Sheffield &
Rotherham

Management Plan for Fox Hagg Nature Reserve

DRAFT

April 2019 – March 2027

Acknowledgements

Sheffield and Rotherham Wildlife Trust would like to thank the many individuals who have contributed to the formulation of this management plan.

Please note that sensitive species data has been omitted from this report.

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1.0 INTRODUCTION

Sheffield and Rotherham Wildlife Trust (SRWT) 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. The Trust aims to promote conservation, advance education in environmental matters and improve the quality of life in Sheffield and Rotherham, through the protection of biodiversity, and the development and promotion of sustainable land management practices.

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

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

1.1 Purposes and formulation of the plan

This management plan has been formulated for the following reasons:

- To provide comprehensive and cohesive information about the nature reserve in one document, with reference to other documents where necessary;
- To outline the long-term vision for the reserve and the associated objectives which form the framework of management;
- To outline the rationale for management, giving a clear and comprehensive explanation of why features require management, the form that this management will take and how this will be monitored;
- To provide a key document from which projects are developed and associated funding sought;
- To provide consistency and continuity, so that when changes of staff take place, or changes in ownership or disposal of the land occurs, then management objectives, prescriptions and monitoring are continued.

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

1.2 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** is 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 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

Fox Hagg nature reserve comprises 33.25 ha of woodland, grassland and heathland lying within the Rivelin Valley centred around OS grid ref :SK283 865 (**Figure 1**). The reserve, along with neighbouring Wyming Brook nature reserve, forms part of the Western Valleys Living Landscape area (**Figure 2).**

Landscape Context and Character

Fox Hagg Nature Reserves lies within National Character Area (NCA) 37: The Yorkshire Southern Pennine Fringe. Fox Hagg is a typical representation of this NCA, which is characterised by: the transition from the upland Southern Pennines to lower lying land, the underlying bedrock of sandstone and gritstones and the dissected landscape of plateaux and steep sided valleys. Its rocky outcrops, heather moorland and birch woodlands give Fox Hagg Nature Reserve a character typical of much of the moorland fringe and the reserve blends well into the hillside and provides excellent views of the surrounding countryside. Its drystone walls are characteristic of this part of Yorkshire.

Site Tenure

Fox Hagg nature reserve is formed from 2 contiguous pieces of land. The first – the original Fox Hagg nature reserve, is owned by Sheffield City Council. From April 2002, SRWT took on the leasehold for the site for a period of 30 years. Fox Hagg Extension is owned by the Duke of Norfolk's Estate. Sheffield and Rotherham Wildlife Trust took on the leasehold for the site for a period of 30 years, from summer 2011. The boundaries of the two different land ownerships are indicated on **Figure 3.**

Designations and Policy Context

Fox Hagg Nature Reserve is designated as a Site of Scientific Interest under the Sheffield Nature Conservation Strategy, which states that:

NCS 6 (P): Development, which may damage Sites of Scientific Interest, or Community Wildlife Areas, will not be allowed.

Fox Hagg Nature Reserve also falls within Sheffield's Green Belt, in an Area of High Landscape Value that is covered by several Unitary Development Plan policies, of which Policy GE2 is the most significant for the nature reserve:

"In the Green Belt, measures will be taken to: (a) maintain and enhance those areas with a generally high landscape value; and (b) improve poor landscapes in priority areas."

Fox Hagg Nature Reserve has a **Public Rights of Way** network, including both footpaths and bridleways **(Figure 4).**

'**Out and about in Sheffield's Countryside'** sets out the Council's approach to maintaining and improving access to and in the countryside. Under this document the Council gives high priority to improvements to the footpaths network that extends access to the countryside for people with disabilities or which allows access to features of interest or sites for active recreation.

Fox Hagg was declared a Local Nature Reserve (LNR) in 2004.

Sheffield's **Green and Open Space Strategy** (2010 – 2030) sets out the councils approach to managing for nature and biodiversity and making green connections for people and wildlife. Under this document the council sets out the following policy:

ENV W1 Protect and enhance priority wildlife species and habitats within designated Local Nature Sites and Sites of Special Scientific Interest (SSSI).

ENV W2 Manage all public spaces, where appropriate, to protect and enhance their potential value for wildlife and habitats.

ENV W3 Develop the wildlife potential of other non-public spaces, where appropriate, to support the sustainability of the wider green space network.

ENV W4 Promote awareness and understanding of the nature conservation value of green spaces as a core part of managing those sites for wildlife and biodiversity.

ENV G1 Manage a network of links between local green spaces and the regional green infrastructure network, for the benefit of both people and wildlife.

ENV G2 Seek opportunities for enhancing the quality, functionality and continuity of the green network both for public use and for biodiversity.

Additionally, as part of the Green and Open Space Strategy's commitment to quality assessment, all green spaces in the city are required to reach a minimum standard. Therefore, the 8 ha of Fox Hagg which is leased to the trust from Sheffield City Council is assessed every 5 years, overseen by both the Sheffield and Rotherham Wildlife Trust and a representative from Sheffield City Council. The standard assesses the reserve across 13 criteria in 3 categories:

Is the space?

- A welcoming place
- Healthy, safe and secure
- Clean and well maintained

In October 2017, Fox Hagg passed all criteria set out by the standard, with an overall score of 53 (pass mark 42).

Reserve Management

The reserve is managed by the trust's Living Landscapes Manager (north), with support from a Community Wildlife Ranger and the Land Management Team. At the time of writing the manager for Fox Hagg is Mr Rob Miller r.miller@wildsheffield.com

Health and Safety

Sheffield and Rotherham Wildlife Trust has many detailed polices including an Environmental Policy & Health and Safety Policy, these are updated at regular intervals or when key legislation changes.

Staff and volunteers from Sheffield and Rotherham Wildlife Trust regularly patrol the site, with any issues logged in order for them to be dealt with accordingly, additionally accidents and/or incidents are all recorded on the appropriate forms. A site risk assessment has been completed, and this is updated on an annual basis. Regular tree inspections are also carried out, along with any corrective work that may be necessary. All visitors to the site are encouraged to take their litter home with them, as there are no litter bins within the reserve itself, regular litter picks of the site are also carried out. Fly tipping can be an issue in the Lodge Lane car park, this is dealt with as and when necessary.

Adjacent Land Ownership

Yorkshire Water, who manage Redmires and Rivelin Reservoirs own the woodland and fields to the north-west of Fox Hagg. The farmland and woodland to the north-east of the reserve is owned and managed by Fox Hagg Farm. The majority of the land to the south of the reserve is under private ownership, primarily comprising of the gardens of neighbouring residential properties. Pockets of farmland along this southern boundary are also managed by both Fox Hagg Farm and Allen Sike Farm. Land along the western boundary of the reserve is under the private ownership of Fox Holes Lodge.

Site History and Past Management

Evidence of tree clearance and permanent settlements indicate that landscape exploitation and early agriculture first emerged on the land which is now Fox Hagg from the Neolithic period to the Bronze Age. The development of agriculture in the lower lying areas of the Rivelin Valley likely continued into the medieval period, with the rougher and steeper slopes possibly being reserved for grazing. In the post-medieval period, much open land was enclosed for pasture, as evidenced by the remains of walls in the central compartments of the reserve.

The freehold for Fox Hagg Nature Reserve is held by the council, with the trust taking on the leasehold in 2002. Sheffield City Council declared Fox Hagg an 'urban fringe' type Local Nature Reserve in 2004, citing biologically important features including: the smoky wave moth and the green hairstreak butterfly; heathland, scrub, woodland and stream habitats; species of interest such as ling heather, heath bedstraw, tormentil, common lizards, kestrel and sparrow hawk (Natural England). However, it should be noted that these species are present within the valley rather than specifically on this nature reserve.

