bedrock, with acidic soils over the sandstone and neutral to base-rich soils associated with the shales and mudstones.

Hydrology

The eastern and southern boundaries to the reserve are both formed by streams **(Figure 5).** The Moss Brook, which runs from north to south through Bridle Road Wood, is classified by the Environment Agency as a Grade 2 river, meaning it is relatively unpolluted. However, the stream that flows through Long Wood is known to suffer occasional incidents of sewage pollution from storm-water overflows on the adjacent Jordanthorpe estate.

Hillside spring-lines and seepages appear as groundwater issues at the base of the more porous sandstone layers across the woodland, resulting in seasonally wet and waterlogged soils, particularly in Long Wood.

Climate

The Moss Valley lies at the climatic northern limit for species with a southern distribution, and the climatic southern limit for northern species of flora and fauna. Data is available for the thirty-year average from the local Sheffield weather station, is presented below.

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

The prevailing wind is from the west. The low-lying and sheltered position of the reserve's woodlands mean that windthrow is rarely an issue.

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 is predicted to rise in future years (Sheffield Local Plan, 2015).

It should be noted that the woodland in Moss Valley, including that comprising the reserve, 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, soil erosion from the adjacent farmland 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. Positive management of this reserve and its water sources together with a long term resolution to prevent it from becoming isolated from adjacent woodlands and biodiverse sites within the valley will increase its resilience and decrease the possibility of species loss.

2.3 Biodiversity

Biodiversity Action Plans

Moss Valley falls within the area covered by the Peak Fringe Area Action Plan section of the Lowland Derbyshire Biodiversity Action Plan. 2011 to 2020. The following Habitat Action Plans are relevant to the reserve: Lowland mixed deciduous woodland, lowland meadow.

Table 1: BAP Priority habitats and species

Lowland Derbyshire Biodiversity Action Plan (BAP) Priorities	
Habitat Action Plans	**Species associated with the habitats**
Lowland mixed deciduous woodland **Lowland meadow** **Rivers and streams**	**White letter hairstreak** *(Strymonidia w-album*) **Freshwater white-clawed crayfish** (*Austropotamobius pallipes*)* **Skylark** (*Alaudia arvensis*)* **Song thrush** (*Turdus philomelos*) **Linnet** (*Carduelis cannabina*) **Bullfinch** (*Pyrrhula pyrrhula*) **Lesser spotted woodpecker** *(Dendrocopos minor)** **Starling** *(Sturnus vulgaris)* **Yellowhammer** *(Emberiza citronella)* Pipistrelle Bat (*Pipistrellus pipistrellus*)

*species recorded in the Moss Valley but not recorded on reserve for at least 10 years

Habitats and species in bold are on the UK Priority Species and Habitats Action Plans, though may be categorised differently. Of additional conservation interest are the woodland ancient indicator species:

Bluebell (*Hyacinthoides non-scripta*), wood sorrel (*Oxalis acetosella*), wood anemone (*Anemone nemorosa*), dog's mercury (*Mercurialis perennis*), wood mellick (*Melica uniflora*), wood millet (*Millium effusum*), yellow archangel (*Lamiastrium galeobdolon*), townhall clock (*Adoxa moschatellina*), ramsons (*Allium ursinum*) and wild daffodils (*Narcissus pseudonarcissus*).

Habitats

The Moss Valley Woodlands nature reserve forms one part of a woodland complex, set in a rural landscape which supports a wide variety of species-rich habitats. The reserve encompasses Coalpit Wood, Long Wood, and parts of Bridle Road Wood and Newfield Spring Wood. The boundaries of the nature reserve managed by Sheffield and Rotherham Wildlife Trust do not encapsulate all of the Moss Valley woodlands (**Figure 1)** but do include a remnant

of wood pasture – now semi-improved neutral grassland, bracken and scrub – known as Dowey Lumb.

Woodland

The woodlands on the reserve all derive from semi-natural ancient oak (*Quercus* spp.) wood, though greatly modified by the historic planting of sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*) and sweet chestnut (*Castanea sativa*). Despite the woodland canopy being greatly modified, the understorey and ground flora have remained largely intact. There are several small areas of species-rich wet woodland adjacent to streams and along flush lines.

The component woodlands on the reserve are distinct in character and are therefore described individually below, based on data gathered during the 2005 Phase I survey (Senkans, 2005):

Coalpit Wood (Cpt 450)

Coalpit Wood is at the western-most end of the reserve, has an even-aged canopy dominated by sycamore, with abundant mature oak hybrids (*Quercus petraea x rubra*), occasional ash and silver birch (*Betula pendula*), and (rarely) horse chestnut (*Aesculus hippocastanum*) and common alder (*Alnus glutinosa*). The understory is well developed and bramble (*Rubus fruticosus*) dominated, with occasional holly (*Ilex aquifolium*), hazel (*Corylus avellana*), wild cherry (*Prunus avium*), rowan (*Sorbus aucuparia*) and elder (*Sambucus nigra*). The ground flora is well developed but characteristically dominated by bluebells and creeping soft-grass, with occasional yellow archangel, wood sorrel, and locally-dominant wood anemone. The ancient woodland indicators yellow pimpernel (*Lysimachia nemorum*) and perforate St. John's wort (*Hypericum perforatum*) are also present. There is also a small wet flush within the centre of the wood, with willow (*Salix* sp.), meadowsweet (*Phillipendula ulmaria*) and rushes (*Juncus* spp.).

The combination of species suggests that this is W10 *Quercus robur-Pteridium aqulinum-Rubus fruticosus- Hyacinthoides non-scripta* woodland.

An old hedge bank runs adjacent to a defunct drystone wall along the northern boundary of the woodland. Fencing was erected in 2004 to prevent motorbike access to the woods, with some shrub planting, has improved the woodland edge structure, providing a variety of heights and densities, and acting as a buffer between the arable fields and the woodland. Though it is not particularly diverse (it contains hazel, hawthorn and elder), it buffers the woodland flora from effects of spray drift and fertiliser and also provides opportunities for nesting, roosting and feeding for birds and small mammals including bats. This area of dense woodland edge shrubs also prevents access by motorbikes from the adjacent farmland. A field margin exists between the woodland edge and the crop; this is retained and managed as a cross-country course and again helps to buffer the effects of arable farming on the woodland flora.

Long Wood (Cpt 451a & b)

Long Wood is characterised by densely-spaced, mature and frequently drawn oak and beech (W14 *Fagus sylvatica-Rubus fruticosus* community), forming a closed canopy and situated on a moderate, south-facing slope. Large, mature rowan, sweet chestnut and wych elm (*Ulmus glabra*) are occasional throughout. Individual yew (*Taxus baccata*), hornbeam (*Carpinus betulus*), wild cherry and Corsican pine (*Pinus nigra* var. *corsicana*) are present in the area adjacent to Dowey Lumb. The understorey in the majority of Long Wood is dominated by holly which forms extensive haggs across the woodland. Localised areas of beech regeneration are present. Hawthorn (*Crataegus monogyna*) is occasional, with hazel present along flush lines and in areas adjacent to the stream. The drier parts of the wood, and the mid-slope also have a few regenerating oak, sycamore and silver birch; these species are utilising the increased light levels following windblow. In recent years large areas of dense holly have been mechanically removed from the woodland creating tracts of bare ground.

Bluebell, creeping soft-grass, bramble and honeysuckle (*Lonicera periclymenum*) are characteristic of the ground flora in drier areas of the woodland with an oak, ash or sweet chestnut canopy. In areas of beech, the ground flora is characterised either by a dense layer of beech mast, which excludes ground flora, or is absent due to the density of holly haggs. Where holly has been removed in 2017 and 2019 the ground remains largely bare, although recolonisation by grasses, bramble and tree seedlings is beginning to occur. Wavy hair-grass (*Deschampsia flexuosa*) dominates the more acidic, steeper slopes. Beech is regenerating sporadically across the woodland, in particular where the canopy has opened up due to tree safety works and possibly as a result of the thinning.

Stands of semi-mature sycamore are concentrated in the area adjacent to the stream. In the wet flushes adjacent to the stream course, the enriched soils support a variety of woodland plants, including dog's mercury (*Mercurialis perennis),* lesser celandine (*Ranunculus ficaria*), greater stichwort (*Stellaria holostea*), wood anemone, wood millet (*Millium effusum*), marsh marigold (*Caltha palutrus*), lady fern (*Athyrium filix-femina*) and ramsons. There are also ancient woodland indicators present including yellow archangel, opposite-leaved golden saxifrage (*Chrysosplenium oppositifolium*), yellow pimpernel, wood speedwell (*Veronica montana*), sweet woodruff (*Galium odoratum*), wood sorrel and wood mellick. This community is found in compartment 451b, under the hazel coppice (**Figure 7**).

The woodland edge along Long Wood is structurally poor and species-poor in places. There is little diversity of structure in the transition from mature trees to open field. The field margin acts as the only buffer to spray drift and fertilisers. The woodland edge therefore offers limited opportunities for feeding passerines, small mammals and invertebrates. However, the north-westerly edge does contain a dense stand of guelder rose (*Viburnum opulus*), which is scarce in the woodland itself.

Bridle Road Wood (452a)

Bridle Road Wood lies on a moderate to steep, east-facing valley side running down to the Moss Brook. The woodland is predominantly sycamore- and beech-dominated to the north, with a canopy dominated by mature, well-crowned sessile oak, mature beech, frequent semi-mature silver birch and occasional field maple (*Acer campestre*) and sycamore to the south, and an area of scrub adjacent to Dowey Lumb..

The northern part of Bridle Road Wood has a canopy characterised by densely-spaced 60-80 year old sycamore, with frequent beech, occasional oak and ash forming a generally closed canopy. Dead standing and fallen wych elm (*Ulmus glabra*) are frequent, and many of the elm stumps are coppicing naturally. Apart from this, the understorey is poorly formed, with scattered pole-stage beech and sycamore. Holly and hawthorn are present but rare. The northern section and parts of the southern section are more closely associated with the W10 community (*Quercus spp. – Pteridium aquilinum – Rubus fruticosus*).

To the south the canopy is open, with a well-developed understorey of hazel, blackthorn (*Prunus spinosa*), dog rose (*Rosa canina*), holly *(Ilex aquifiolium)*, hawthorn (*Crataegus monogyna*) and crab apple (*Malus sylvestris*). Wood melick (*Melica uniflora*), wood barley (*Hordelymus europaeus*), wood millet (*Milium effusum*), and barren strawberry (*Potentilla sterilis*) are present in the ground flora. The ground flora also contains pignut (*Conopodium majus*), marsh thistle (*Cirsium palustre*) and bitter vetch (*Lathyrus linifolius*). These species are usually associated with open areas, and are probably remnants of when this area had a more open character.

Elements of W7 (*Alnus glutinoa-Fraxinus excelsior–Lysimachia nemorum)* woodland community are present along the Moss Brook.

As the woodland grades into Dowey Lumb, birch and hawthorn scrub become dominant, with blackthorn (*Prunus spinosa*) forming locally dominant patches. The hawthorn here are old and often multi-stemmed from historic coppicing.

The western edge of the wood runs along an ancient hedgerow bank, where there is coppiced hazel, coppiced hawthorn and holly. The hedgerow at Bridle Road Wood contains a row of mature ash, some of which have fallen but are re-growing, and also contains wild cherry, field maple, and rose (*Rosa* sp). The hedgerow ground flora contains dog's mercury, hogweed, (*Heracleum sphondylium*), greater stitchwort (*Stellaria holosteum*), and wood sage (*Teucrium scorodonia*).

Little woodland management has taken place in Bridle Road Wood over the past 45 years, although tree safety works have been carried out as required.

Newfield Spring Wood (452b)

Newfield Spring Wood has a varied canopy characterised by beech, oak and sycamore. The canopy is generally closed, and the woodland generally has a poorly-developed understorey, although occasional thickets of holly, wych elm, bramble and birch are present. Tree regeneration is sporadic throughout, the exception to this being the northern-most part of the reserve where a good number of oak, beech and sweet chestnut saplings are growing. In steeper areas, the understorey has frequent rowan, hazel and silver birch. The ground flora throughout the woodland is co-dominated by bluebell and creeping soft-grass, but is more diverse adjacent to the stream, as in Long Wood. The woodland is W16 *Quercus-Betula–Deschampsia flexuosa* woodland on the more acidic soils in the northern part of Newfield Spring Wood. Small patches of W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland are also present, adjacent to the River Moss. Elements of W14 *Fagus sylvatica–Rubus fruticosus* exist in the southern part of Newfield Spring Wood.

The very northern, most beech dominated, part of the woodland was thinned, and beech removed between 2002 and 2005. There has been a flush of oak regeneration as a result; indicating that this thinning has achieved the objective of opening up the canopy to allow natural regeneration of oak to occur.

Table 2: Summary of woodland management works since 2000

Year	**Woodland**	**Management**
2002	Coalpit Wood	10% canopy thin across woodland
2002-2005	Newfield Spring Wood	Woodland thinned favouring oak
2003	Bridle Road Wood	Thinning of young woodland on boundary with Dowey Lumb
2013	Coalpit Wood	Under-planting of canopy with native shrubs to diversify the understory
2015	Long Wood	Recut hazel coppice in Compartment 451b
2015	Long Wood	Group fell to create regeneration glades at the eastern end of Compartment 451a
2017	Long Wood	Halo thin of selected trees

2017	Long Wood	Widespread holly clearance
2019	Long Wood	Widespread holly clearance

Wood Pasture (453)

Dowey Lumb is an area of grassland on a south facing slope at the south-eastern end of the site, where the two branches of woodland meet. It is believed to be an area of relict woodland pasture, though the area has not been grazed within living memory. Today, the Lumb supports a diverse flora, with a number of plant communities characteristic of different habitats present, as well as a range of fungi.

Elements of the woodland plant communities, including species such as bluebell, greater stitchwort, wood anemone, wood sorrel, creeping soft-grass and red campion, are found across the Lumb. These are growing interspersed with neutral grassland species such as Yorkshire fog (*Holcus lanatus*), meadow foxtail (*Alopecurus pratensis*), rough and smooth meadow grasses (*Poa trivialis* and *P. pratensis*), common knapweed (*Centaurea nigra*), common sorrel (*Rumex acetosa*), bitter vetch (*Lathyrus linifolius* var. *montanus*) and cowslips *(Primula veris)*. Pignut (*Conopodium majus*) a species characteristic of old pasture, is present.

Species characteristic of acid grassland are also found on the Lumb. These include tormentil (*Potentilla erecta*), heath bedstraw (*Galium saxatile*), lesser stitchwort (*Stellaria graminea*), betony (*Betonica officinalis*) and slender St. John's wort (*Hypericum pulchrum*).

In several areas across the Lumb, the soil is damp and species characteristic of wet grassland and damp woodland dominate. Tufted hair-grass (*Deschampsia cespitosa*), wild angelica (*Angelica sylvestris*), common valerian (*Valeriana officinalis*), marsh thistle (*Cirsium palustre*), meadow-sweet (*Filipendula ulmaria*), sneezewort (*Achillea ptarmica*), oval sedge (*Carex ovalis*) and creeping buttercup (*Ranunculus repens)* are all present, along with stands of compact rush (*Juncus conglomeratus*) and rosebay willowherb (*Chamerion angustifolium*).