Prior to the leasehold being taken on by Sheffield and Rotherham Wildlife Trust, Fox Hagg extension was managed by the Duke of Norfolk Estate.

Services and Vehicular Access

Fox Hagg nature reserve has water mains pipes immediately adjacent to the north eastern boundary of the reserve, where it abuts Lodge Lane. There is also an oil pipeline running down the slope of Fox Hagg towards the car park area **(see Figure 5).** A small car park, accommodating approximately 5 vehicles, is at the eastern end of the site, in addition to the car park available at Rivelin Dams reservoirs to the North West of Fox Hagg extension. Access is controlled at the site entrances by the existence of vehicle gates and horse hops.

Public Rights of Way

An extensive bridleway network exists across Fox Hagg nature reserve, footpaths also cross the reserve **(Figure 4**). These routes provide circular walks through the site. The footpaths and bridleways at Fox Hagg Nature Reserve are generally not surfaced, though some spot repairs and cross drains have been added during the period of the previous management plan. Sleeper steps that had been constructed on the steeper sections of the bridleways have been removed and the routes re-graded. Way-marker posts indicate the route of the bridle paths. A number of bridleways on site are difficult for horses to access, due to the angle of the slope and the narrowness of the paths, these are indicated on **Figure 4**.

2.2 Environmental Information

Topography

Fox Hagg Nature Reserve lies on a steep, rocky hillside in the Rivelin Valley, to the south of the A57. The reserve has a generally north-facing aspect, with an altitude between 175m and 285m.

Geology

The reserve lies on bedrock of the Carboniferous Millstone Grit series which is comprised of sandstone/gritstone and mudstone conglomerates, interspersed by impermeable shales. These sedimentary rocks were formed in the carboniferous age and are indicative of a formerly fluvial environment.

Pedology

The geology of Fox Hagg Reserve is overlain with brown earth and podzol soils. The British Geological Survey has recorded superficial surface deposits of peat formed up to 3 million years ago in the Quaternary period.

Climate

Table 1 provides climate data for the thirty-year average (1981-2010), taken from the local Sheffield weather station (Sheffield Cdl). The prevailing wind is from the west.

Table 1. Thirty-year average climate data for Sheffield.

Location	Mean Annual Rainfall (mm)	Sunshine (hrs)	Mean maximum temperature (°C)	
			Daytime	Night
Sheffield (131m)	834.6	1444.9	13.4	6.6

Hydrology

A stream runs south-north through Fox Hagg Nature Reserve adjacent to the western reserve boundary. Other than this, the site is generally free-draining, apart from where impermeable shales impede drainage, giving rise to wet flushes **(Figure 6).** Within Fox Hagg extension two streams run south-north, one adjacent the eastern reserve boundary and another within the central area of semi-natural broadleaved woodland

2.3 Biodiversity

Biodiversity Action Plans

The reserve is covered by a number of different Biodiversity Action Plans (BAPs) and supports a number of priority habitats and species, as summarised below:

Sheffield BAP Priorities

The Sheffield Local Biodiversity Action Plan has recently been updated to produce Habitat Action Plans for 4 priority habitat types across 130 sites in Sheffield. Fox Hagg is covered by the Heathland and Woodland Habitat Action Plans and is considered a target heathland site by the city council.

UK BAP Priorities

Heathland, rivers and streams and upland oakwood are considered to be priority habitats under the UK Biodiversity Action Plan.

UK BAP Priority Species recorded at Fox Hagg: yellowhammer *(Emberiza citrinella*), lesser redpoll *(Carduelis (f.) cabaret)*, common linnet *(Carduelis cannabina),* willow tit *(Poecile montana*), common bullfinch (*Pyrrhula pyrrhula*), song thrush *(Turdus philomelos),* and wood warbler (*Phylloscopus sibilatrix)*

Habitats

Heathland

Fox Hagg nature reserve predominantly consists of an intermediate between upland and lowland heathland, which is characteristic of the heathland around Sheffield. Heathland dominates the southern and eastern portions of the reserve, whilst the west has succeeded to secondary, deciduous woodland. A Phase One map of the site is provided in **Figure 7.**

The heathland of Fox Hagg extension is comprised largely of pockets of acid dry dwarf shrub heath within the broad-leaved woodland, with scattered trees and some grassland. Much of the heathland is being encroached, with areas succeeding to young birch woodland (*Betula* sp.).

The heathland areas of the site are dominated by heather *(Calluna vulgaris*) and bilberry (*Vaccinium myrtillus)*, with wavy hair-grass (*Deschampsia flexuosa)*, heath bedstraw (*Galium saxatile*) and common sorrel (*Rumex acetosa*). Birch seedlings and saplings are scattered throughout the heath, reaching up to 30% cover in places.

Bryophyte communities are present within the heather, but these are not as well developed as those of Wyming Brook Nature Reserve. The heather on Fox Hagg Nature Reserve also appears less mature than that of Wyming Brook, suggesting that the area has been burnt at some point during the past two or three decades.

Bracken (*Pteridium aquilinum*) is present across the reserve, forming bracken-dominant beds in places. Garden escapes; including raspberry (*Rubus idaeus*), ornamental roses (*Rosa* sp.) and the potentially invasive variegated yellow archangel (*Lamiastrum galeobdolon argentatum*) are common along the southern boundary to the site. Patches of nettles (*Urtica dioica*) are also present, suggesting localised areas of nutrient enrichment, possibly caused by adjacent households tipping garden waste onto the reserve.

Scrub

The vegetation of Fox Hagg Nature Reserve contains a significant scrub component. Areas of dense holly *(Ilex aquifolium)* and hawthorn (*Crataegus monogyna*) scrub are present along the old field-boundary on the northern edge of the reserve. Additionally, central compartments of Fox Hagg extension have a significant scrub component, particularly the downslope areas of the former pasture land. Some areas recorded as

scrub in the 2012 woodland survey have since succeeded into young birch woodland, again in the central compartments of Fox Hagg extension.

Broadleaved Woodland

Much of the secondary broadleaved woodland of Fox Hagg has developed on what was previously heathland. The woodland is dominated by birch with some rowan (*Sorbus aucuparia*), holly and the occasional oak (*Quercus* sp.). The ground flora contains heather, bilberry, wavy hair-grass and some bracken beds. In the National Vegetation Classification this woodland fits into the W16 oak/birch woodland community.

In the west of Fox Hagg extension the woodland is dominated by mature birch with rowan. The understorey is made up of holly and scattered remnants of acid dry dwarf shrub heath, mostly comprised of bilberry and heather. Young birch woodland has begun to encroach on heathland on the flatter ground. The steep, wooded banks in this area have associated springs and streams, with wet loving species such as alder *(Alnus glutinosa)* and crack willow *(Salix fragilis)* recorded here.

The central compartments of Fox Hagg Extension are comprised of the remnants of fields previously used for pasture, made up of mostly neutral grassland with some old boundary oak trees. There are large areas of younger woodland, particularly downslope to the north. Beyond the River Rivelin to the north are scattered.trees supporting ancient woodland indicator species such as bluebell (*Hyacinthoides non-scripta)*, greater stitchwort (*Stellaria holostea),* and greater woodrush (*Luzula sylvatica).*

Additionally, Himalayan balsam (*Impatiens glandulifera),* rhododendron *(Rhododendron ponticum)* and cotoneaster (*Cotoneaster* sp.) have been recorded on site, all of which are listed on Schedule 9 of the Wildlife and Countryside Act 1981 and are invasive non-native species.