The scrub area of the Lumb is comprised of a range of species including hawthorn, crab apple (*Malus sylvestris*) and bird cherry (*Prunus padus*). Bracken occurs across grassland areas of Dowey Lumb, although its vigour has been greatly reduced by years of management and it no longer dominates the area.

Watercourses

The reserve has a considerable freshwater resource, in the form of two streams that join to form the River Moss, plus a number of seasonally-wet flushes. These support a varied flora; plant communities along the streams are more diverse than in drier areas. Water quality in the Moss Valley is recorded as being moderate to good. However, in times of high rainfall, the local arrangement of surface-water drains and foul water sewers occasionally result in the discharge of raw sewage into the brook.

A report written in 2002 on the water quality within the Moss Valley concluded that the stream running southeast from the top of Long Wood was of medium quality, with some indication of pollution. The stream running from the northern parts of the Moss Valley (Newfield Spring Wood and Bridle Road Wood) to Dowey Lumb was found to be of good quality. The two watercourses running into Coalpit Wood from Jordanthorpe Parkway were identified as very polluted in this survey. The combination of the diversity of species present and aquatic indicator species resulted in this conclusion.

Species

Fungi

The reserve's fungal communities have been well surveyed, once in 2001 (Senkans, 2001) and again in 2015 (Clements, 2015).

46 species were found in autumn 2001; some growing in abundance. The most prolific being the *Russula* family, especially the common yellow russula *(Russula ochroleuca)*, the charcoal burner *(R. cyanoxantha)* and the blackish purple russula *(R. atropurpurea).* Long Wood was particularly rich in these colourful mycorrhizal fungi, especially under areas where beech and oak are plentiful.

In autumn 2015, 126 species of fungi were recorded on the reserve, placing it amongst the best sites for fungi in the area. Newfield Spring, Bridle Road Wood, Long Wood were all rich in fungi, due both to the species composition and prevalence of (fallen) dead wood. Dowey Lumb supported a number of grassland fungi although the sward height is generally too long to be ideal for these species.

Coalpit Wood was found to be less rich in fungi, due to lower quantities of dead wood (volumes purposely kept low as this area suffers from petty vandalism and misuse such as fire-starting) and the prevalence of bramble.

Invertebrates

A number of different invertebrate surveys have been carried out within **Newfield Spring, Bridle Road and Long Woods** over the past two decades, and a number of casual records have also been made. The most notable feature of the existing data is the presence of a high percentage of ancient woodland indicator hoverflies. The Moss Valley is considered to support

a very rich hoverfly fauna, with 15 species indicative of ancient woodland recorded up to 1987. Newfield Spring Wood has 36 species of hoverfly with widely differing ecological niches. As larvae, most are aphid predators but there are also species, such as *Rhingia campestris,* which inhabit dung, *Merodon equestris* which feed on bulb species, species of decaying wood (*Xylota* spp.) and the *Eristalis* spp which breed in water-filled rot holes and wet muddy pools. No information for Coalpit Wood has been received but species present here will reflect the composition found in the other areas of the reserve.

Most records from **Dowey Lumb** focus on hoverflies and Lepidoptera (mostly moths), with some useful records of a small range of true bugs. Many of the hoverflies found had come from adjacent woodland and wet habitats, visiting the Lumb to feed on the nectar of grassland flowers. Examples include the ramsons hoverfly (*Portevinia maculata*), which is exclusively a deciduous woodland species found where ramsons occur, as well as *Criorhina ranunculi* (first recorded in 1984 and also in Long Wood), *Brachypalpoides lenta* and *Xylota sylvarum*. These species are local or very local and weakly indicative of ancient woodland. *Didea fasciata* is more strongly indicative and also nationally notable. Species characteristic of woodland margins, such as *Pipiza fenestrata* are also present.

Both moths and butterflies have been recorded on the Lumb. Moths constitute the largest group, with 85 species recorded to date, including some micro-moths. The majority are common species, including generalists such as the swallow-tailed moth, the larvae of which feeds on a wide variety of trees and shrubs. Other woodland and hedgerow species include green oak tortrix (*Tortrix viridana*), the locally notable slender brindle (*Apamea scolopacina*) whose larvae feed on woodland grasses, the rufous minor (*Oligia versicolor*) and scarce silver-lines (*Bena prasininana*), which feeds mainly on oak. Nine species of pyralid moth, a mainly grassland species, are present on the Lumb and caterpillars of the chimney sweeper moth (*Odezia atrata*), which feed on pignut, were also recorded. An adult chimney sweeper moth was recorded on Dowey Lumb in 2001.

The butterfly fauna of Dowey Lumb comprises many species common to the Sheffield area, such as orange tip (*Anthocharis cardamines*), ringlet (*Aphantopus hyperantus*), green-veined white (*Pieris napi*), small copper (*Lycaena phlaeas*), peacock (*Inachis io*) and gatekeeper (*Pyronia tithonus*).

White-letter hairstreak, a Derbyshire BAP Priority species, has been recorded in the Moss Valley in 1992 and 1998 but has not been recorded on the reserve. The closely related purple hairstreak (*Favonius quercus*), an oak specialist, is present on the reserve.

A butterfly survey undertaken in 2001, concluded that the mature nature of the reserve's woodlands, with their closed canopies, limited their suitability as a habitat for many butterfly species. The Lumb is considered of greater value due to its open but sheltered character, and the range of sward heights and densities.

The Coleoptera (beetles) are another order of note, playing an important role in the woodland food web. Around 1,000 beetle species rely on trees and woodland habitats in the UK so the few species recorded on the reserve are undoubtedly an under-representation of what is present there. Coleoptera are heavily represented but not restricted to the saprophytic community, with many species acting as "recyclers" –of dead wood, dung, carrion or other waste. Additionally, as both adults and larvae, they form an important food source for many other woodland animals including woodpeckers, swallows and swifts, and some warbler species.

Common field grasshopper (*Chorthippus brunneus*) have been recorded in Dowey Lumb, where numbers appear to have increased in recent years in response to the grassland management regime.

White-clawed crayfish **(***Austropotamobius pallipes***)** are another BAP species historically present in the valley but not present in the reserve's streams, where the presence of signal crayfish (*Pacifastacus leniusculus*) poses a long-term barrier to any recolonisation.

Fish

A number of Bullhead (*Cottus gobio*) and Brown Trout (*Salmo trutta*) were recorded in the reserve's streams. There were greater numbers in the northern tributary (running through Bridle Road Wood) than in the southern tributary (running through Long Wood). In this southern tributary, there were greater numbers in the eastern section than in the western section, possibly due to higher levels of sewage pollution in the upper parts of this stream.

Amphibians and reptiles

Adder (*Vipera berus*), slow worm (*Anguis fragilis*) and great crested newt (*Triturus cristatus*) have been recorded in Moss Valley but not within the reserve boundary. Grass snake (*Natrix natrix*) has been recorded on the reserve, suggesting the presence of amphibians such as common frog (*Rana temporiaria*) and/or Common Toad (*Bufo bufo*) in the area. A single record for Common Lizard was received in 2020 but more survey work would be required to determine the exact location and extent of reptile and amphibian populations on the reserve.

Birds

Table 3: Birds of Conservation Concern

Red listed		**Amber listed**	
Woodcock	*Scolopax rusticola*	Mallard	*Anas platyrhynchos*
Song thrush	*Turdus philomelos*	Stock dove	*Columba oenas*
Lesser spotted woodpecker*	*Dendrocopus minor*	Bullfinch	*Pyrrhula pyrrhula*
Spotted flycatcher*	*Muscicapa striata*		

*species recorded in the Moss Valley but not recently recorded on reserve

The reserve's breeding bird fauna were surveyed in 2002 and again in 2012 using the Common Bird Census methodology. The species and populations recorded are, of course, a subsection of the avifauna of the wider woodland. However, as recent survey data for Nor Wood and Owler Carr Wood is not available, the contribution of the reserve's bird population to that of the whole, and the relative suitability of habitats on the reserve to those in the wider area, cannot be ascertained. Nevertheless, the Moss Valley nature reserve clearly supports a rich assemblage of woodland birds.

The reserve's bird communities reflect the opportunities for feeding and nesting within the woodland. Seedeaters, such as linnet (*Carduelis cannabina*), a national BAP priority species, greenfinch (*Carduelis chloris*) and goldfinch (*Carduelis carduelis*) form a relatively small component of the assemblage, reflecting the paucity of feeding opportunities within the reserve. However, species able to utilise beech mast, such as nuthatch (*Sitta europea*), are well catered for, and a good population of this species is present in the woodland. The woodlands' holly, elder and hawthorn shrubs also support species such as bullfinch (*Pyrrhula pyrrhula*), and song thrush (*Turdus philomelos*), both national Biodiversity Action Plan priority species, as well as the commoner blackbird (*Turdus merula*).

Many insectivorous birds, such as chaffinch (*Fringilla coelebs*), robin (*Erithacus rubecula*), wren (*Troglodytes troglodytes*), long-tailed tit (*Aegithalos caudatus*), blue tit (*Parus caeruleus*), and treecreeper (*Certhia familiaris*) are common throughout the woodland. Great-spotted woodpecker (*Dendrocopus major*), are regularly recorded. Occasional sightings of lesser-spotted woodpecker *(Dendrocopus minor*) in the area suggest that this species may include the reserve's woodlands as part of its feeding range.

At the top of the food chain, tawny owl (*Strix aluco*), buzzard (*Buteo bueo*) and sparrowhawk (*Accipter nisus*) have been recorded in the woodlands. Grey wagtail (*Motacilla cineria*) and kingfisher (*Alcedo atthis*) have been recorded along the streams. Other birds of prey, including red kite (*Milvus milvus*) are present in the valley and are likely to be recorded on the result periodically.

When data from the 2002 and 2012 breeding bird surveys were compared, it showed that many of the species identified had comparable numbers of territories across the two surveys, suggesting a stable bird community. Territory numbers were, however, significantly different

for 4 species. Looking at the data, it would appear that the number of breeding robins on the reserve declined over the 10 years between surveys, whilst the breeding populations of goldcrest, tree creeper, great tit and nuthatch increased over the same period.

Mammals

A number of common British mammals, including roe deer (*Capreolus capreolus*), badger (*Meles meles*), pipistrelle bat (*Pipistrelle* sp.), fox (*Vulpes vulpes*), grey squirrel (*Sciurus carolinensis*) and brown hare (*Lepus europaeus*) have been recorded on the reserve. Recent surveys have found no trace of water vole along the reserve's streams.

Grey squirrels are ubiquitous throughout the reserve and are the most often seen mammal. The large populations of this species may, in the future, prove problematic in terms of tree regeneration on the reserve as they are known to cause extensive damage to the bark of pole stage beech.

Several badger setts are known and badger roam widely across the area. A full badger survey for the reserve has been carried out. The results are lodged with Sheffield and Rotherham Wildlife Trust. Badgers are constantly under threat from badger baiters. Sett protection measures have been undertaken by the local badger group. Liaison, advice and protection measures will be continued with the local badger group as required.

Sheffield's roe and muntjac deer (*Muntiacus reevesi*) population has grown in recent years. Although both species are found in the valley, populations are not thought to be large and may be being controlled by local landowners.

Pipistrelle bats have been recorded on the reserve, feeding along the woodland edge and over Dowey Lumb. Brown long-eared bats (*Plecotus auritus*) have also been recorded roosting in the woodlands.

2.4 Infrastructure

Walls and fencing

The reserve is bordered by other woodlands, and arable fields. The boundary walls, where these exist, are in a state of disrepair. Post and rail fencing and post and wire fencing exists between the woodland and the farmland in places, particularly on the boundaries of Coalpit Wood and along the northern boundary of Long Wood. These fences are necessary to deter and prevent access to the woodland by motorcycles. A second length of fencing runs across the neck of Coalpit Wood, separating it from Long Wood, for the same reason.

Dowey Lumb is enclosed by post and rail fencing to prevent entry by horses and bicycles.

Footpaths and bridleways

Moss Valley Woodlands nature reserve has a good network of footpaths, concessionary bridleways and desire lines. These are generally unsurfaced through Newfield Spring, Bridle

Road and Coalpit Wood, with surfaced sections of bridleway adjacent to Dowey Lumb and in Long Wood.

The condition of the reserve's footpaths is generally very good, with localised boggy places in winter when the woodland soils can get waterlogged. The condition of the concessionary bridleway route through Long Wood is much improved since extensive resurfacing works in 2019.

Access furniture

Stiles and squeeze gaps have been installed at reserve entrances to prevent motorbikes from accessing the woods, and on footpaths to prevent horses and dissuade bikes from using these routes. The reserve's boundaries are protected by a series of walls, hedges and fences only some of which belong to the site. Two areas of internal fencing also exist, with one fenceline separating Coalpit Wood from Long Wood and a second enclosing Dowey Lumb.

Crossing points on the reserve's streams are marked by bridges, fords or stepping stones. Features on Right of Way are the responsibility of Derbyshire Rights of Way whilst those on the permissive bridleway route fall to SRWT to maintain.

Way-marking is sporadic across the reserve. 1 bench is present on site, in Long Wood.

2.5 Cultural Context

Site archaeology

Moss Valley Woodlands nature reserve contains a number of archaeological features. A walk-over archaeological survey of the reserve was carried out in 2001 (EDAS, 2001) and recorded a total of 32 features, with a further 12 lying within 500m of its boundaries (**Figure 6**).

A single medieval site was identified within the study area. This is an area of shallow sub-circular depressions at the west end of Coalpit Wood, believed to be the result of coal extraction workings. Since there are no visible remains of spoil or upcast around the depressions, it is believed that this feature, if indeed it is mining related, is probably the result of shallow surface workings.

The majority of the archaeological sites recorded in the survey area (58%) are post- medieval (AD 1540 onwards) in date. Many are associated with woodland management and exploitation, and include two substantial areas of charcoal platforms and associated features in Long Wood. Here, the platforms are well defined and a number of well-preserved white coal kilns are also evident. All are situated on or just above sloping ground overlooking watercourses.

Two communication routes of probable post-medieval date are present on the reserve. These take the form of hollow ways or terraced track ways. Their positions close to existing footpaths suggest that they may form earlier alignments of existing routes.

A small number of industrial sites are also present on the reserve. The most visible of these is the site of an old quarry in the northeast corner of Coalpit Wood, known as the 'bomb hole'. Today this is represented by an oval depression. No stone or working faces are visible and motorcycle scrambling damaged the feature during the 1980s and 1990s, although it is no longer occurring.

In addition to the above sites, the reserve contains another 12 sites of unknown period. The majority are probably poorly defined post-medieval woodland management features or natural features, like conjoined linear depressions (possible recent drainage ditches) in Coalpit Wood, two possible platforms and conjoined linear depressions in west Long Wood, disturbed grounds in Bridle Road Wood and Newfield Spring Wood, linear depressions, a curvilinear depression (possible drainage ditch) and a circular earthwork in New Springfield Wood.

The reserve also contains examples of "living archaeology" in the form of old holly haggs and coppice stools which provide links to past management,

The key management guideline for these archaeological features is to minimise the amount of ground disturbance in their immediate vicinity. Consequently, the potential impact of management works such as fencing, path creation, and woodland management works and scrub removal, on the reserve's archaeology should be considered and mitigated as necessary. The Derbyshire Archaeology Service has offered to provide advice and guidance on the

preservation of the reserve's archaeological heritage and should be consulted when planning and delivering the capital works programme.

Community Engagement

SRWT recognised the importance of community involvement in the Moss Valley Woodlands nature reserve in both the formulation of the management plan and in its delivery. Active participation is encouraged through events and regular volunteer work days on site.

The Moss Valley Reserves User Forum meets twice a year. The group has no constitution, but plays an active role in determining and monitoring the management of the site. Meetings are open to all and attract representatives from a number of local groups including the Moss Valley Wildlife Group, local landowners, the Moss Valley and District Riders, Eckington Riders, the Northeast Badger Group, the Dronfield Footpaths and Bridleways Association, Dronfield and District Natural History Society, and local councillors.

SRWT events in Moss Valley are advertised in several locations. Temporary posters are put up at reserve entrances and are also publicised in the Wildlife Trust e-newsletter and on the Trust's website, Facebook page and Twitter account.

Recreation

The Moss Valley, including the Moss Valley Woodlands nature reserve, contains an extensive Public Rights of Way network, comprising both bridleways and footpaths. The reserve is easily accessible on foot, and on horseback from the livery at Hazelhurst Farm, and from Owler Car Lane.

The woods receive a low-level but steadily increasing use by the public, with a notable increase in footfall in 2020 due to the COVID-19 crisis and lockdowns. Walking, including dog walking, wildlife watching and horse riding are the chief recreational pursuits, with mountain biking increasing in popularity.

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. Most people use the reserve in combination with adjacent areas during a walk or ride. The majority of visitors are from the local area.

A table showing the access protocol for Moss Valley Woodlands nature reserve is given below:

Table 4: Access protocol for Moss Valley Woodland

Walkers	Are permitted to use the reserves network of footpaths and bridleways (both statutory and permissive).

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

The recreational uses to which the reserve is put are generally compatible, both with each other and with the reserve's ecological value. Currently, the respective users of the woodland co-exist with little conflict. Previous conflicts between walkers and horse riders stemmed chiefly from the poor condition of many paths within the woodland which are now largely resolved.

Little parking is available in the vicinity of the reserve. A few parking spaces are available at the end of Owler Car Lane and on Lightwood Lane and Hazelhurst Lane. Parking is also available on the Jordanthorpe estate, although entry at this point requires crossing the Jordanthorpe Parkway without benefit of any facilitating infrastructure.

Visitor information and interpretation

Current visitor information about the Moss Valley as a whole and the reserve in particular, is available on line, from the Trust, the Moss Valley Wildlife Group and a number of other local sources.

Disabled access

The accessibility of Moss Valley Woodlands nature reserve to people with mobility disabilities is unavoidably limited by the nature of the terrain and the lack of contiguous parking. Access by wheelchair or mobility scooter to any portion of the reserve is not possible.

Access for those with limited mobility may be possible, depending on the extent of their mobility and stamina. DEFRA's stipulations and guidance relating to access, taking into account the Equality Act 2010, are followed when installing footpath furniture on site to support ease of access.

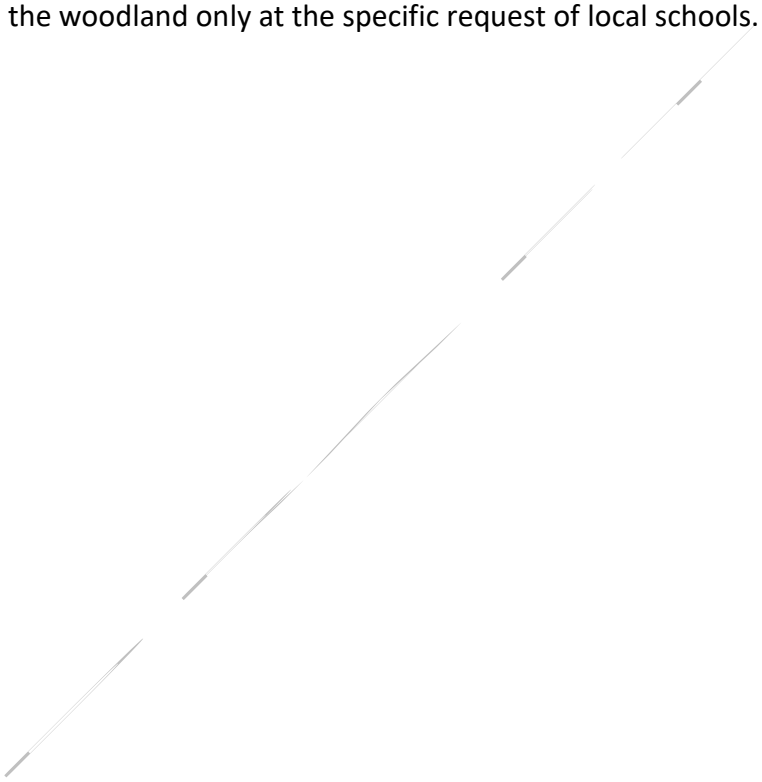
Community Engagement

Sheffield and Rotherham Wildlife Trust recognises the importance of community involvement in the Moss Valley Woodlands nature reserve in both the formulation of the management plan and in its delivery. The Trust seeks to actively engage the local population in the reserve through regular volunteer work days, an annual programme of events and activities and through the reserve user forum, which plays an active role in the management of the site. Additionally, the Trust does, on occasion, partner with the Moss Valley Wildlife Group on the delivery of wildlife walks in the area, in addition to which the Group also run their own events programme.

Outdoor learning

Since 2001 SRWT has been working with primary schools, secondary schools and youth groups to bring young people from the local area to the woods. Outdoor learning is a key area of development for SRWT at the current time. The Trust provide outdoor learning 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, as well as learning opportunities for all the family.

Currently, the Trust's focus is in attracting school and youth groups to one of our outdoor learning hub sites (Ecclesall Woods, Greno Woods) or in delivering sessions on or near individual school premises. The size, topography and lack of facilities at Moss Valley Woodlands nature reserve make it unsuitable as an education hub. Consequently, the outdoor learning team will deliver sessions in the woodland only at the specific request of local schools.



Economic

Past, present and future grant funding

Moss Valley Woodlands nature reserve has received considerable investment over the past twenty years. The majority of this investment has been in woodland management works, (thinning, group felling and tree safety works) and infrastructure improvements including the creation and surfacing of the concessionary bridleway loop, and the management of Dowey Lumb. The majority of this investment has come from the Heritage Lottery Fund, from Woodland Grants Scheme/ Countryside Stewardship and from Landfill Tax.

The entirety of Moss Valley Woodlands is certified as being of UK Woodland Assurance Standard and is in receipt of Countryside Stewardship funding covering the period 2018 to 2022.

Timber

Moss Valley Woodlands nature reserve has a considerable timber resource. The woods are managed under a programme of continuous cover forestry meaning that careful management of the reserve's hardwood will allow the sale of selected specimens felled during thinning or group felling works. However, vehicular access to the reserve is extremely limited to all areas other than Coalpit Wood, making the economic extraction of timber difficult. Consequently, much of the woodland management carried out is done as "fell to waste" forestry with arisings retained on site.

Membership recruitment

The Moss Valley Woodlands nature reserve is one of the Trust's smaller and less well known reserves. Nevertheless, it has the potential to raise the Trust's profile and to showcase its work in the local area and to its members.

Employment and training

The reserve currently provides part-employment to three people directly through the Trust and also contributes indirectly to 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.

Additionally, the woods provide a variety of opportunities for skills development, in terms of practical conservation techniques, habitat management, ecological identification and forest management and the Trust's practical conservation work teams, which include trainees and volunteers, work regularly in the woods.

Communication and marketing

At the current time, welcome signage, in the form of the Trust's standard wooden 'Welcome to Moss Valley Woodlands' sign, are present at three of the entrances to the woods. Minor entrances are marked with small welcome signs showing the Trust logo and contact details.

A webpage about the reserve is present on the Trust's website giving general information about the reserve. www.wildsheffield.com/nature-reserves/our-reserves/mossvalley

3.0 Reserve Vision and Features of Interest

3.1 Vision Statement

Our vision for Moss Valley Woodlands by 2070 is:

Set in an agricultural landscape, Moss Valley Woodlands is an ancient woodland rich in wildlife. It is well connected with other woodland and biodiverse areas in the Moss Valley

Hugging the streams on the valley bottoms, beautiful ancient woodlands are carpeted in bluebells, sweet woodruff and wood anemone in spring and early summer. Majestic oak and beech trees tower overhead, the two halves of the reserve meeting at Dowey Lumb, a small meadow rich in wildflowers and fungi with scattered trees and scrub.

Dead wood, both standing and fallen, is common on the reserve which supports a diverse fungal assemblage.

The reserve's streams retain a reliable water flow and are home to a good population of freshwater invertebrates which, in turn, support populations of brown trout.

The reserve is teeming with birds, with over 30 species breeding here on a regular basis, including woodpeckers, yellowhammers and linnets.

On the reserve man-made features are minimal, well-kept; and in keeping with the naturalistic setting.

The site is well-used by walkers and horse-riders from the local area, yet retains an air of tranquillity and the sense of providing an escape from the hustle and bustle of city life. A network of footpaths and bridleways provide good public access to the woods and the adjacent land.

Well-behaved dogs are welcome on the reserve; with dog owners assiduous about keeping them under control, particularly during the bird breeding season, and in removing their waste from site.

3.2 Feature 1: Broadleaved woodland

Objective: 24ha native broadleaved woodland in good condition by 2070

Attributes of woodland in good ecological condition

Attribute	Performance Indicator	Monitoring
Species composition.	≥ 70% of the canopy comprises native broadleaf species. ≥ 7 native broadleaved tree and shrub species represented in the canopy and understory over at least 50% of the woodland. The dominant canopy species will be oak (*Quercus petraea* or the hybrid *Q. petraea x robur*), birch (*Betula* sp), beech and sycamore (*Acer pseudoplatanus*) with < 10% of the canopy comprising coniferous species.	Woodland Condition Monitoring
Successful broadleaf regeneration beneath canopy	Evidence of browsing damage present across <40% of woodland. Evidence of regeneration present across >40% of woodland, of which 80% is native broadleaved species.	Woodland Condition Monitoring
Woodland structure	10 – 40% of woodland has areas of temporary open space, of at least 10m in diameter. Width of woodland edge habitat should be at least 1.5 times the height of the nearest mature tree.	Woodland Condition Monitoring

Attribute	**Performance Indicator**	**Monitoring**
Woodland structure cont.	Average of 3 different tree size classes present per 100m^2 across woodland.** Average of 3 veteran trees per ha*.	Woodland Condition Monitoring
Dead Wood	>3 snags (standing dead wood including dead wood in live trees) per 100m2 across woodland. >50% of woodland area contains large** fallen dead wood (including large branches, stems, excluding stumps).	Woodland Condition Monitoring

*** Very mature/veteran (at least 80cm DBH) Mature/ mid-range (at least 35cm DBH) Young / Pole stage (at least 7cm DBH) Saplings (Over 50cm, under 7cm DBH) Seedlings (up to 50cm)**

**** >20cm diameter & >50cm long.**

Reference: Woodland Condition Survey (2017), Online: (The England Woodland Biodiversity Group and Forest Research.).

Factors

A factor is anything that has the potential to influence or change a feature, or to affect the way in which a feature is managed.

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Invasive non-native species	No rhododendron, cherry laurel, Japanese knotweed or Himalayan Balsam are present on the reserve. If these species are present and no action is taken their spread will displace the native flora.	Yes	No invasive non-native species (INNS) present in woodland.	Woodland Condition Monitoring
Invasive native species (holly)	This native species is spreading across woodlands in the Moss Valley due to lack of natural control processes (grazing by deer and rootling by swine) and the cessation of past woodland management practices such as cutting for winter fodder. Without control holly forms dense thickets, displacing other species and preventing the regeneration of trees. Holly is currently spreading in Newfield Spring and Bridle Road Woods and is already problematic in Long Wood.	Yes	No continuous holly cover on the reserve. Holly cover is sparse or absent across 50% of the reserve.	Woodland Condition Monitoring

Factors	Rationale	Management Required	Technical Indicator of control	Monitoring
Access	Large areas of the reserve are inaccessible to machinery for much of the year (access only over farmland between crops). This will constrain the type and rate of woodland management possible.	N/A	N/A	N/A
Tree disease	Many species of native broadleaved trees are vulnerable to pathogens, several of which are active in the area. Species known to be at imminent risk – ash, sweet chestnut, larch – are present on the reserve in relatively small numbers. However, diseases of oak and beech are active in the UK and may pose a significant future threat to the woodland	No, monitor	Persistence of oak, beech, and birch as dominant species in the woodland canopy, with at least 5 other native broadleaved species present on the reserve.	Woodland Condition Monitoring
On-site archaeology	The reserve contains a number of features of archaeological interest. These may be vulnerable to damage during management operations, especially those involving ground disturbance or heavy machinery.	No, monitor	Archaeological features identified and, if necessary, protected during management operations.	Operational checklists (Appendix III)

Factors	Rationale	Management Required	Technical Indicator of control	Monitoring
Climate change	Global temperatures are predicted to continue rising over the course of the century. Although the exact effect on the climate of the UK is not known, it is thought that the result is likely to include to an increase in climatic variability, with extremes in temperature, wind speed and rainfall becoming more common. Consequently, increasing the reserve's resilience to drought, fire events and gales should be a priority when management decisions are made. Long-term changes in climate may also affect the species which the reserve is able to support long-term and future species conservation plans will need to take this into account	No, monitor	N/A	Woodland Condition Monitoring Site Risk Assessment.

Woodland Evaluation

Lowland oak birch woodland (W16 woodland, National Vegetation Classification) is the dominant habitat type on the reserve, which currently comprises c24 ha of semi-natural oak woodland, heavily modified by a number of other broadleaved species - notably beech, sycamore, hornbeam and sweet chestnut. The result of these introductions is a canopy where the dominant species varies. Beech, oak and sycamore are the species most frequently represented over much of the woodland, with other canopy species being occasional or rare. However, when understory species are included 96% of the woodland area contains 3 or more native tree species, with 63% of the area containing 7 or more native tree species (Woodland Condition Monitoring report, 2019). Consequently, the feature meets the criteria for favourable condition outlined above with respect to species diversity.

Analysis of natural regeneration of tree species at Moss Valley shows the regeneration of deciduous species across the reserve. The majority of these seedlings/saplings are suppressed, as is normal in woodland with a closed canopy. However, regeneration is dominated by beech and sycamore across over large parts of the woodland and consequently, will lead to an increase in the representation of these species in the canopy over time, at the expense of the less competitive, slower growing oak unless corrective management is undertaken.