Water courses and flushes

A stream (Allen Sike) runs through the woodland; here, beds of opposite-leaved golden saxifrage dominate the ground flora. There are also a number of springs on this site, one of which flows across the path and down into one of the fields in the north of the reserve resulting in the formation of a boggy area that supports cuckoo-flower (*Cardamine pratensis*), marsh thistle and bog stitchwort (*Stellaria alsine*). Adjacent to the damp area is an extensive patch of broad buckler fern. Marshy grassland communities, dominated by tufted hair-grass (*Deschampsia cespitosa),* great woodrush (*Luzula sylvatica*), marsh thistle *(Cirsium palustre)* and black knapweed (*Centaurea nigra*), are also present in wetter areas of the site.

Species

Fungi

Little is known about the fungal communities of Fox Hagg and such data as is available is the result of casual records rather than systematic recording effort. A walk-through survey in 2012 recorded 28 species of fungi, including species such as: the fly agaric *(Amanita muscaria),* the wood blewit *(Lepista nuda),* and the brown roll-rim *(Paxillus involutus).*

Bryophytes and Lichen

There is currently limited knowledge regarding the bryophytic communities at Fox Hagg. As part of the Phase 1 survey conducted in 2018, areas of extensive *Sphagnum sp.* were recorded, with notable areas being within compartments 3, 4, 9 and 10. Here a carpet of mosses comprised of much of the heath understorey, along with areas of *Sphagnum* found in wet flushes. Additionally, a walk –through survey in 2015 recorded 38 species, including: Haircap Moss *(Polytrichum commune)*, and Lawnmoss *(Rhytidiadelphus squarrosus).*

Invertebrates

Fox Hagg Nature Reserves has entries in the Invertebrate Site Register indicating that the wider area has a high invertebrate interest.

The invertebrate record for Fox Hagg nature reserve is more restricted than that for Wyming Brook, a result of both its smaller size and of less frequent recording. The main interest of the reserve is its lepidopteran fauna, which include the smoky wave (*Scopula imitaria*), it's only Sheffield record apart from Blackamoor, the notable *Coleopphora vitisella* and the green hairstreak butterfly. Also noteworthy were two locally uncommon diptera, *Myopa buceata* and *Servillea ursine*, representatives of the aculeate hymenoptera and the dead wood beetles *Triplax aenea* and *Orchesia undulata.*

Several beetle species, including two locally uncommon species of fungus beetle, are present on Fox Hagg nature reserve, and the heather beetle (*Lochmaea suturalis*) is common.

The invertebrate fauna recorded for Fox Hagg nature reserve are mainly characteristic of heathland and woodland edge habitats. Exceptions include the hoverfly *Cheilosia albipila,* whose larvae feed on marsh thistle, and the orange tip butterfly (*Anthocharis cardamines*), whose larvae feed on cuckooflower and which is also indicative of damp/marshy conditions. The scarcity in the records of species associated with marshy/wet habitats suggests under-recording, as there are a number of species-rich flushes and sphagnum bogs scattered across the reserve.

The extent of maturing birch and hawthorn scrub across the area will have a controlling influence on certain invertebrate groups, for example butterflies, hoverflies and dragonflies. Many representatives of these groups require open sunny areas for feeding and mating.

Reptiles and amphibians

Both viviparous lizards (*Lacerta vivipara*) and common toads (*Bufo bufo*) have been sighted at Fox Hagg (M. Masterson pers. comm.).

Birds

A detailed breeding bird survey of Wyming Brook, Fox Holes Plantation and Fox Hagg was carried out by Jim Clarke in 2011. Within the boundaries of Fox Hagg, a total of 48 species were recorded, with 40 of these species holding territories. The most common birds found on the reserve were: Eurasian blackcap *(Sylvia atricapilla),* common blackbird *(Turdus merulus*), and great tit (*Parus major).* The majority of species recorded were woodland species, however heathland species such as common linnet, yellowhammer, dunnock *(Prunella modularis),* and common cuckoo *(Cuculus canorus)* were also observed. Additionally, species that have been noted flying over the site include osprey *(Pandion haliaetus)* and lapwing *(Vanellus vanellus)*

A total of 9 red listed birds of high conservation concern were recorded as holding territory at Fox Hagg (Table 3.), the most populous of these being song thrush and willow tit. The presence of willow tit is of particular note due to the massive nationwide decline in its population, which fell by 88% from 1970-2006. Populations of song thrush have declined 48% from 1967-2008. A total of 6 amber listed birds of medium conservation concern were recorded at the site (Table 3.), with notably large populations of both willow warbler *(Phylloscopus trochilus)* and bullfinch.

Table 3. Species of conservation concern recorded at Fox Hagg.

Red		**Amber**	
Yellowhammer	*Emberiza citrinella*	Mallard	*Anas platyrhynchos*
House Sparrow	*Passer domesticus*	Bullfinch	*Pyrrhula pyrrhula*
Lesser Redpoll	*Carduelis (f.) cabaret*	Willow Warbler	*Phylloscopus trochilus*
Grey wagtail	*Motacilla cinerea*	Tawny Owl	*Strix aluco*
Mistle Thrush	*Turdus viscivorus*	Stock Dove	*Columba oenas*
Willow Tit	*Poecile montana*	House Martin	*Delichon urbicum*
Song Thrush	*Turdus philomelos*		
Woodcock	*Scolopax rusticola*		
Common Linnet	*Carduelis cannabina*		
Merlin	*Falco columbarius*		
(Common) Cuckoo	*Cuculus canorus*		

Mammals

A recent small mammal survey was survey carried out to establish which species of small mammals were present on Fox Hagg. Using sixteen longworth baited traps over three days, which were checked every morning and evening of the survey. Only three species were captured including; field/bank voles, field mice and a single pygmy shrew (Doherty, 2005).

Roe deer are periodically sighted on the reserve.

2.4 Infrastructure

The infrastructure at Fox Hagg includes site furniture, access controls, and sign posts **(Figure 8).**

Access Furniture

There are bridleways and footpaths (both informal and statutory) throughout the nature reserve. None of the footpaths or bridleways at Fox Hagg Nature Reserve are surfaced. A small car park, accommodating approximately 3 vehicles, is present at the eastern end of the site and regular patrols are used to remove litter from the site. A low vehicle barrier surrounds parts of the car park to prevent vehicles from encroaching onto the vegetation; this requires maintenance and repairs as necessary.

Access is controlled at the site entrances by the existence of vehicle gates, horse hops and A-frames.

Walls, Fences and Other Boundaries

The condition of the boundaries of Fox Hagg Nature Reserve varies greatly. The remaining drystone walls in the northern part of the reserve are now in a poor state of repair. Post and wire fences along parts of the northern, eastern and western boundaries have replaced walls. Most of the southern edge of the reserve is adjacent to back gardens, and as a result boundaries include drystone walls, wet stone walls, hedges, and garden fences. In general, they are well maintained. A hedge was planted along part of the northern boundary, though this was more to increase habitat than create a stock proof barrier.

The woodland of Fox Hagg extension continues to the west, with no boundary wall or fence marking the end of the area managed by the trust, the River Rivelin forms the boundary of much of the northern edge of Fox Hagg extension. The southern boundary of Fox Hagg extension is comprised of dry stone walls with post and wire fencing replacing these to the southwest.

Site Furniture

There are three benches are on the reserve. There are currently two SRWT signs on the reserve – one at the eastern entrance and one at the western entrance.

2.5 Cultural Context

Archaeological Overview

Archaeological Interest and Existing Features

The following information is sourced from an archaeological report undertaken in 2013 by Ed Dennison Archaeological Services.

Prehistoric Period (up to AD 43)

This period was characterised by gradual landscape exploitation, although there is little structural evidence of this due to later landscape disturbance. Evidence for the earliest occupation of the Fox Hagg (pre 8300 BC) is limited to caves and rock shelter sites. Throughout the Neolithic Period and Bronze Age there was intensive occupation of the area by farming communities, resulting in extensive tree clearance, with evidence of more permanent settlements indicated by the presence of at least five burial grounds on Lodge Moor and a small promontory fort to the West of Fox Hagg, above Wyming Brook. A total of eight presumed or actual prehistoric sites were identified within 500m of the Fox Hagg survey area, evidenced by the recovery of flints, flint chipping or other implements.

Romano British (AD 43-410)

Three Roman sites have been identified within 500m of Fox Hagg, two of which were evidenced by the recovery of Roman artefacts. The only known proposed significant Roman site close to the reserve, c.150m to the south, is a section of a long distance Roman road , named as 'Long Causey Road' on early 19th century maps, it is marked as a 'Roman Road' on early Ordnance Survey maps.

Early Medieval Period (AD 410-1066)

Evidence for Anglo-Saxon activity in the area is, like most other regions, inferred, to date, no artefacts from this period have been found in the area surrounding Fox Hagg. It is likely that by the end of the Anglo-Saxon period, the low-lying parts of the area were well settled and the complex pattern of manors, *vills*, townships and parishes that characterise the medieval period was already in existence.

Medieval Period (AD 1066-1540)

The reserve lies within an area known as Hallam in the Domesday Book, which was noted as containing c.16, 000 acres of wood pasture. A large part of this served as designated hunting grounds for the Lords of Sheffield, although records indicate that some of the lower slopes and valleys would have been occupied and cultivated, with the exploitation of the wood pasture playing an important part in the local economy.

Post Medieval Period (AD 1540 onwards)

The region immediately surrounding the reserve was still sparsely populated in the early to mid post-medieval period, and the industrial development which occurred elsewhere in the region did not significantly affect the area. To the immediate east of the reserve was Rivelin Lodge, built in c. 1616. The current house at Rivelin Lodge appears to have been extensively altered in the 1980s, although there may be earlier buildings surviving behind the house which are not visible from the road. It has been noted that an inner room with stone walls and ceiling survives, and suggestions have been made that Mary Queen of Scots may have stayed there when hunting.

Between 1791 and 1805 the 3,935 acres of moorland in Upper Hallam were enclosed, beginning with the creation of large walled fields on Ash Cabin Flat and Lodge Moor. The greatest post-medieval impact on the setting of the survey area occurred in the mid-19th century when the Rivelin reservoirs were constructed, being completed in 1848.

Much of the archaeological sites recorded within the reserve date from the 18th, 19th or 20th century, including a military camp on Lodge Moor and Lodge Moor Hospital. The relative isolation of the site from Sheffield city is likely to have been a deciding factor behind the construction of these developments.

Recreational Usage

Fox Hagg is a quiet reserve. The majority of visitors to the reserve are dog walkers, with other walkers, mountain bikers and horse riders also represented amongst site users.

Visitor surveys show that visitor satisfaction with the reserve is high. Most users feel that that Fox Hagg was is in need of any improvements, and seemed generally happy with the work that the Wildlife Trust are doing.

Community

The visitor profile for the reserves is reflected by that of the wider community. The communities living adjacent to the reserve reside in the ward of Fulwood. The population of this ward contains a large number of people in the 20-24 age bracket, due to the proximity of the ward to the city's universities. In the immediate vicinity of the reserve however the majority of the population are of older working age (46-64) or retired, reflecting the high levels of home ownership and high cost of housing in the area.

Fullwood has lower rates of long-term illness, unemployment and economic inactivity than the Sheffield average. Levels of educational attainment are above the Sheffield average, as are levels of car ownership. All these factors suggest a comparatively wealthy population.

The population of Fullwood is a predominately white British, with 14.7% of residents identifying as being black or of another minority ethnic group.

The communities surrounding the reserve have a tradition of voluntary work and participation in local activities. Several groups, in particular the Lodge Moor Conservation Society and Rivelin Valley Conservation Group, have a long history in working on both the reserves, and other sites in the area. Interest in the reserves is high and the Wyming Brook/Fax Hagg Reserves Advisory Group that was set up in 2002 remains one of the more active of the advisory groups. Skill levels within the communities are high, with many local people having a wide experience and knowledge of environmental management.

Education

There are several schools near the reserves (although none within easy walking distance), all of which perform well above the Sheffield average, and the national average, in terms of academic achievement. The Higher Education sector is well developed in Sheffield. The city has two universities, with a student population of approximately 35,000 (full and part-time). The University of Sheffield runs degree courses in biology, ecology and related subjects. It also runs part-time adult education courses through the Institute for Lifelong Learning. Sheffield Hallam University runs degree courses in environmental land management, countryside recreation management and tourism (Schools of Environment and Development and the School of Sport and Leisure Management). There are no records of either university using this site as a destination for field visits.

2.5 Economics

Past Funding

Since the Trust took on the management of Fox Hagg the majority of the nature reserve has been under a Woodland Grants Scheme and, more recently, has been entered into DEFRA's Countryside Stewardship scheme which has replaced this.

Veolia have funded works to improve habitats for willow tit, including woodland thinning and control of rhododendron, bracken and himalayan balsam.

The Peak District Sustainable Development Fund funded a variety of educational events and habitat management works, as well as the archaeological survey that took place in 2013.

Productive Land-use

No productive land use initiatives are operational on the reserve. When the woodland is thinned to improve its structure, timber arising's are extracted and sold. However the difficulty in extracting timber from much of the site means that such operations rarely make a surplus. There is no expectation that commercial forestry operations will be carried out on the reserve during the period covered by this plan.

Current and Future Funding Schemes, Income and Grants

Fox Hagg is currently enrolled in Forestry Commissions Countryside Stewardship scheme (CSS) – starting 2018 and running for 5 years. Through this scheme the site receives a Woodland Improvement Grant which supports work to improve woodland condition for biodiversity or to enhance resilience to climate change.

Sheffield and Rotherham Wildlife Trust Membership Recruitment

Wildlife Trust membership across the city is steadily increasing as a more pro-active approach to membership recruitment has taken place in recent years. When recruitment campaigns have been targeted at neighbouring communities these have met with a large degree of success. There is great potential to recruit members in the Fox Hagg area, and the high quality management and interpretation will go some way towards generating members.

Marketing

Fox Hagg is included in Sheffield and Rotherham Wildlife Trust's Nature Reserves booklet, which gives details on the sites location and the ways in which it can be reached, Fox Hagg is also included in the Trust's Living Landscape Brochure.

News and articles about the reserves are printed in Sheffield and Rotherham Wildlife Trust's Kingfisher magazine, which is sent out to members three times a year. Press releases are sent to the Sheffield Star and the Sheffield Telegraph.

Fox Hagg Nature Reserve has a page on the Sheffield and Rotherham Wildlife Trust website. This gives some general information about the reserve, as well as access to electronic versions of documents such as, a site map, leaflet and the minutes of any Reserve Advisory Group meetings: https://www.wildsheffield.com/reserves/fox-hagg/

3.0 RESERVE VISION AND FEATURES OF INTEREST

3.1 Vision Statement

Our vision for Fox Hagg by 2070 is:

Fox Hagg lies on the southern side of the Rivelin Valley, spanning the hillside between Lodgemoor and the River Rivelin. The majority of the reserve is wooded, with the woodland varying in character between open and wet willow-birch woodland to dense, high forest with a canopy of oak and beech.