In conservation terms, native wildlife is best adapted to semi-natural ecosystems with plant species typical of semi-natural vegetation communities. In this context, the high proportion of beech, sycamore and other non (locally or nationally) native species in the canopy can be seen as undesirable. Against this must be balanced the increasing prevalence of tree diseases e.g. sudden oak blight, *Phytophthora* and ash dieback mean that all large tree species are potentially under threat in the coming years. Added to the changes in survivorship resultant from a changing climate, **the Moss Valley Woodlands will be managed to retain a varied canopy, albeit with a greater proportion of native tree species (especially oak) than currently exists**. Woodland management practises will therefore favour oak, ash, birch, wild cherry, alder and rowan, both as canopy species and as regenerating saplings, but beech and sycamore will also be retained.

The density and composition of the woodland understory is varied across the reserve, ranging from well-developed and diverse in Coalpit Wood and along the reserve's streams, to least diverse across parts of Long Wood. Here groves of dense holly bushes dominate large areas of woodland, suppressing the ground flora and the regeneration of tree seedlings. Holly, a native shrub, was once managed by cutting to provide winter fodder, and some areas of holly within the reserve are clearly of a great age. Holly however is now spreading across woodlands throughout the region and is particularly problematic in combination with a beech canopy, where its spread is favoured by low light levels. Holly has benefits for wildlife. Holly haggs provide food and shelter during the winter months, and areas of dense holly affect the woodland microclimate, blocking wind and so increasing humidity. Dense haggs are used for nesting by several species of woodland bird, notably blackcap (*Sylvia atricapilla*). However, beyond a certain point the spread of holly is damaging as it displaces the ground flora and prevents tree regeneration. **Work to reduce (but not eradicate) holly cover** has been taking place across Long Wood over the past 5 years and **will continue during the period covered by this management** plan. Work to control the spread of holly in Bridle Road and Newfield Spring Woods will also take place, focusing largely on the removal of young holly bushes (see also 3.3 and 3.6) with the oldest specimens preserved.

Unless incompatible with public safety, worked trees e.g. multi-stemmed specimens will be neither cleared nor 'reworked' – as they comprise an important part of the heritage interest of the woodland.

The field layer in these woodlands is species-rich by the standards of W16 woodlands. This is discussed further under Feature 2.

Another factor affecting a woodland's biodiversity is its structural diversity. This includes the age structure of the woodland canopy, and the presence of features such as veteran trees, dead wood, woodland glades and the presence of an ecotone on the woodland edge.

The canopy at Moss Valley is closed with many well grown trees present. As such, it is relatively even-aged, and lacks veteran and senescent trees, reflecting past management practices. Woodland with a diverse age structure provides more ecological niches for exploitation than even-aged woodland. Equally, mature and, in particular, veteran trees provide extremely important ecological resource, attracting a range of specialist saprophytic species not otherwise supported by younger vegetation. The structural complexity of such trees also allows them to provide suitable roost and nest sites for a range of animals, including the bats for which this site is of importance.

Over the previous management planning period, a number of trees across the woodland have been identified as future veterans and **halo thinning** around them has taken place to give them the space to reach full maturity and eventual veteran status. **This work will now be extended to trees in Bridle Road and Newfield Spring woods** to encourage greater age diversification of the tree stock across these woodlands. Additionally, **light thinning works will be carried out in Bridle Road and Newfield Spring Wood** to support growth of the remaining trees and release saplings (see also 3.3 Ancient woodland ground flora).

Dead wood habitat, especially standing dead wood, is found throughout the reserve but is limited within Newfield Spring Wood. To remedy this, and to promote the development and maintenance of the reserve's rich fungal communities, **fallen and**, in particular, **standing dead wood arising from management of the site will be retained on the reserve** where practicable. It is anticipated that the spread of ash dieback on the reserve will increase the dead wood component significantly over the period covered by this plan.

Temporary open spaces (glades, clearings) are an important feature of woodland in good ecological condition as they provide habitat for early successional plants, basking spaces for invertebrates and reptiles and offer opportunities for the recruitment of tree seedlings. Temporary open spaces of at least 10m in diameter are currently found across 33% of the reserve's woodlands, meaning that the reserve meets this attribute.

Woodland edge is defined as the transition zone between a maturing forest and adjacent habitats, such as grassland, crop land, or wetland. A well-developed woodland edge typically consists of plant communities that are intermediate in height when compared to adjoining habitat types. Many species make regular use of the edge habitats for feeding due to higher herb layer productivity and larger invertebrate populations. Productive woodland edge habitats are those where the width of the woodland edge habitat is at least 1.5 times the height of the nearest mature tree. At Moss Valley only 5% of the edge habitat falls within this category, meaning that the reserve is majorly deficit in this regard. This feature can be created by management (coppicing and felling on the woodland edge but this approach would be problematic if applied wholesale across the reserve given the shape of the woodlands here which are extensive in length but reduced in width. Consequently, a less extreme approach will be adopted with **the creation of scalloped edge habitat along the northern boundary and eastern boundaries of Long Wood –** work which will be carried out in conjunction with targeted holly removal. Due to successional processes and a lack of natural

processes (grazing/browsing) to counteract this, this habitat will require proactive management in order to retain it once created.

Wetland features such as wet woodland, flushes and streams are a feature of Moss Valley Woodlands and are widely distributed across the reserve. They are discussed further under Feature 6.

Moss Valley Woodlands are browsed by deer and squirrel. Very little evidence of browsing damage to trees was detected in the woodland during the 2018 monitoring, suggesting browsing pressure is currently well within the tolerance limits suggested for woodlands in good ecological condition. The presence of Roe Deer, Muntjac and Grey Squirrel in the valley are a potential threat to tree regeneration long term, as all 3 species can cause substantial damage to the bark of young trees. Squirrel damage has already been noted in adjacent Nor Wood. **The Trust will undertake monitoring to determine the threat posed by these species to the long-term health of the reserve** and work with adjacent land owners to manage it, should it become problematic**.**

Management objectives

Objective 1: 24ha native broadleaved woodland in good condition by 2070.

1.1 To diversify age structure and species composition of canopy in Bridle Road and Newfield Spring Woods by 2031.
1.2 To promote regeneration of tree species across the woodland.
1.3 To increase the proportion of woodland edge ecotone in good condition by 50% by 2028.
1.4 To monitor health of tree stock across the reserve.

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

3.3 Feature 2: Ancient woodland ground flora

Objective Reserve supports 24ha of species rich ancient woodland ground flora.

Attributes

Attribute	**Performance Indicator**	**Monitoring**
Species richness	Overall Ancient Woodland Indicator species richness score of ≥10. AWI species richness score of ≥4 in at least 80% of woodland grid squares	Ancient Woodland Indicator Monitoring
Bluebell	Cover score of ≥2 in at least 50% of the woodland squares. Cover score of 3 in at least 25% of the woodland squares	Ancient Woodland Indicator Monitoring
Holly cover	No squares with a cover score of 3 No more than 50% woodland squares with cover score of ≥2	Ancient Woodland Indicator Monitoring

Factors

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Invasive non-native species	No rhododendron, cherry laurel, Japanese knotweed or Himalayan Balsam are present on the reserve. If these species are present and no action is taken their spread will displace the native flora.	Yes	No invasive non-native species (INNS) present in woodland.	Woodland Condition Monitoring
Invasive native species (holly)	This native species is spreading across woodlands in the Moss Valley due to lack of natural control processes (grazing by deer and rootling by swine) and the cessation of past woodland management practices such as cutting for winter fodder. Without control holly forms dense thickets, displacing other species and preventing the regeneration of trees. Holly is currently spreading in Newfield Spring and Bridle Road Woods and is already problematic in Long Wood.	Yes	No continuous holly cover on the reserve. Holly cover is sparse or absent across 50% of the reserve.	Woodland Condition Monitoring

Factors	Rationale	Management Required	Technical Indicator of control	Monitoring
Access	Increased recreational pressure can damage ancient woodland ground flora which is susceptible to damage from trampling	Yes	No desire lines on the reserve	Casual observation, patrolling
Canopy cover	A shaded environment suppresses competition from more vigorous woodland plants such as bracken and bramble which can outcompete Ancient Woodland Indicator Species (AWIS).	No	AWIS stable or spreading	AWI monitoring

Table 5. Ancient Woodland Indicator Species*

Wild garlic/Ransoms	*Allium ursinum*
Wood anemone	*Anemone nemorosa*
Opposite-leaved golden saxifrage	*Chrysosplenium oppositifolium*
Alternate-leaved golden saxifrage	*Chrysosplenium alternifolium*
Wood horsetail	*Equisetum sylvaticum*
Sweet woodruff	*Galium odoratum*
Bluebell (English)	*Hyacinthoides non-scripta*
Yellow archangel (not variegated)	*Lamium galeobdolon*
Yellow pimpernel	*Lysimachia nemorum*
Common cow-wheat	*Melampyrum pratense*
Dog's mercury	*Mercurialis perennis*
Wood sorrel	*Oxalis acetosella*
Primrose	*Primula vulgaris*
Sanicle	*Sanilcula europaea*
Greater stitchwort	*Stellaria holostea*
Wood speedwell	Veronica montana
Remote sedge	*Carex remota*
Greater woodrush	*Luzula sylvatica*
Wood melick	*Melica uniflora*
Wood millet	*Milium effusum*

*This list covers the commoner ancient woodland indicators found on the reserve and is not intended to be comprehensive.

Evaluation

Ancient semi natural woodland (ASNW) is an English designation referring to woodland that has existed continuously since 1600 or before. Plants which are particularly characteristic of these ancient woodland sites are called ancient woodland indicator species (AWIS). These species are typically poor dispersers, producing few and/or heavy seeds or utilizer asexual (clonal) reproduction and require stable environmental conditions in order to persist. They are poor competitors when challenged by more vigorous species, flowering and storing energy early in the year before the woodland canopy comes into leaf and relying on the subsequent shade to prevent competition from more vigorous species such as bramble. They are typically patch forming and, in the right conditions, produce the iconic “carpets” of spring flowers.

Moss Valley Woodlands support a range of AWIS, including the majority of species seen in such woodlands in this area of the country and on these types of soils. As an ancient woodland, Moss Valley should have a minimum of 10 AWI species present over the woodland; the reserve has 13 AWI species recorded overall, meeting this target. The richest areas are located near the Moss Brook; this is typical of AWI distribution as several species (e.g *Allium ursinum*, *Chrysosplenium* sp.) prefer wet or damp conditions. Bluebell is the most common AWIS found on the reserve and is found in varying density across the woodland, with wood anemone the second most frequent.

These communities are under threat nationally, and in a local context, the ground flora in its entirety is of high conservation value, as centuries of charcoal and/or white coal production, changes in management practises or lack of management, and increases in recreational pressure have led to a severe decline, and often loss, of such communities in urban and urban fringe woodlands across the region. The preservation of these communities, is therefore a conservation priority for the reserve.

The AWIS richness target is for the woodland to support ≥4 species across at least 80% of its area. However, baseline monitoring gives an AWIS richness score of 47%, meaning this target has not yet been reached.

The target for bluebell distribution across the reserve has been met and exceeded (84%) as has the target for density (27%). The dominance of bluebell across parts of the woodland (notably Bridle Road Wood and parts of Newfield Spring Wood) is noteworthy, as the United Kingdom holds much of the world's bluebell resource and this species is one of the UK's Biodiversity Action Plan priorities.

Holly cover was surveyed as part of the AWIS monitoring and it was found that its extent and density across the reserve exceeds tolerance limits, being both too dense in places and too widespread.

Consequently, AWIS will be protected in Moss Valley through the following:

Appropriate woodland management

AWIS grow best in undisturbed conditions where more competitive ground-cover is suppressed by a closed canopy over the summer. In particular, dense carpets of bluebells require areas with a dense summer canopy to maintain them. Conversely, they require access to sunlight during spring so will not thrive under evergreens such as holly, or the brash arisings generated by felling operations.

In consequence, it must be realised that **management to diversify the woodland structure** through thinning the woodland canopy, or by creating ecotone on the woodland edge, **may conflict with the needs of the ancient woodland ground flora** and, if carried out injudiciously could adversely affect the density and distribution of AWIS across the woodland. To avoid this, **these management activities will be carefully planned to avoid areas where the ancient woodland ground flora is densest or most biodiverse eg. by stream sides**. However, **holly will be removed across the reserve** to prevent future loss of AWIS and create areas for future AWIS recolonisation. Holly removal will take place predominantly using a flail to avoid the generation of a large quantity of brash. Where brash is produced it will be disposed of through dead hedging, where required to prevent the spread of paths and creation of desire lines or by habitat piling in areas of bare ground.

Protection from ground disturbance and trampling

AWIS generally and in particular bluebells are easily damaged by trampling; this damage then prevents them from producing enough energy to flower and reproduce in subsequent years. Areas of high footfall or vehicle use can cause entire colonies to die out. In consequence SRWT will minimise the use of vehicles when carrying out management within the woodland, carefully plan timber extraction routes to avoid AWIS communities and, in particular, exclude machinery from sensitive areas such as stream sides.

Additionally, **SRWT will work to prevent the proliferation of desire lines across the woodland**, both by maintaining the official path network to a high standard and also by the use of dead hedging and other means to restrict access to unofficial paths.

Objective Reserve supports 24ha of species rich ancient woodland ground flora.

3.1 Plan woodland management works to avoid damage to ancient woodland ground flora.
3.2 Reduce holly cover across the reserve.
3.3 Protect AWIS from damage by visitor pressure.

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

3.4 Feature 3: Diverse woodland bird community

Objective: 40 or more bird species recorded on the reserve during the breeding season.

Attributes

Attribute	**Performance Indicator**	**Monitoring**
Species diversity	≥ 40 species of bird recorded on the reserve during the breeding season.	McKinnon Bird List monitoring
Habitat condition	24 ha of woodland in good ecological condition Availability of scrub habitat	Woodland Condition Assessment

Factors

A factor is anything that has the potential to influence or change a feature, or to affect the way in which a feature is managed.

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Woodland structure and management	Different species of bird have different habitat requirements. In order to provide a range of ecological niches (roosting, nesting and feeding opportunities) to support a wide range of species, the woodland will require a diverse structure and to be in good ecological condition.	Yes	Reserve's woodlands are in good ecological condition.	Woodland Condition Monitoring
Availability of scrub habitat	Certain bird species utilize woodland edge and scrub habitat which is currently limited on the reserve.	Yes	Increase in scrub/woodland edge habitat on the reserve	Woodland Condition Monitoring
Invasive native species (holly)	See 3.2 above			
Access	See 3.2 above			
Tree disease	See 3.2 above			

Factors	Rationale	Management Required	Technical Indicator of control	Monitoring
Climate change	Global temperatures are predicted to continue rising over the course of the century. Although the exact effect on the climate of the UK is not known, it is thought that the result is likely to include to an increase in climatic variability, with extremes in temperature, wind speed and rainfall becoming more common. Consequently, increasing the reserve's resilience to drought, fire events and gales should be a priority when management decisions are made. Long-term changes in climate may also affect the species which the reserve is able to support long-term and future species conservation plans will need to take this into account	No, monitor	N/A	Woodland Condition Monitoring Site Risk Assessment.