Deadwood, both standing and fallen, is an important component of the woodland across the reserve. This supports a diverse community of saprophytes. The fruiting bodies of fungi are not picked on the reserve.

Open areas of dwarf –shrub heath and acid grassland are present on the southern edge and centre of the reserve, and support breeding populations of Common Lizard.

The reserve is good for birds, and is used for breeding by at least 20 species including Willow Tit, Wood Warbler and Bullfinch. It is naturalistic in character, with few man-made features, except where required to facilitate safe public access. A variety of footpaths and bridleways link the reserve with the surrounding countryside.

Fox Hagg is a quiet site, and offers opportunities for solitude and in which to enjoy the natural world. It is enjoyed by walkers, horse-riders and cyclists but away from rights of way the reserve is undisturbed.

Well-behaved dogs are welcome on the reserve; with dog owners assiduous about keeping them under control, picking up after them and removing their waste from site.

3.2 Feature 2: Broad-leaved Woodland

30 ha of broadleaved woodland in good ecological condition by 2070.

Attributes of woodland in good ecological condition

Attribute	Performance Indicator	Monitoring
Species composition.	≥ 70% of the canopy comprises native broadleaf species. ≥ 8 native broadleaved tree and shrub species represented in the canopy and understory. In areas of upland oak woodland (W10) the dominant canopy species will be oak (*Quercus petraea* or the hybrid *Q. petraea x robur*), birch (*Betula* sp) and rowan (*Sorbus aucuparia*) with < 10% of the canopy comprising coniferous species. In areas of wet woodland the dominant canopy species will be alder (*Alnus glutinosa*) and/or willow (*Salix* sp) 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. Average of 3 different tree size classes present per 100m^2 across woodland.** Average of 3 veteran trees in each ha**.	Woodland Condition Monitoring

Attribute	Performance Indicator	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

* >20cm diameter & >50cm long.

** 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)

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

* >20cm diameter & >50cm long.

** 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)

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	Rhododendron, snowberry and cherry laurel are present on the reserve. If no action is taken this species will spread, displacing the native flora.	Yes	No rhododendron, snowberry or laurel (INNS) present in woodland.	Woodland Condition Monitoring
Invasive native species (holly)	This native species is spreading across woodlands in Sheffield, 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 on Fox Hagg but is not yet problematic.	Yes	Holly cover is frequent over <50% of woodland. Holly cover is very frequent or continuous over <10% of woodland.	Woodland Condition Monitoring
Topographical constraints	Large areas of the reserve are steep and inaccessible to people and machinery. This will constrain the type and rate of woodland management possible.	N/A	N/A	N/A

Factors	Rationale	Management Required	Technical Indicator of control	Monitoring
Tree disease	Many species of native broadleaved trees are vulnerable to pathogens, several of which are active in the Sheffield area. Species known to be at imminent risk – ash, sweet chestnut – are present on Fox Hagg in 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
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 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	No loss of wetland habitats across the reserve	Woodland Condition Monitoring Site Risk Assessment. Fire Risk Assessment Plan

Evaluation of Current Condition against Attributes and Factors

Fox Hagg currently supports c25 ha of broadleaved woodland, an amount which is increasing as heathland and scrub habitat succeed to woodland over time. This woodland has been divided into a number of management compartments (**Figure 9**).

The natural climax vegetation type for much of the reserve is oak-birch woodland, with many areas of the reserve gradually succeeding towards this community. The exception being well established areas of willow and alder along wet flushes. However, factors such as tree disease and climate change suggest that a more diverse woodland, with a component of additional canopy species such as beech, chestnut and sycamore, may prove more resilient in the long-term. Consequently, the systematic removal of these species through management is not thought desirable, although oak may be favoured during thinning operations.

Woodland structure is a key attribute of woodland in good ecological condition. Temporary open spaces (glades, clearings) are an important feature of woodland health 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 at least 10m in diameter are currently found across 71% of the woodland at Fox Hagg. Structural diversity should increase naturally with time as the woodland matures, however thinning and selective felling will alter the canopy and promote the growth of natural regeneration and ground flora, again this will also improve resilience against factors such as climate change and disease. During thinning operations, oak could be favoured, in order to promote the succession towards an oak-birch woodland.

Another structural factor affecting a woodland's biodiversity is its age structure, and particular, the presence of mature and senescent trees. Woodland with a diverse age structure provides more ecological niches for exploitation than even-aged woodland. Fox Hagg currently supports few veteran trees of a large size. The veteran and notable trees recorded on the reserve during the 2016 survey will be protected during woodland works and retained (unless they become unsafe).

The presence of deadwood both standing and fallen is an important attribute of deciduous woodland in a good ecological condition, providing a habitat for a wide variety of saprophytic species such as fungi. 82% of the woodlands at Fox Hagg currently meet the target for standing deadwood, meaning that the woodland as a whole is considered to be in good condition for this feature.

Woodland edge is defined as the transition zone between a maturing forest and adjacent habitats, such as grassland, crop land, or wetland. 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 Fox Hagg, 33% of woodlands fall into this category. Due to succession and a lack of natural processes (grazing/browsing) to counteract this, this habitat will require proactive management in order to ensure its retention on site.

Currently, rhododendron is present across 23% of the reserve's woodland, and Indian balsam across 32%. Unchecked, these invasive non-native species will spread. Holly, a native shrub, is spreading across woodlands throughout Sheffield. It is particularly problematic in combination with a beech canopy, where its spread is favoured by low light levels. Its abundance at Fox Hagg will be monitored during the period covered by this management plan.

The woodlands of Fox Hagg are primarily browsed by squirrel, evidence of browsing damage to trees was not detected in any of the woodland surveyed in winter 2018, suggesting browsing pressure is currently well within the tolerance limits suggested for woodlands in good ecological condition.

Management Objectives

1.0 30 ha of broadleaved woodland in good ecological condition by 2070, including 23 ha of upland oak woodland and 1 ha of wet woodland.

1.1 To retain a diverse woodland structure and species composition across the reserve's woodlands through active woodland management.

1.2 To increase the proportion of woodland edge ecotone in good condition by 2027

1.3 To control the spread of invasive non-native species across the reserve by 2027.

3.3 Feature 2: Bird Community

Reserve supports a diverse woodland bird community including breeding willow tit, wood warbler, bullfinch and spotted flycatcher.

Attribute	Performance Indicator	Monitoring
Diverse breeding bird assemblage	≥20 native species of bird breeding on the reserve on an annual basis, including willow warbler, coal tit, wren, chaffinch and robin.	MacKinnon List Survey
Breeding Willow Tit	≥ 2 pairs breeding willow tit on site	Tape lure
Breeding Wood Warbler	Wood warbler present on the reserve during the breeding season	MacKinnon List Survey
Breeding Bullfinch	Bullfinch present on the reserve during the breeding season	MacKinnon List Survey
Breeding Spotted Flycatcher	Spotted Flycatcher present on the reserve during the breeding season	MacKinnon List Survey
Suitable Woodland Habitat	As per Feature 1. Broadleaved Woodland	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.