Evaluation

Currently, Moss Valley and the surrounding woodlands support a diverse bird community, with 37 species recorded on the reserve during the 2012 breeding season. The vast majority of these were woodland species, of which blue tit, great tit and wren were by far the most common. Additionally a few species associated with more open woodland and scrub were recorded, broadly reflecting the habitats and accompanying ecological niches available in the area. While several of the species recorded are of conservation concern, none has conservation management needs that go beyond the management of their habitat(s) outlined elsewhere in this report. Current management activities such as diversifying the structure of the woodland, increasing the percentage of oak in the canopy, promoting veteranisation and increasing the scrub component will benefit bird populations.

Much of the reserve's importance for birds lies in the diversity of the age and structure of its woodland, and the community it supports is typical for an area of lowland woodland of this size. The maturity of the trees favours many of the woodland birds, which utilise natural cavities for nesting. Continued **diversity in tree age, woodland structure and species composition will therefore be promoted on the reserve in the long-term.**

The reserve has the potential to support several species of breeding raptor. **Where raptors are known to favour certain trees as nesting sites these will be identified and retained during forestry operations.**

The management of woodland fringe is of particular importance to birds such as yellowhammer, linnet and blackcap. Successional processes mean that, without management, the woodland fringe matures leasing to a lack of ecotone. **Work will be carried out to increase the proportion of suitable fringe habitat on the reserve** during the period covered by this plan**.**

Both greater and lesser spotted woodpeckers have been recorded in the valley, although lesser spotted woodpecker has not been recorded on the reserve in recent years. 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 dependent on standing dead wood on which it forages for insects and specialised in foraging on the smaller dead branches, which can bear its weight but not that of the more robust greater spotted woodpecker. Consequently, common tree safety works which create fallen dead wood, or monoliths, or require the removal of dead branches do not benefit this species. Instead, **the preservation of whole, dead trees (where compatible with public safety) will create feeding habitat** and, in particular, attempts will be made **to promote the development and retention of senescent birch and alder poles along the reserve's streams** to provide suitable nest sites for this species.

Work on adjacent parts of Newfield Spring Wood to create suitable nesting habitat for willow tit (*Poecile montanus*) is being followed with interest. Should this work prove successful then the Trust will identify suitable areas in which to carry out similar work on its land, to allow the population to spread.

Hornbeam constitutes another non locally-native element to the woodlands, although it is native to the southern UK. It produces a dense, straight-growing trunk which was once highly valued for pit beams and props, probably accounting for its occurrence in these woodlands. Hornbeam (along with yew and wild cherry) are essential food sources for Hawfinch (*Coccothraustes coccothraustes*), a bird which has been lost to the Sheffield area over the last 30 year period and which is declining nationally. Although

management at Moss Valley alone cannot hope to restore the species, **hornbeam, wild cherry, and yew will be retained in the woodlands** in the hope of its future recovery.

Management objectives

Objective 3: 40 or more bird species recorded on the reserve during the breeding season.

3.1 To diversify age structure and species composition of canopy in Bridle Road and Newfield Spring Woods by 2031.
3.2 To promote regeneration of tree species across the woodland.
3.3 To increase the proportion of woodland edge ecotone in good condition by 50% by 2028.
3.4 To increase the proportion of standing dead wood on the reserve by 2031.

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

3.5 Feature 4: Species rich grassland

Objective: Reserve supports 1 hectare of species-rich grassland at Dowey Lumb.

Attributes of species-rich grassland

Attribute	**Performance Indicator**	**Monitoring**
Species composition.	Sward should be dominated by fine-leaved grasses. Grassland should support ≥20 species of forb Dense bracken should not be present.	Casual observation
Vegetation structure	Bare ground should occur no more than rarely across the Lumb Open grassland (no canopy cover) predominant	Casual observation

Factors

Factors

A factor is anything that has the potential to influence or change a feature, or to affect the way in which a feature is managed.

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Invasive species	Bracken and bramble are present on the Lumb but years of management have rendered it sparse and scattered. Unmanaged these species will displace the species rich grassland.	Yes	Populations of these species remain sparse and scattered across 1 ha of area.	Casual observation
Shading	Many of the flowering species found in the grassland are shade intolerant and will be lost if a canopy is allowed to develop. The formation of a canopy will also lead to soil enrichment which again will lead to the loss of these species through competition with shade-tolerant, vigorous bracken and bramble.	Yes	0.75ha of open grassland	Casual observation

Evaluation

Dowey Lumb is an area of grassland, trees and scrub on a south facing slope, and is 1.4 ha in extent. The Lumb is demarked by post and rail fencing to the north, east and west and a stream to the south. However in vegetative terms, the boundary with the adjacent woodlands of Long Wood, Owler Carr Wood and Bridle Road Wood is indistinct – the only clear vegetative boundary being that with the arable land to the north.

Dowey Lumb is believed to be an area of relict woodland pasture, though the area has not been grazed within living memory. Elements of the plant communities seen in the adjacent woodlands are seen on the periphery of the Lumb, particularly under the mature oak along the stream, and the younger oak to the north. The central slopes of the Lumb support an unimproved neutral grassland community overlain by scattered bracken. Here neutral grassland species such as Yorkshire fog, sweet vernal grass and rough and smooth meadow grasses are inter-dispersed with a variety of herbaceous species characteristic of unimproved grassland. The species present characterise this grassland as MG5 *Cynosurus cristatus-Centaurea nigra* grassland.

Given the scarcity of unimproved grassland in both the Moss Valley and the Sheffield area, the retention of this habitat at Dowey Lumb is a conservation priority.

In recent years, management to reverse woodland succession and control bracken has been carried out across the Lumb, leading to a decrease in shading and a reduction in bracken and bramble which once dominated the area. **This annual programme of mowing and scrub control will continue** over the period covered by this plan. The annual late (September) hay-cut promotes botanical diversity by lowering nutrient status, allowing seed deposition and by preventing the dominance of bracken and the establishment of scrub.

Despite its species-richness, the size of the grassland area on the Lumb is still small, making it vulnerable to encroachment and the effects of shading. Oak and hawthorn have been planted to the north and west and are now beginning to adversely affect the grassland beneath them, enriching and shading it and increasing its 'woodland' character. **These specimens will be reduced in number** over the period covered by this plan.

The scrub component on the Lumb provides a valuable habitat for a number of invertebrate and bird species, which require scrub and edge habitat rather than mature woodland, and should therefore be, at least in part retained. **The diversity of scrub species** on the Lumb, which includes species such as crab apple and bird cherry, **will be preserved**.

The Lumb is open to visitors and is crossed by several public footpaths. It is protected from horses, bikes and motorbikes by fencing and low stiles. **These will be retained and maintained** over the period covered by this plan.

Objective 4: Reserve supports 1 hectare of species-rich grassland at Dowey Lumb.

4.1 Retain 1 hectare of species rich grassland at Dowey Lumb

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

3.6 Feature 5: Diverse fungal community

Objective: Reserve supports a diverse fungal community of ≥120 species in 2031.

Attributes

Attribute	**Performance Indicator**	**Monitoring**
Species diversity	≥ 120 species of fungi found on the reserve.	Casual records
Dead wood	Woodland meets criteria for good ecological condition for standing and fallen dead wood.	Woodland Condition Monitoring

Factors

A factor is anything that has the potential to influence or change a feature, or to affect the way in which a feature is managed.

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Tree and shrub diversity	Different species of fungi are supported by different species of tree and shrub, either as dead wood or by mycorrhizal associations.	Yes	≥ 7 native broadleaved tree and shrub species represented in the canopy and understory over at least 50% of the woodland.	Woodland Condition Monitoring
Extent of understory	A well-developed understory is positively associated with a variety of fungal fruiting bodies, partially because the presence of an understory helps promote a stable microclimate and increased humidity but also because it discourages entry and therefore trampling by humans.	Yes	Well developed understory present in ≥50% of woodland.	Woodland Condition Monitoring
Ground disturbance and compaction	Fruiting fungi are negatively impacted in areas where the ground has been compacted or disturbed, either by machinery or by trampling.	Yes	Use of vehicles is minimized on site. No desire lines present on site.	Operational Standards and Techniques

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Climate change	Global temperatures are predicted to continue rising over the course of the century. Although the exact effect on the climate of the UK is not known, it is thought that the result is likely to include to an increase in climatic variability, with extremes in temperature, wind speed and rainfall becoming more common. Fungi are sensitive to humidity levels would be adversely affected by periods of drought.	No	N/A	None

Evaluation

Moss Valley Woodlands supports a rich mycological community. The lack of a UK standard methodology for woodland fungal surveys means that it cannot be directly compared to that of other woodlands in the region. However, it is considered locally noteworthy (*S. Clements; pers comm*) and is consequently regarded as a valued element of the site, and one for which it is managed.

The fungal communities present on the reserve are the result of multiple factors. Chief amongst these are the woodland species composition and structure, the amount of dead wood available on site and the relatively low levels of disturbance through management (intensive woodland management is damaging to fungi) and low recreational pressure.

Retaining and increasing the reserve's tree diversity and in particular the proportion of oak, birch and beech will promote the preservation of their fungal community. Measures for doing this are discussed in section 3.2, as is management for veteran trees, themselves an important fungal habitat.

Dead wood habitat, especially standing dead wood, is found throughout the reserve but is limited within Newfield Spring Wood. To remedy this, and to promote the development and maintenance of the reserve's rich fungal communities, **fallen and**, in particular, **standing dead wood arising from management of the site will be retained on the reserve** where practicable. It is anticipated that the spread of ash dieback on the reserve will increase the dead wood component significantly over the period covered by this plan. **Bonfires are not permitted on site.**

The management needs of fungi (low levels of disturbance, dense understory) conflict somewhat with the management needs of other of the reserve's features (birds and AWIS). Management works will therefore need to be carefully balanced to promote the requirements of all groups. This will be achieved by adopting a slow, cautious approach to woodland management works, aiming to do the minimum necessary rather than the maximum possible, to achieve our management aims.

In particular, the need to limit holly spread across the woodland to benefit AWIS needs to be balanced with the need to retain holly for fungi. Holly haggs are beneficial to fungi as they create a microclimate which in hot dry periods help to retain soil moisture which is required for fungal fruiting. Additionally, holly can be protective of fungi by acting as a barrier deterring visitors (and their dogs) from straying from the footpaths. Consequently, care will be taken that the removal of continuous or dense holly cover and the subsequent creation of bare ground does not lead to an expansion in footfall across the woodland floor as the resultant compaction would be damaging both to the ancient woodland ground flora but also the fungal community.

Data suggests that the collection of fungi for culinary purposes (foraging) does not adversely affect the fungal communities. However, the data set is limited and given Moss Valley's designation as a nature reserve, its proximity to a large population centre, and the need to keep people on the official path network, **foraging for fungi is not permitted on the reserve.**

Objective 5: Reserve supports a diverse fungal community of >120 species in 2031.

1.1 Increase the proportion of standing dead wood across the reserve by 2031
1.2 Prevent an expansion of the desire line network across the reserve

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

3.7 Feature 6: Running water

Objective: Reserve's streams in good ecological condition by 2031.

Attributes

Attribute	**Performance Indicator**	**Monitoring**
Water quality	Water quality is classed as "Good" or "Very Good" by Water Framework Directive standards Population of brown trout in the Moss Brook	Environment Agency records
Flood resilience	Stream courses not artificially constrained Streams contain in-channel features e.g. meanders, dead wood to slow flow rates during high rainfall events.	Casual observation

Factors

Factors	**Rationale**	**Management Required** **(Yes/no/monitor)**	**Technical Indicator of control**	**Monitoring**
Sewage outflows	Sewage outflows have traditionally been a problem in the Moss Brook with outflows adjacent to the Jordanthorpe Estate discharging effluent into the Brook during high rainfall events. These outflows have reduced the quality of the water in the Moss Brook, suggesting that the threshold for discharge is too low, resulting insufficient dilution of effluent.	No	Water quality meets "Good" or "Very Good" standard under Water Framework Directive.	Environment Agency Severn Trent Water
Agricultural run off	The proximity of the reserve's streams to agricultural land and the input of water from this land through flushes, drainage ditches and seasonal flows place the reserve's streams at risk from pollution by agricultural run-off.	No	Water quality meets "Good" or "Very Good" standard under Water Framework Directive.	Environment Agency
Climate change	Changes in climate causing an increase in extreme weather events (droughts, floods) may have a negative impact on the stream ecosystem.	No	Streams do not dry up and contain features to slow the flow (and therefore provide wildlife refuges) during storm events	N/A

Evaluation

The reserve's eastern and southern boundaries comprise streams, with the unnamed stream flowing from the north through Newfield Spring and Bridle Road Woods meeting the Moss Brook on the corner of Dowey Lumb.

Both streams are shallow, carrying only a few inches depth of flow for most of the year but carrying substantially increased flows (of depths up to several feet in the Moss Brook) during periods of high rainfall. Water quality has traditionally been moderate in the Moss Brook due to grey water discharges from the Jordanthorpe estate. These discharge points are on a list to be upgraded by Severn Trent Water but the work has not yet been carried out. Both are also at risk from agricultural run-off (chemicals and soil run off) from adjacent farmland, with the junction between Newfield Spring and Bridle Road Woods and the boundary between Dowey Lumb and Bridle Road Wood being particularly vulnerable.

Brown trout have been recorded in both the reserve's streams but little is known about the size and distribution of any population or even if it is extant within the reserve. The presence of brown trout in the reserve's streams would be an indicator of their ecological health. However low water levels, varying water quality and full shading of the stream course may limit the suitability of the stream to support this species.

The changing climate will challenge the ecological condition of the reserve's watercourses as extreme weather events become more frequent. In order to increase their resilience, both in times of flood and drought, the stream courses need to hold water at a variety of depths and have access to peripheral areas in which to flood. This has been achieved naturally in the Moss Brook where the presence of dead wood and rocky in the stream channel has naturally, over time, lead to meandering and the formation of pools. Work on this stream is therefore not required. Less meandering has occurred on the northern stream, which is steeper and here in channel features to slow water falls may be beneficial.

Management Objectives

Objective 6: Reserve's streams in good ecological condition by 2031.

6.1 Work to ensure water quality in the reserve's steams is rated good or very good by 2031.

6.2 Work to ensure streams are resilient to high and low water flows by 2031.

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

Feature 7: Public Access

Objective: Reserve is safe, welcoming, tranquil and well-maintained.

Attribute	**Performance Indicator**	**Monitoring**
Path network	3.8 km of footpaths and permissive bridleway maintained in line with PRoW standards.	Through routine patrols
Cleanliness	Reserve has low levels of litter and dog waste. Fly tipping on reserve is rare and cleared promptly.	Through routine patrols
Safety	≥ 90% of visitors feel that the reserve is safe and well-cared for. Reserve is secure from motorcycle access.	Feedback from visitors/incident reports Reserve User Forum feedback

Factors

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Dogs and dog walking services	Increasing dog ownership and the popularity of the reserve for commercial dog walking are leading to increasing amounts of negative encounters between different user groups and dog-related nuisance, such as fouling, on the reserve.	Yes	Dogs on reserve are kept under owner's control at all times, and on leads during the bird breeding season. Dog faeces and abandoned bags containing the same are rare on the reserve.	Through routine patrols Monitoring of incident log
Correct use of PRoW network	Problems have been reported on the reserve with mountain bikes and motor bikes using the footpath network. Both can cause erosion of unsurfaced paths and prove a danger to walkers (and, in the case of motor bikes, all other reserve users).	Yes	Motorbikes not reported on the reserve. PRoW footpaths used by walkers only. The different user groups on the reserve treat each other with respect, with low levels of conflict between them.	Through routine patrols Monitoring of incident log Monitoring of incident log

Factors	Rationale	Management Required (Yes/no/monitor)	Technical Indicator of control	Monitoring
Increasing visitor numbers	Visitor numbers are increasing at Moss Valley, with this increase set to continue as population levels in the city rise. Without careful management, an uncontrolled rise in visitors to the reserve will not only result in increased disturbance to wildlife, but may destroy the peace, tranquility and sense of "getting away from it all" which visitors value.	Yes	"Peace and tranquility" remain highly valued attributes of the reserve	Visitor feedback Reserve User Forum feedback

Evaluation of current condition

Moss Valley is a quiet reserve that has become more popular with members of the public during 2020. Visitor numbers are highest at weekends, and during periods when movement is restricted due to coronavirus legislation. The majority of visitors live within a couple of miles of the reserve, but visitor numbers from further have increased. Most visitors are walkers, dog walkers or horse riders.

Little parking is available in the vicinity of the reserve. A few parking spaces are available at the end of Owler Carr Lane and on Lightwood Lane and Hazelhurst Lane. Parking is also available on the Jordanthorpe estate, although the road crossing from this to Coalpit Wood can be dangerous.

Consequently, it is not the Trust's intention to increase visitor numbers to the reserve, although a natural increase in visitor numbers is expected in response to the city's increasing population size and its "discovery" by many in 2020. The majority of visitors arrive on foot, including those who incorporate a visit to the reserve with a wider walk through the valley.

The reserve is well served by a network of definitive and unofficial footpaths (Figure 2) and by part of a permissive bridleway loop that runs through Long Wood. This network is sufficient for public access and will not be increased, to avoid damage to the reserve's ecological interest. Much of the existing access infrastructure at Moss Valley is associated with this network of paths and bridleways on site. Maintenance of the access furniture on definitive footpaths fall under the remit of the Derbyshire RoW unit, with those on the wider network of unadopted footpaths and on the permissive bridleway in Long Wood being maintained by SRWT. **Aging and defunct access furniture on the reserve will be replaced** over the period covered by this plan.

Levels of mobility impairment are increasing in the general population. Improvements in transport (public and private) along with improvements in mobility technology mean that those with limited mobility are no longer unable to reach rural locations. However, the semi-rural location lack of parking, gradient and condition of the path network on the reserve make it inaccessible for those with restricted mobility unless on horseback. However, where general accessibility can be improved – such as replacing stiles with gates – this has been done.

Waymarking of the concessionary bridleway loop is poor and **will be improved over the period covered by this management plan.**

The reserve attracts little litter and is **regularly litter picked** by the reserve ranger. This will continue over the period covered by this plan.

Although levels of conflict between different visitor groups on the reserve are generally low, two such areas have been identified. The first is caused by the occasional presence of motorcycles and mountain bikes on the reserve's footpaths. As well as being illegal, such usage is potentially dangerous to walkers and damaging to the paths themselves and will be discouraged. The second area of conflict relates to the increased use of the reserve by dog-walkers, leading to increased disturbance to wildlife and increased levels of dog fouling. Poorly controlled dogs, in all numbers, are also proving an increasing source of disturbance to wildlife on the reserve, and are particularly damaging to the breeding success of low or ground-nesting birds such as wood warbler. **SRWT will work to decrease these conflicts during the course of this plan.**

Objective 7: Reserve is safe, welcoming, tranquil and well-maintained.

7.1 To maintain the network of paths and concessionary bridleway route in line with national and local standards.

7.2 To ensure the reserve is kept clean of litter, and safe for public usage.

7.3 To prevent damage to the reserve's features of interest by inappropriate visitor usage.

For management prescriptions see 4.0 Work Programme.

All works to be carried out in compliance with the directory of Operational Standards and Techniques given in Appendix III.

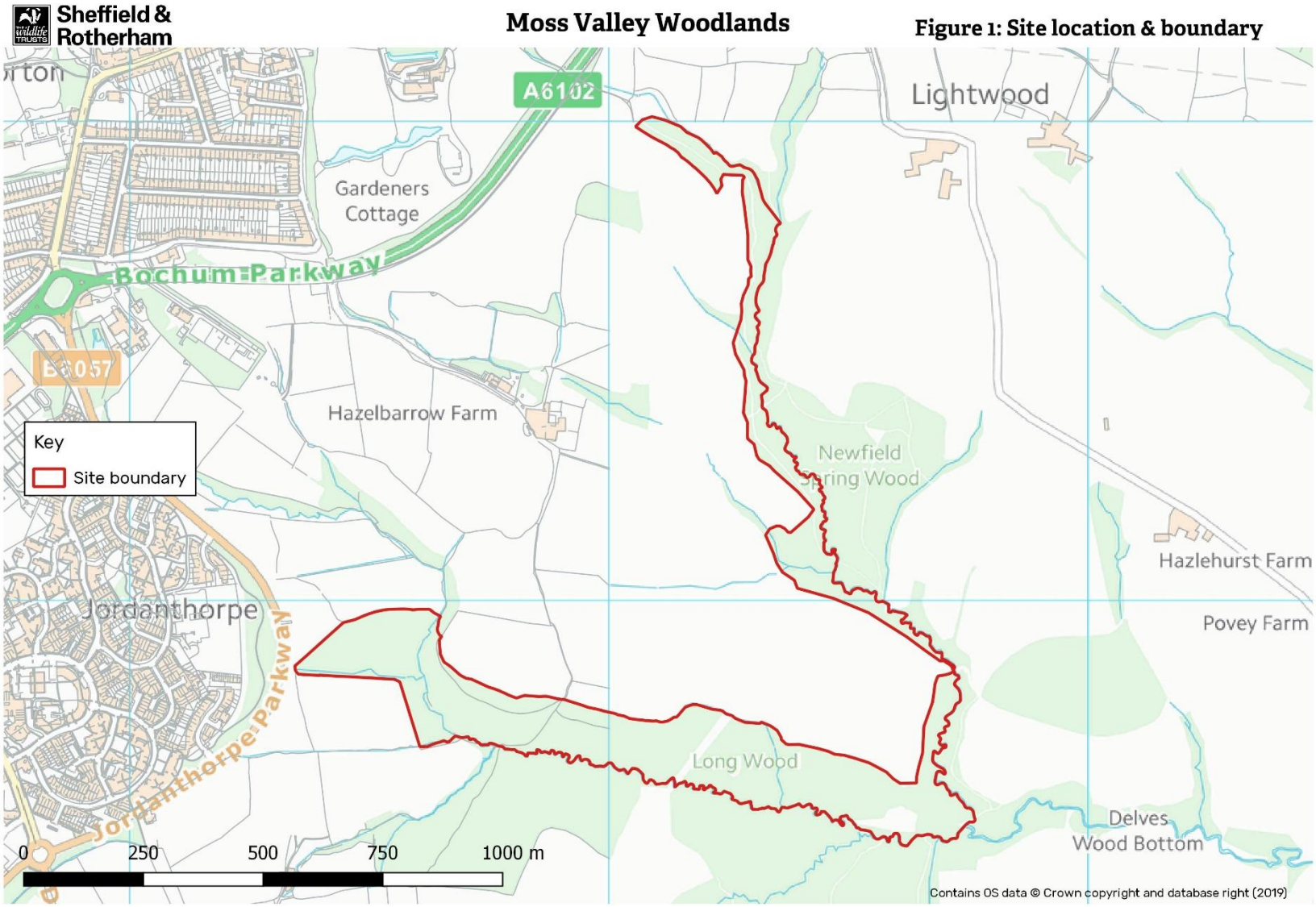
4.0 Work Programme

Feature	Objective no.	Objective with prescriptions	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
Woodland	**1.1**	To diversify the age structure and species composition of canopy in Bridle Road (cpt 452a) and Newfield Spring Wood (cpt452b) by 2070.										
		Lightly thin canopy in Bridle Road Wood to favour oak and other native broadleaved species	X	X								
		Lightly thin canopy in Newfield Spring Wood to favour oak and other native broadleaved species			X	X						
		Halo thin selected trees across Bridle Road Wood to encourage their development to full maturity/veteran		X								
		Halo thin selected trees across Newfield Spring Wood to encourage their development to full maturity/veteran				X						
	1.2	To promote regeneration of tree species across the woodland.										
		Reduce holly cover in Bridle Road Wood (cpt 452a) to two thirds of 2019 levels, focusing on areas on streamsides and adjacent to AWI plants. Control regrowth as necessary.	X		X		X		X		X	
		Reduce holly cover in Newfield Spring Wood (cpt452b) to two thirds of 2019 levels, focusing on areas on streamsides and adjacent to AWI plants. Control regrowth as necessary.		X		X		X		X		X
		Control regrowth of holly in Long Wood	X					X				
	1.3	To increase the proportion of woodland edge ecotone in good condition by 50% by 2030.										
		Scallop edges of woodland in Long Wood (cpt 451a; A11, A13, A17, WCM)					X	X	X			
	1.4	To monitor health of tree stock across the reserve.										
		Carry out an annual assessment of the progression of ash dieback on the reserve, with tree safety works carried out as necessary	X	X	X	X	X	X	X	X	X	X
		Carry out a QTRA tree safety survey along all PRoW and permissive bridleway, with tree safety works carried out as necessary						X				
		Manage tree safety on the reserve in line with SRWT policy and procedures	X	X	X	X	X	X	X	X	X	X
		Monitor woodland for signs of browsing damage through Woodland Condition Assessment					X					
Ancient Woodland Ground Flora	**2.1**	Plan woodland management works to avoid damage to ancient woodland ground flora.										
		Mark up specimens for thinning, avoiding streamsideas and richest areas of AWIS (see monitoring data).	X	X	X	X						
		Plan extraction routes to exclude streamsides and areas rich in AWIS (see monitoring data).	X	X	X	X						

Feature	Objective no.	Objective with prescriptions	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
Ancient Woodland Ground Flora cont.												
	2.2	Reduce holly cover across the reserve by 2030.										
		Cross reference with 1.2										
	2.3	Protect AWIS from damage by visitor pressure by 2030										
		Drain and resurface downhill sections of concessionary bridleway, Long Wood						X	X			
		Use dead hedging to restrict access to desire lines across the reserve, as required	X	X	X	X	X	X	X	X	X	X
Birds												
		Cross reference with 1.1-1.3										
	3.4	Increase the proportion of standing dead wood across the reserve by 2030										
		Create monoliths and, where compatible with public safety, retain whole, dead trees	X	X	X	X	X	X	X	X	X	X
		Retain mature birch and alder along stream sides and allow to develop into senescent form	X	X	X	X	X	X	X	X	X	X
Species-rich grassland	**4.1**	Retain 1 hectare of species rich grassland at Dowey Lumb (cpt 453)										
		Late summer cut and rake off across 1 ha of grassland area	X	X	X	X	X	X	X	X	X	X
		Removal of trees along northern and western boundaries of Lumb		X				X				
		Replace boundary fencing on north and eastern boundary Lumb								X		
		Replace boundary fencing on western boundary Lumb									X	
Fungal Diversity	**5.1**	Increase the proportion of standing dead wood across the reserve by 2030										
		Cross reference with 3.4										
		Increase the proportion of fallen dead wood across the reserve by carrying out a percentage of thins as fell to waste	X	X	X	X	X					
	5.2	Prevent an expansion of the desire line network across the reserve										
		Cross reference with 2.3										
Running Water	**6.1**	Work to ensure water quality in the reserve's steams is rated good or very good by 2031.										
		Map inflows to Moss Brook and to the northern watercourse.					X					
		Work with the DRCT to identify potential problematic flows and work with local land owners, the EA and Severn Trent Water to resolve these.						X	X	X		

Feature	Objective no.	Objective with prescriptions	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
Running water cont.												
	6.2	Work to ensure streams are resilient to high and low high water flows by 2031.										
		Work with DRCT to slow flows down the northern stream (Newfield Spring Wood, Bridle Road Wood) as required.	X									
Public Access	**7.1**	To maintain the network of paths and concessionary bridleway route in line with national and local standards.										
		Replace Moss Brook crossing points on concessionary bridleway loop	X									
		Cross ref with 2.3										
		Work with Woodland Trust to waymark concessionary bridleway loop	X									
	7.2	To prevent damage to the reserve's features of interest by inappropriate visitor usage										
		Maintain reserve's boundaries to prevent entry by quad or motor bikes, as required	X	X	X	X	X	X	X	X	X	X
		Cross reference with 4.1										
		Carry out regular litter picks of the reserve and promptly clear any fly-tipped waste	X	X	X	X	X	X	X	X	X	X
		To publicise the Trust's messaging around responsible dog walking on the reserve	X	X	X	X	X	X	X	X	X	X

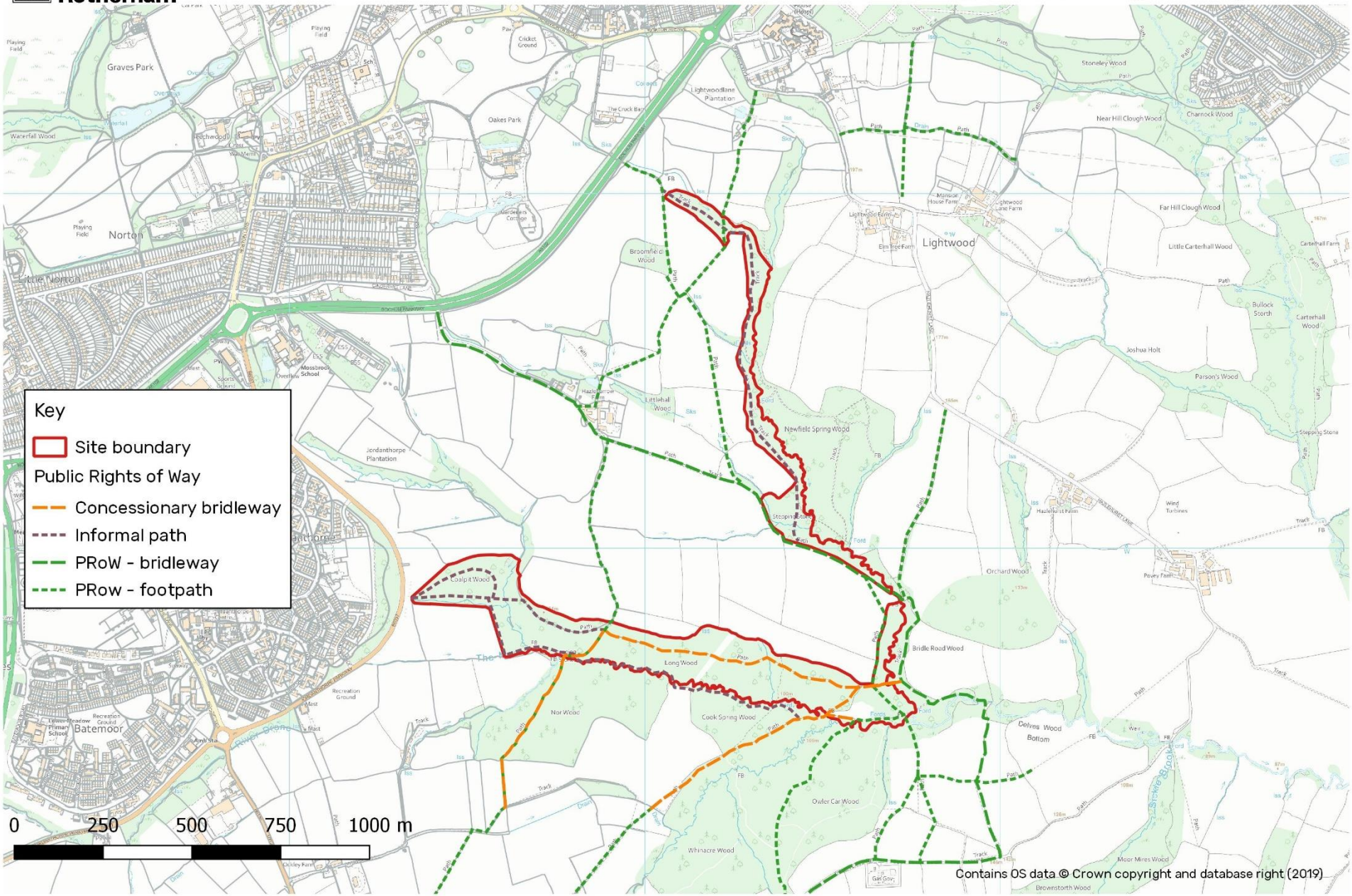
5.0 Figures


Sheffield & Rotherham
Moss Valley Woodlands
Figure 1: Site location & boundary
A6102
Lightwood
Gardeners Cottage
Bochum Parkway
Hazelbarrow Farm
Key
Site boundary
Newfield
Spring Wood
Hazlehurst Farm
Jordanthorpe
Povey Farm
Jordanthorpe Parkway
Long Wood
Delves Wood Bottom
0
250
500
750
1000 m
Contains OS data © Crown copyright and database right (2019)