Factor	Rationale	Management Required (Yes/No/Monitor)	Technical Indicator of Control	Monitoring
Structure of woodland edge habitat	A well-structured woodland edge containing occasional large trees, a scalloped edge, with open areas and areas of younger trees and scrub is necessary to support redstart and tree pipit. Further work (and time) is required to optimize the woodland fringe for these species.	Yes	Cross reference w those for Feature 1 above	Woodland Condition Monitoring
Woodland structure	A well-structured woodland containing trees of each age class, standing dead wood, a well-developed but not uniformly dense understory and network of glades and open areas is necessary to support a diverse bird assemblage, with each species having its own particular set of requirements.	Yes	Cross reference w those for Feature 1 above	Woodland Condition Monitoring
Woodland canopy species composition.	The woodland's current canopy composition, allows all the species given above to breed on the reserve.	Yes	Cross reference w those for Feature 1 above	Woodland Condition Monitoring
Disturbance	Increases in the popularity of certain activities, such as dog walking may increase the extent and amount of disturbance experienced by wildlife on the reserve, with ground nesting birds being particularly badly affected.	Monitor	No increase in the number of footpaths, bridleways or desire lines on the reserve. N	Informal monitoring through Wildlife Trust patrols
Regional, national or international decreases in population size for individual species	The bird species found at Fox Hagg constitute a sub-set of a wider population and may therefore be indirectly affected by population changes on a national or international level. This is particularly true of species on the current red or amber lists which are already undergoing population declines.	Monitor	Local and national populations of individual species remain stable or increase.	BTO published data SBSG published data showing species trends

Evaluation of Current Condition against Attributes and Factors

The diversity of the age and structure of the reserve's woodland is crucial for the bird community that it supports. Wintering bird surveys have shown that the majority of species favour areas of mixed woodland or upland oak wood. **Continued diversity in tree age, woodland structure and species composition will therefore be promoted on the reserve in the long-term. Compartment specific management will be carried out to support particular species.**

No birds solely reliant on a heathland habitat are currently known to hold territory or breed on the heath at Fox Hagg. This is primarily due to the extent of the heath being narrow and linear, and disturbance from the both the rights of way running through the heath and the neighbouring residential properties. Therefore, species observed on the heath are usually those preferring woodland edge habitats and garden birds that may nest in the area due to the proximity of domestic bird feeders. Given the predicted succession of much of Fox Hagg to heathland over the period covered by this management plan (see section 3.4 below), it is not thought that the reserve will provide suitable habitat for birds of open heathland in the future.

Compartment specific woodland management for the bird community at Fox Hagg has proven to be valuable, allowing birds with subtly different habitat requirements to co-exist on the reserve, and this management will continue over the period covered by this management plan. In particular, **the creation of open woodland with high stumps to provide suitable nesting habitat for willow tit,** has proved successful in supporting willow tit on the reserve **and will continue.**

Healthy populations of bullfinch are known to nest and breed on the reserve, preferring to nest in shrubs in areas of scrub and woodland, especially hawthorn. This will therefore be considered during scrub thinning and woodland edge management activities, to ensure that any areas of preference are identified and retained.

Management Objectives

2.0 Reserve supports a diverse woodland bird community including breeding willow tit, wood warbler, bullfinch and spotted flycatcher.

Cross reference with 1.1-1.3 above

2.1 To carry out compartment-specific woodland management operations in cpts 1-10 to benefit willow tit, wood warbler, spotted flycatcher and bullfinch.

3.4 Feature 3: Heathland

1.6 ha of intermediate heathland in good ecological condition by 2027.

Attributes of heathland in good ecological condition

Attribute	Performance Indicator	Monitoring
Dwarf Shrub Cover	To be classified as heathland when part of a mosaic of other habitats, the cover of dwarf shrubs must be >25%	Heathland Condition Monitoring
Scrub and Bracken Cover	Maintenance of patchy scrub and bracken cover: ≤10% scrub cover and ≤20% continuous bracken cover.	Heathland Condition Monitoring
Heathland Structure	10% heather of mature/degenerate age 25-50% heather of pioneer age	Heathland Condition Monitoring
Bryophyte Community	>10% cover of naturally present bryophytes	-
Bare Ground	<10% bare ground	Heathland Condition Monitoring

References: Sheffield Local Biodiversity Partnership (2012) Heathland Habitat Action Plan.

Natural England (2011) UK Biodiversity Action Plan Priority Habitat Descriptions.

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.

Factor	**Rationale**	**Management Required**	**Technical Indicator of Control**	**Monitoring**
Topographical constraints	Large areas of the reserve are steep and inaccessible to people and machinery. This will constrain the type and rate of heathland management possible.	N/A	N/A	N/A
Scrub encroachment	Heathland will naturally succeed to scrub/woodland.	Yes	≤10% scrub cover within heathland compartments	Heathland Condition Monitoring
Bilberry dieback (*Phytophthora)*	The disease has not yet been reported in the Sheffield area, however the potential of an outbreak should be considered	No, monitor	No presence of diseased vegetation	Heathland Condition Monitoring
Fragmentation of heathland pockets	This may affect the continuity and extend of pockets of heathland and associated species	Yes	Retention of 1.62ha heathland pockets	Heathland Condition Monitoring
Human disturbance	Excessive pressure from recreation can lead to erosion and a reduction in value for wildlife	No, monitor	No reduction in size of heathland pockets selected to retain.	Heathland Condition Monitoring

Evaluation of Current Condition against Attributes and Factors

Fox Hagg currently has c 4.8 ha of intermediate heathland distributed in pockets across the site (**Figure 10**). The heathland at Fox Hagg is primarily dominated by bilberry, with frequent patches of bracken and bramble, scattered young silver birch, and wavy hair-grass. Bryophyte communities are present within the heather, however these are not as well developed as those of Wyming Brook nature reserve.

Heath in a good ecological condition has the potential to support a diverse community of invertebrates, bryophytes and birds. One of the primary ecological factors that will affect the species supported by the heathland is the complexity of its structure, with a diverse age assemblage of heather, species composition and presence of bare ground all important components.

The narrow shape of much of the pockets of heath at Fox Hagg mean that no birds solely reliant on a heathland habitat are currently known to hold territory or breed on Fox Hagg. Instead the heathland habitat provides a suitable habitat for bird species which utilise woodland fringe habitat (see 3.2 above).

Across the reserve the heathland is undergoing natural successional processes and becoming encroached by scrub. Over one third of the site has succeeded to secondary birch woodland, with much of the remainder comprising a heath and scrub mosaic. The succession of the heathland to woodland is considered to be an unfavourable outcome, as it would result in the loss of much biodiversity from the reserve and would also change its character. However, the retention of a portion of the reserve's woodland is also considered desirable, as many of the species found on the reserve require both habitats.

Bracken also threatens the heathland habitat, due to a variety of reasons - warmer winters, nutrient enrichment from air pollution and lack of grazing or cutting. It may also have encroached onto the heathland due to the leaf litter from the surrounding birch, which has accumulated in localised areas. Whilst bracken does have some value to wildlife (such as nesting whinchat, wheatear and numerous invertebrates), its march into the heather and bilberry is deleterious both for wildlife and for people. The heathland sub-shrubs will eventually be lost, and the valuable bilberry resource will diminish.

Heathland is a man-made habitat and requires intervention in the form of natural or man-made processes to retain it. There are no natural processes (primarily grazing) to keep this in check at Fox Hagg, and mechanical control and burning are not appropriate for this site, due to topographical constraints and fire risk respectively. Consequently, the management of scrub encroachment is done entirely by hand, limiting the area that can reasonably be retained, in extent and to locations which can safely be accessed by work parties. Therefore the gradual succession of much of the reserve's heathland to open heathy woodland during the period covered by this management plan is anticipated. However, **1.62 ha of heathland area spread over four sub-compartments will be actively retained in good ecological condition** (**Figure 10**).

Management Objectives

3.0 1.6 ha of intermediate heathland in good ecological condition by 2027.

3.1 To control the spread of bracken and birch across the heathland retention area by 2027.

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.

3.5 Feature 4: Public Access

Reserve is safe, well-maintained and accessible for people of all ages and physical abilities.