Sheffield & Rotherham

Moss Valley Woodlands

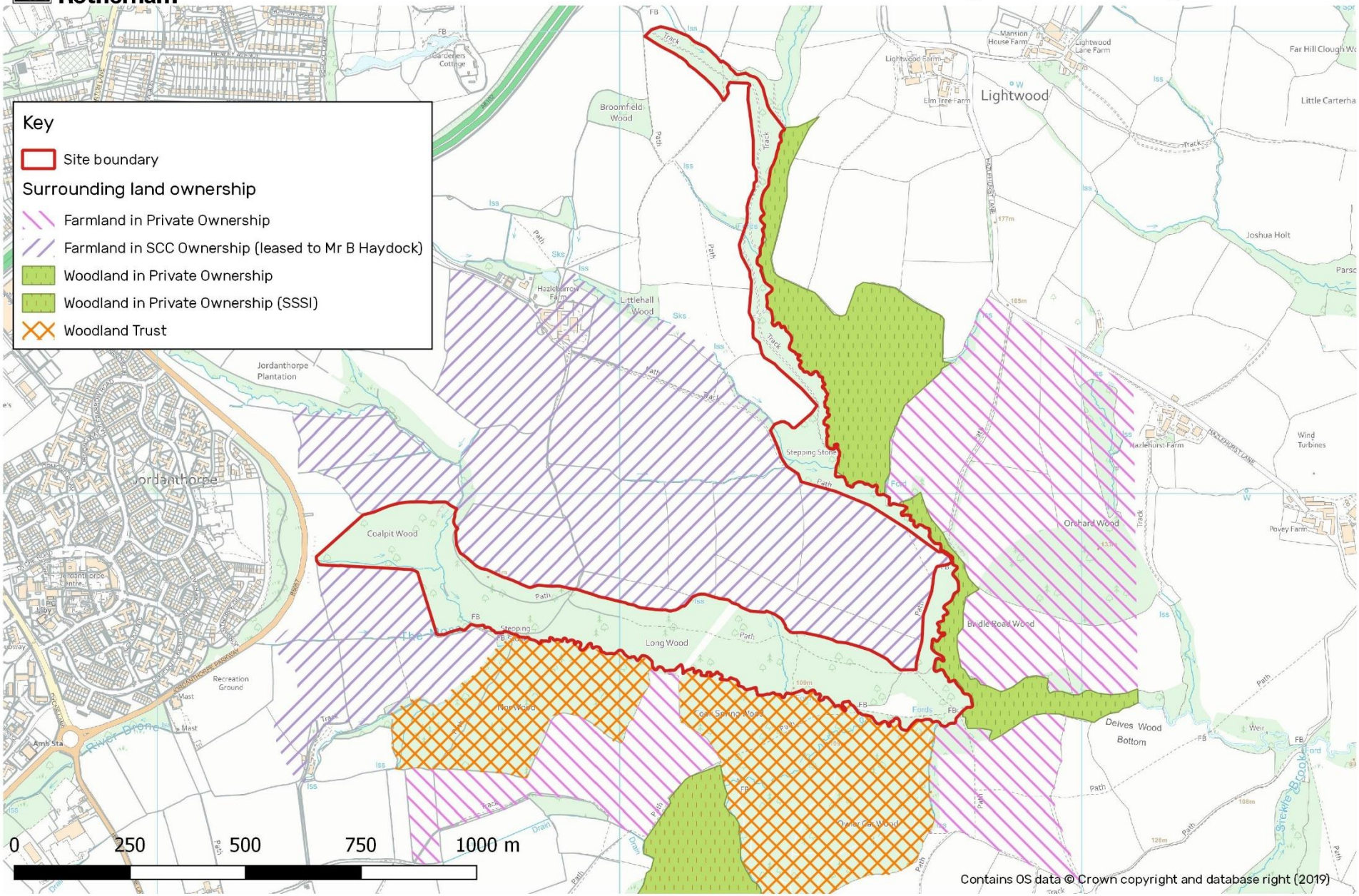
Figure 2: Public Rights of Way



Sheffield & Rotherham

Moss Valley Woodlands

Figure 3: Surrounding land ownership



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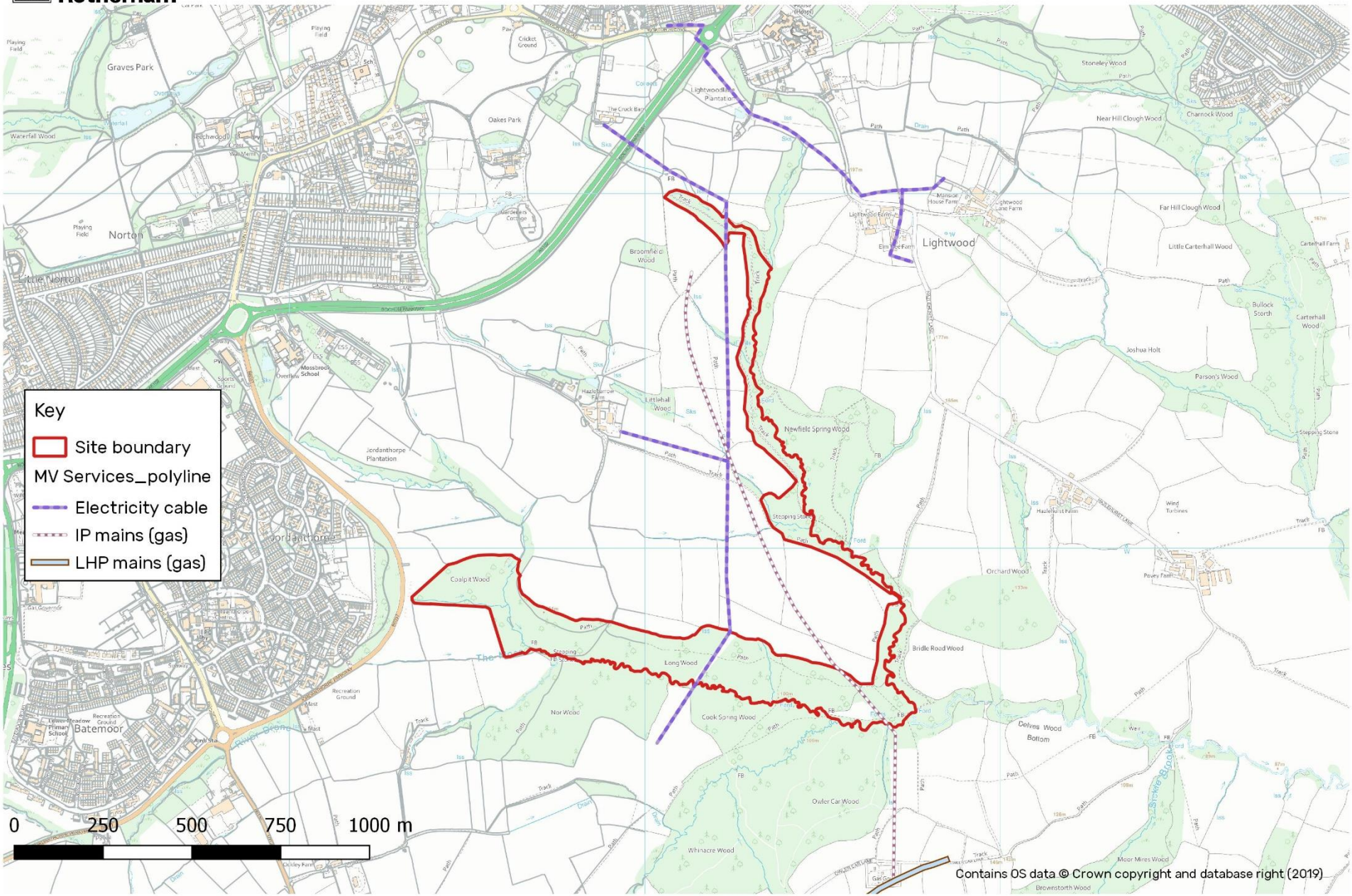
Moss Valley Woodlands

Figure 4: Services



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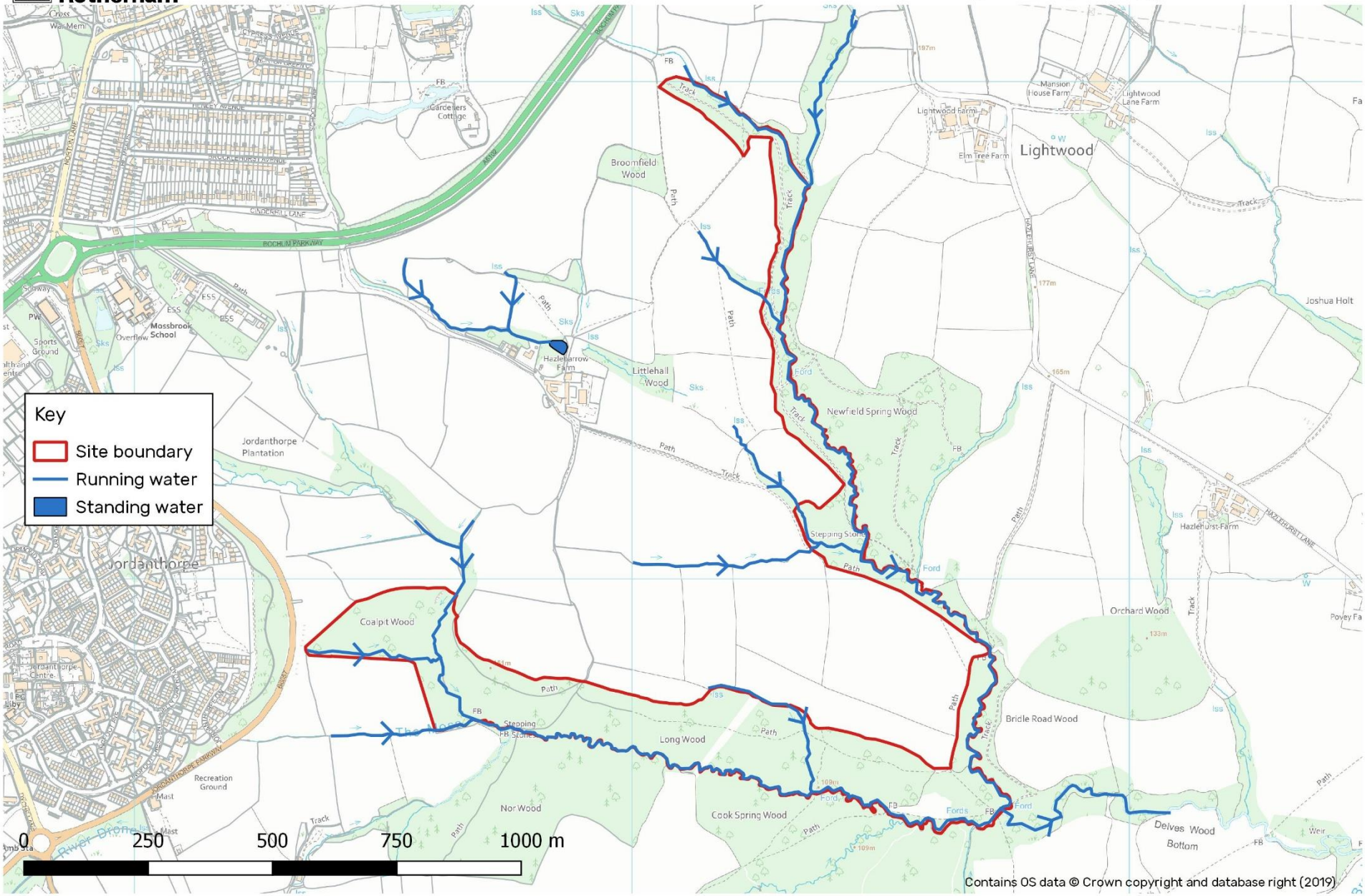
Moss Valley Woodlands

Figure 5: Hydrology



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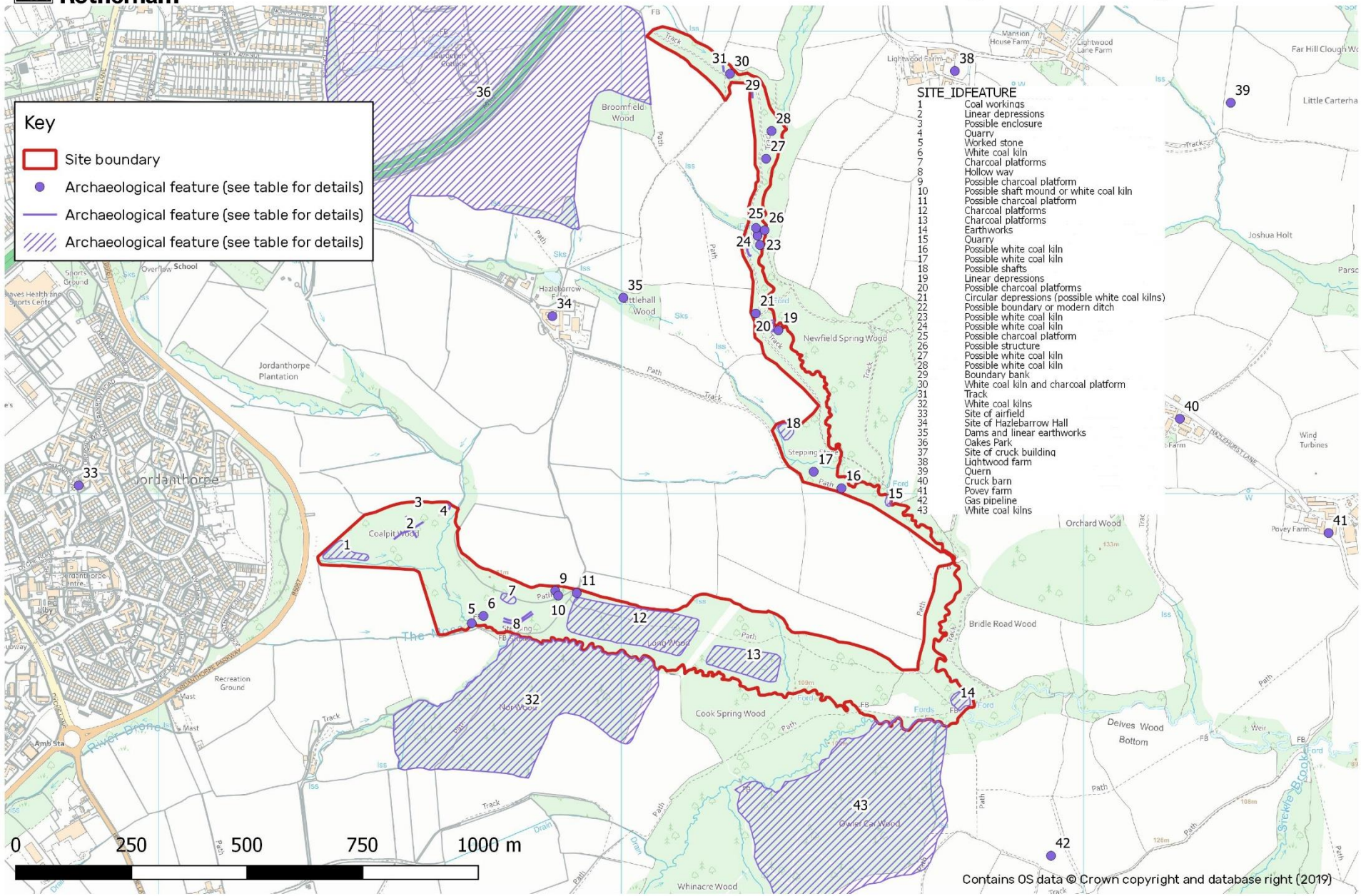
Moss Valley Woodlands

Figure 6: Archaeological features



SITE_ID	FEATURE
1	Coal workings
2	Linear depressions
3	Possible enclosure
4	Quarry
5	Worked stone
6	White coal kiln
7	Charcoal platforms
8	Hollow way
9	Possible charcoal platform
10	Possible shaft mound or white coal kiln
11	Possible charcoal platform
12	Charcoal platforms
13	Charcoal platforms
14	Earthworks
15	Quarry
16	Possible white coal kiln
17	Possible white coal kiln
18	Possible shafts
19	Linear depressions
20	Possible charcoal platforms
21	Circular depressions (possible white coal kilns)
22	Possible boundary or modern ditch
23	Possible white coal kiln
24	Possible white coal kiln
25	Possible charcoal platform
26	Possible structure
27	Possible white coal kiln
28	Possible white coal kiln
29	Boundary bank
30	White coal kiln and charcoal platform
31	Track
32	White coal kilns
33	Site of airfield
34	Site of Hazlebarrow Hall
35	Dams and linear earthworks
36	Oakes Park
37	Site of cruck building
38	Lightwood farm
39	Quern
40	Cruck barn
41	Povey farm
42	Gas pipeline
43	White coal kilns

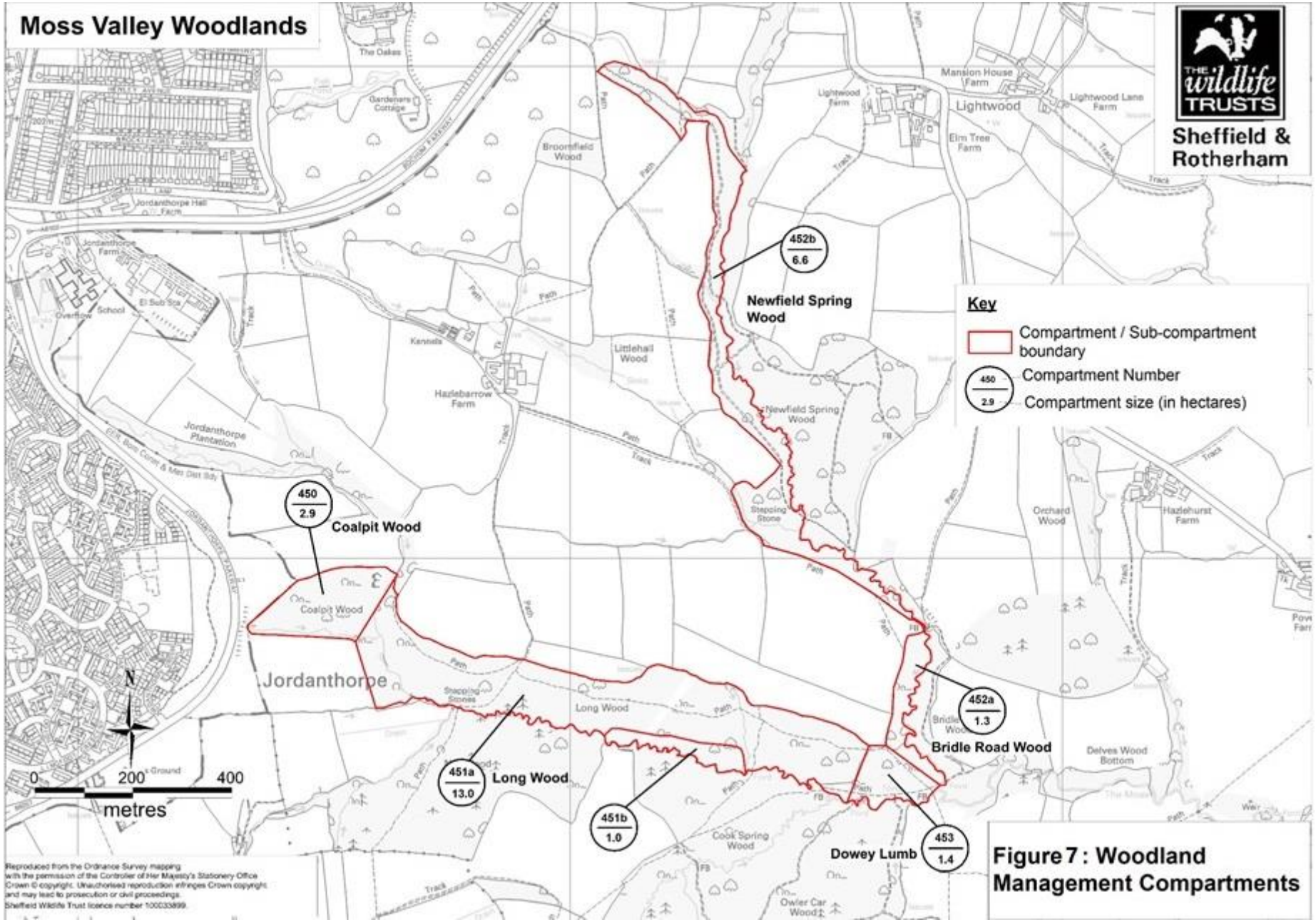


Figure 7 : Woodland Management Compartments

APPENDIX I: Glossary of Acronyms and terms

ATTRIBUTE	Measurable quality of a feature, against which its condition will be monitored in order to judge the effectiveness of management.
ASNW	Ancient Semi Natural Woodland
AWIS	Ancient Woodland Indicator Species
BAP	Biodiversity Action Plan
CCF	Continuous Cover Forestry
DCC	Derbyshire County Council
DRCT	Don Rivers Catchment Trust
EWGS	English Woodland Grants Scheme
FACTOR	Anything that have the potential to influence or change a feature, or which can affect the way in which a feature is managed.
FC	Forestry Commission
FEATURE	The most valued elements of the site, for which it is managed.
LBAP	Local Biodiversity Action Plan
PAWS	Plantation on Ancient Woodland Sites
PI	Performance Indicator
PRF	Potential Roost Features
PRoW	Public Rights of Way
SCC	Sheffield City Council
SRWT	Sheffield and Rotherham Wildlife Trust
VISION	A statement describing the ideal condition of a site, at a given point in the future.

APPENDIX II SUMMARY OF PROPOSED MONITORING

FEATURE	**Monitoring Methodology**	**Frequency**
1. Broadleaved woodland	Woodland Condition Assessment	Every 6 years
2. Ancient Woodland Indicators	Ancient Woodland Indicator monitoring	Every 6 years
3. Bird Community	MacKinnon List Survey	Every 3 years
4. Public Access	Through routine patrols	Monthly

APPENDIX III: Operational Standards and Techniques

Protection and control

All clear-felling operations will be designed to minimise the risk of damage from wind, fire, pests and diseases.

Minimising wind damage

All restructuring will make use of wind firm edges, where available, to minimise the risk of damage from wind. Assessment using the ForestGALES modelling system may be used to further limit the risk from wind damage if required.

Pests and diseases

There are no rabbits present in the woodland. There is a healthy population of grey squirrel and roe deer. Browsing damage will be monitored during Woodland Condition Assessments.

Phytophthora ramorum (and a similar but distantly related disease *Phytophthora kernoviae*) is a fungus-like water mould first recorded in the UK in 2002. Since 2009 *Phytophthora ramorum* has been affecting Japanese Larch in the west of England, and can be hosted by European and hybrid larch. 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 and Douglas Fir, Sitka spruce, beech and sweet chestnut can also be infected.

The Common Leaf Weevil *Phyllobious pomaceas* and *P.argentatus* may attack broadleaved restock sites during early May and June. A site, approximately 6km to the south, 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.

Chalara (ash dieback) is a windborne disease of ash trees that is now widespread throughout Sheffield. Ash is not common at Moss Valley but it is anticipated that all ash trees on the reserve will be lost to this disease during the course of this management plan.

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. Monitoring for other more serious insect pests will be done during harvesting operations.

Biosecurity

Procedures and measures designed to protect the environment against harmful biological agents e.g. fungal pathogens, are laid out in the Trust's Biosecurity procedure, which will be adhered to during the delivery of this management plan.

Archaeology

Known archaeological features will be marked and protected if heavy machinery is to be used in the area.

Protected species

All forestry operations will be carried out between end August and end January to avoid disturbance to breeding birds.

Where raptors are known to favour certain trees as nesting sites these will be identified and retained during forestry operations.

Areas rich in ancient woodland ground flora will be protected from vehicular damage during management operations.

Badger setts or known bat roosts will be excluded from operational areas, as required.

No felling works should be carried out until a ground based/aerial PRF (potential roost feature) assessment has been undertaken and the risk to roosting bats managed by an appropriate risk assessment (eg. BS8596).

Veteran and Notable Trees

Trees identified as veteran or notable during the 2016 survey will be marked and retained during forestry operations.

Water Management

Planning for operations in the vicinity of water features is in accordance with the Forestry Commission (UKFS) Forest and Water Guidelines (https://www.confor.org.uk/media/246145/forest-and-water-guidelines.pdf).

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 Moss Valley Woodlands Nature Reserve is the Moss Brook at around 2m wide.

All water features within the vicinity of harvest operations will be highlighted within the Hazard Assessment with regard to fuel storage and possible spillage. No intervention of forest operations will take place within the above 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.

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.

Use of pesticides and fertilisers

The range of pesticide use on the reserve has been kept to a minimum, with glyphosate in use since at least 2000. No fertiliser has been applied.

Work will be carried out in accordance with SRWT policies and procedures, 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.

COSHH assessments and completed pesticide records 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. All operators will be competent to apply pesticides. Warning signs will be erected on treated sites and site visitors informed of the operations in advance, if required.

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

Assessments will be made as to whether pesticide 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.

Fly-tipped waste and garden refuse will be removed and disposed of by a licensed waste carrier. The reserve will be litter-picked on a regular basis.

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 before safe disposal in line with environmental requirements.

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. Broadleaved and steeper areas mostly require felling by chainsaw, either to waste or for extraction by forwarders.

All stands are designated as CCF systems and will be thinned on a selective basis, 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 where possible but when extraction is not possible or profitable felling will be to waste. 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.

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.

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.

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.

The reserve's woodlands will be surveyed and managed in line with the Trust's Tree Risk Management Procedure.

APPENDIX IV: Operational Standards and Techniques checklist

To be completed before management operations undertaken

	Yes/No/ Not Applicable
Protection and control Felling operations designed to minimise the risk of damage from wind, fire, pests and disease.	
Wind damage Forestry operations designed to make use of wind firm edges, where available	
Tree pests and diseases Tree diseases currently active in work area (please list): Appropriate biosecurity measures in place	
Other Protected Species Harvesting operations will be limited to periods outside of bird nesting season. Felling operations designed to avoid areas rich in ancient woodland ground flora. Ground conditions suitable to support machinery and level of activity expected for the operation without risk significant damage (Y/N) If no, list mitigations below: All/any badger setts excluded from operational areas. All/any raptor nesting sites within operational areas identified and marked for retention. Ground based/aerial PRF bat roost assessment has been undertaken and the risk to roosting bats managed by an appropriate risk assessment.	
Archaeology All/any prehistoric archaeological features excluded from operational areas.	
Veteran and notable trees All/any veteran and notable trees in operational areas identified and marked for retention.	

Ancient Woodland Ground Flora Areas rich in ancient woodland indicator species identified and marked for retention.	
Water management Buffer areas in place along all watercourses in operational area. All water features within the vicinity of harvest operations highlighted within the Hazard Assessment with regard to fuel storage and possible spillage. Use of fertilizers and pesticides excluded from buffer areas. Procedures and equipment for control of any oil/ fuel spill in the woodland in place.	
Pesticides use Assessments made to determine if pesticide treatment required. If yes: Least harmful pesticide and delivery mechanism selected for use. Necessary COSHH assessments and completed pesticide records completed and held on file. Copies of competency certificates for all operators on file. Pesticide record to be completed on a daily basis by operators and held on file. Warning signage to be erected on treated sites and visitors informed of the operations in advance, as required. Fuel and chemical containers to 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 before safe disposal in line with environmental requirements. Procedures and equipment for control of any oil or chemical spill in the woodland in place. All pesticide applications to be carried out in accordance with Forestry Commission Field Book 8 - The Use of Herbicides in the Forest and with SRWT pesticide policies and procedures.	
Management of Health and Safety Risk assessment for works has been produced, signed off and placed on file. Chemical and oil spill emergency plan in place. Warning signage agreed and in place. Responsibility for maintenance of signage has been allocated. Contact details for all parties (contract manager, principal contractor, site manager etc) shared and placed on file.	