Attributes

Attribute	**Performance Indicator**	**Monitoring**
Footpath network	Footpaths maintained in accordance with PRoW standards	Routine Patrols
Bridleway network	Bridleways maintained in accordance with PRoW standards	Routine Patrols
Car parking	Car parking available at Lodge Lane	Routine Patrols
Safety	≥ 90% of visitors feel that the reserve is safe and well-cared for.	Visitor Survey
Cleanliness	Fly tipping on the reserve can be an issue however this is dealt with promptly	Routine patrols

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.

Factor	Rationale	Management Required (Yes/No/Monitor)	Technical Indicator of Control	Monitoring
Dogs and dog walking services	The popularity of the reserve for dog walking could lead to 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.	Regular Patrols Visitor Survey Monitoring Incident Log
Correct use of PRoW network	The footpath network should be accessible to walkers only, with horses using the available bridleways routes. Inappropriate access can cause erosion to paths and a danger to other user groups.	Yes	Motorbikes not reported on the reserve. PRoW footpaths used by walkers only. Horse riders and cyclists remain on bridleways.	Regular Patrols Monitoring Incident Log

Evaluation of Current Condition against Attributes and Factors

Levels of user contentment with Fox Hagg Nature Reserve are generally high, with few visitors, or members of the local community wanting to see overt changes to the reserve. Conserving the landscape character, biodiversity value and tranquil nature of the reserve are all visitor priorities, consequently, all management activities will aim (where possible) to maintain the 'wild' feel that visitors to Fox Hagg enjoy.

Responses to the visitor survey indicate that dog walking is one of the most popular recreational activities carried out on the site, occasional issues with dog faeces not being picked up by owners and dogs not under adequate control have been reported, however this has not yet escalated into a widespread issue. Neighbouring Wyming Brook seems to be the more popular destination for commercial dog walkers, and no incidents involving this user group have been reported at Fox Hagg in the past 12 months. Continued monitoring and regular patrols of the reserve will help to ensure that this remains the case into the future.

Many visitors to Fox Hagg live within walking distance of the reserve, or pass through the reserve as part of a longer walk, however there is limited parking availability off Lodge Lane. The car park is the responsibility of both theTtrust and the adjacent land owner. In recent months, ongoing issues with fly-tipping have meant that part of the car park has been blocked off by the adjacent land owner, reducing the number of spaces available. Fly-tipping at the reserve is dealt with swiftly, when any indication of the perpetrator is found (names or addresses on labels etc.) it is reported to the local authority for further action to be taken.

At Fox Hagg, steep gradients and rough paths make the majority of the reserve inaccessible to those with impaired mobility, and therefore the footpath network must be maintained to a high standard to ensure that existing levels of access are not lost. The bridleway network at Fox Hagg is in a good condition, however one portion of the network is likely to become inaccessible to horses in the near future, as erosion has led to the narrowing of the path. The remaining bridleways must therefore be maintained to a high standard to ensure that safe access can continue.

Levels of conflict between user groups is generally low, however the potential for issues to arise is always present, due to the differing needs of various visitors. In order for all visitors to enjoy the reserve, regular communication with local user groups should continue, and engagement with the community should be a part of the ongoing decision making process.

Fox Hagg is an important resource for bilberry-pickers. Unlike the general day-to-day use of the site, people from much farther away than Lodge Moor visit the site when the bilberries are in fruit. Many families have been picking bilberries at Fox Hagg for generations, and therefore the management of the open heathland has cultural importance.

Management Objectives

4.0 Reserve is safe, well-maintained and accessible for people of all ages and physical abilities.

4.1 To maintain the Public Rights of Way network in line with national and local standards.

4.2 To ensure the reserve is kept clean of litter, and safe for public 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	2019	2020	2021	2022	2023	2024	2025	2026	2027
Broadleaved woodland	**1.1**	**To retain a diverse woodland structure and species composition across the reserve's woodlands**									
		Thin cpt 1 to favour oak and other native broadleaved species.	X			X					
		Thin cpt 2 to favour oak and other native broadleaved species.			X			X			
		Thin cpt 3 to favour oak and other native broadleaved species.					X				
		Thin cpt 4 to favour oak and other native broadleaved species.							X		
		Thin cpt 5 to favour oak and other native broadleaved species.	X				X				
		Thin cpt 6 to favour oak and other native broadleaved species.						X			
		Selective fell, cpt 7.		X							
		Thin cpt 7 to favour oak and other native broadleaved species.									X
		Thin cpt 8 to favour oak and other native broadleaved species.	X							X	
		Mark all veteran notable trees across the reserve for retention.	X								
	1.2	**To increase the proportion of woodland edge ecotone in good condition by 2028**									
		Scallop and coppice southern edge of cpt 2 to create woodland edge habitat to favour bullfinch and spotted flycatcher		X		X		X		X	
		Control scrub within and scallop and coppice the edge of the heathland glades in cpts 5&9 (Figure 10) to retain open heathland areas and to create woodland edge habitat.	X		X		X		X		X
	1.3	**To control the spread of invasive non-native species across the reserve by 2027.**									
		Pull Indian balsalm from glades in cpt 6 & 7	X	X	X	X	X	X	X	X	X
		Remove rhododendron from 50% of the woodland monitoring squares in which it is present, beginning with squares where it is present at low density.	X	X	X	X	X	X	X	X	X
Breeding bird assemblage	**2.1**	**To carry out compartment-specific woodland management operations in cpts 1-10 to benefit willow tit, wood warbler, spotted flycatcher and bullfinch.**									
		Cross reference w 1.1, 1.2 and 1.3 above	X	X	X	X	X	X	X	X	X
		Manage scrub in cpt 9 to favour bullfinch.								X	
		Thin cpt 2 to favour wood warbler			X			X			
		Thin cpts 3, 4, 6 & 7 creating glades with high stumps for willow tit.		X			X	X	X		

Feature	Objective no.	Objective with prescriptions	2019	2020	2021	2022	2023	2024	2025	2026	2027
Heathland	**3.1**	**1.6 ha of intermediate heathland in good ecological condition by 2027**									
		Pull bracken across heathland retention area 3a.		X					X		
		Remove birch across heathland retention area 3a.	X					X			
		Pull bracken across heathland retention area 6.				X					X
		Remove birch across heathland retention area 6.			X					X	
		Pull bracken across heathland retention area 8.					X		X		
		Remove birch across heathland retention area 8.			X						X
		Pull bracken across heathland retention area 9.	X								
		Remove birch across heathland retention area 9.		X							
Public Access	**4.1**	**To maintain the Public Rights of Way network in line with national and local standards.**									
		Cut back overhanging vegetation along Rights of Way	X	X	X	X	X	X	X	X	X
		Spot improvements on bridleway (cpt 9) to retain and improve drainage		X				X			
	4.2	**To ensure the reserve is kept clean of litter, and safe for public usage**									
		Replace handrail along bridleway (cpt 10)								X	
		Carry out regular litter picks across reserve	X	X	X	X	X	X	X	X	X

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5.0 FIGURES

Please see Figures PDF

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.
BAP	Biodiversity Action Plan
CS	Countryside Stewardship
EA	Environment Agency
Factor	Anything that have the potential to influence or change a feature, or which can affect the way in which a feature is managed.
Feature	The most valued elements of the site, for which it is managed.
LBAP	Local Biodiversity Action Plan
PDNPA	Peak District National Park Authority
SAC	Special Area of Conservation
SCC	Sheffield City Council
SPA	Special Protection Area
SRWT	Sheffield and Rotherham Wildlife Trust
SSSI	Site of Special Scientific Interest
Vision	A statement describing the ideal condition of a site, at a given point in the future.
YW	Yorkshire Water

APPENDIX II SUMMARY OF PROPOSED MONTORING

FEATURE	Monitoring Methodology	Frequency
1. Broadleaved woodland	Woodland Condition Assessment	Every 6 years
2. Bird Community	MacKinnon List Survey Tape lure monitoring of willow tit	3 years Annually
3. Heathland	Drone survey	5 yearly
4. Public Access	Through routine patrols Feedback from RAG group and access groups	Monthly Ad hoc

APPENDIX III: OPERATIONAL STANDARDS AND TECHNIQUES

3.5.1 Protection and control

All felling operations will be designed to minimise the risk of damage from wind, fire, pests and diseases through the appropriate treatment of waste (lop and top) from thinning and felling operations.

3.5.2 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.

3.5.3 Minimising fire risk

Due to the generally dry ground conditions, age class distribution and the location of the site, the fire risk is moderately high. During periods of high risk (early spring and late summer), restrictions are not put on public access through the wood, as it is accepted that public access leads to better reporting of fire. Hoerver signage warning of high fire risk, and forbidding the use of portable barbeques, or the creation of camp fires, on site will be displayed.

3.5.4 Pests and diseases

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

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.

Chalara (ash dieback) is a windbourne disease of ash trees that is now widespread throughout Sheffield. Ash are not common at Fox Hagg 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.

3.5.5 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.

3.5.6 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.

3.5.7 Veteran and Notable Trees

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

3.5.8 Dead wood

Where possible, standing dead wood and snags will be retained during felling operations.

3.5.9 Water Management

The natural and man-made watercourses/features can be seen in Figure 7. Planning for operations in the vicinity of water features is in accordance with the Forestry Commission (UKFS) Forest and Water Guidelines (2011).

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

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

The largest stream on Fox Hagg is the Rivelin Brook at around 2-3m 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. Only minimal 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.

3.5.10 Domestic stock and fencing

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

3.5.11 Use of pesticides and fertilisers

The range of pesticide use on the reserve has been kept to a minimum, with only two chemicals, glyphosate and asulox, 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 reports are held on file for the woodland.

All pesticide applications will be carried out in accordance with Forestry Commission Field Book 8 - The Use of Herbicides in the Forest. 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.

Pesticide report forms 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.

3.5.12 Waste disposal and pollution

No significant waste from forest operations has been identified.

The Environment Agency and SCC Environmental Enforcement Officer will be informed of all illegal activities as appropriate. The dumping of oil drums, car batteries and asbestos has previously been an issue in the Lodge Lane car park. These will continue to be removed by a specialised disposal service including the issue of a removal certificate.

Fly-tipped waste and garden refuse will be removed and correctly disposed of by the SRWT ranger team. 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.

3.5.13 Control of harvesting operations

Steep and inaccessible terrain means that felling operations will be carried out by chainsaw, to waste.

Stands are designated to be treated under CCF systems and will be thinned on a selective basis, in order to enable regeneration.

Thinning operations will be limited to periods outside of bird nesting times when the ground conditions are suitable to support safe access.

3.5.14 Emergency procedures

Chemical and oil spill

A chemical and oil spill emergency plan will be in place for all operations

Accident plan

All thinning operations will be carried out under risk assessment and provide 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

3.5.15 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.

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 Clear-felling operations designed to minimise the risk of damage from wind, fire, pests and disease.	
Wind damage and fire risk 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	
Protected Species Harvesting operations will be limited to periods outside of bird nesting season 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 raptor nesting sites within operational areas identified and marked for retention..	
Veteran and notable trees All/any veteran and notable trees in operational areas identified and marked for retention.	

Water management Buffer areas of 10m 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 reports completed and held on file. Copies of competency certificates for all operators on file. Pesticide report forms 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. 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. Site fire plan shared with all contractors (if fire risk high) Warning signage agreed and in place. Responsibility for maintenance of signage has been allocated. Contact details for all parties (contract manager, principle contractor, site manager etc) shared and placed on file.	

APPENDIX V: LIST OF SURVEYS, MONITORING PROGRAMMES AND REPORTS

Author	Date	Survey	Summary of surveys at Fox Hagg
Belinda Wiggs and Susan Shorter	2001	Botanical Survey	A detailed Phase 1 survey was carried out across the site, highlighting a mosaic of heather and bilberry heathland, bracken, birch and oak woodland and small areas of wet grassland on a steep south-facing slope.
Various - SRWT	2001	Photo Monitoring	Fixed-point photography was carried out across the reserve to show the extent and spread of bracken.
Michael Senkans	2001	The Fungi of Fox Hagg	A report on the location of different fungi species found across the site. 22 species found. Fungi would benefit from more dead wood on site.
Henna Tanskanen	2001	Visitor Survey for Fox Hagg	The aim was to find out who uses the reserve, for what purpose, where they come from and how they would like to see the reserve managed for use with the new management plan.
Gareth Taylor	2003	Visitor Survey Report for Wyming Brook and Fox Hagg	SWT conducted this visitor survey during the summer of 2003. The reserves are enjoyed for their peace and quiet, natural beauty and because of the large number of public rights of way; the only threats the public perceived were the safety and dumping in Wyming Brook off Redmires Road.
Geraint Doherty	2005	Small Mammal Survey	A survey carried out to establish which species of small mammals were present on Fox Hagg, using sixteen longworth baited traps over three days. Only three species were captured including; Field/Bank Voles, Field Mice and a single Pygmy Shrew.
Liz Jeffreys and Belinda Wiggs	2005	Phase One Habitat Survey	Detailed site description, species list and habitat map.
Sarah Sidgwick	2011	Visitor Survey	SWT conducted a visitor survey with an aim of finding out who uses the reserve, for what purpose, where they come from and what improvements to the site they would

			like to see implemented. The site is mainly used for walking, exercise, dog-walking and enjoying the countryside. The main improvement visitors would like to see are benches, rubbish bins, more regular litter control and better signage, access and footpaths.
Jim Clarke	2011	Common Bird Census	A survey to assess which of the common birds are present on the site and present in the newly acquired extension between this site and Wyming Brook.
Julie Riley	2012	Phase One Habitat Survey of Fox Hagg and Fox Hagg Extension	Detailed site description, species list and habitat map.
Ed Dennison and Shaun Richardson	2013	Archaeological Desk-Top Survey of Fox Hagg	Survey conducted in order to determine baseline archaeological data for SRWT. Survey indicates that the long term and large scale exploitation of the area likely took place from the late Neolithic period onwards. A significant amount of wood pasture was present during the medieval period. It is likely that Fox Hagg first emerged as a 'Holly Hagg'. There was little evidence of gritstone quarrying or World War activity throughout the survey area.
Gary McCarthy (Anderson Tree Care Ltd.)	2014	Tree Safety Survey	Walkover tree risk survey with individual surveys and inspections as required. Main findings were that Fox Hagg is a Hillside site with mainly low growing mature and early mature trees, with evidence of ongoing tree management across the site. Follow up recommendations are: re survey of site in 5 years' time and in house basic inspections whilst staff are on site or following high winds.
A. Baker, F. Denham, P.Dixon, S. Dixon, J.Egan, E. McBride.	2015	Fox Hagg Mosses	A report on the presence of different Bryophytes throughout the reserve. 38 species recorded.
Rachel Stevenson and Rae Smith	2018	Wyming Brook and Fox Hagg Visitor Survey	SRWT conducted a visitor survey with an aim of finding out who uses the reserve, for what purpose, where they come from and what improvements to the site they would like to see implemented.

Julie Riley	2018	Phase One Habitat Survey of Fox Hagg and Fox Hagg Extension	Detailed site description, species list and habitat map.