Sheffield & Rotherham

DRAFT 2

Management Plan for Woodhouse Washlands

April 2017 – March 2025

Acknowledgements

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Summary

Woodhouse Washlands encompasses 56 hectares of wetland, grassland and scrub, which straddles the River Rother on the boundary between Sheffield and Rotherham at Woodhouse Mill. Owned by the Environment Agency, the reserve has been managed for the purposes of flood amelioration, nature conservation and public recreation by the Sheffield and Rotherham Wildlife Trust (SRWT) since 2016.

Woodhouse Washlands is designated as both as a Local Nature Reserve and Local Nature Site under the relevant local plans. Its contains many features of biodiversity interest, including its wetland and unimproved grassland habitats, its population of great crested newts and its invertebrate and bird fauna.

Woodhouse Washlands has long been used as a place for recreation, and has been enjoyed by generations of local people for walking, picnicking and angling. The site contains a comprehensive network of desire lines and, in recent years, a section of the Trans Pennine Trail – a long distance cycle way – has been constructed on site.

As part of the River Rother, Woodhouse Washlands falls under the area covered by the River Rother restoration project. As a result, Woodhouse Washlands will be managed in accordance with the landscape-scale vision for the area set out by the project, with care taken to ensure that the unique characteristics of the site, so appreciated by its users, are retained.

This management plan covers the period April 2017-March 2024. Physical works contained in the plan are aimed at retaining a balance of habitats on the site and restoring its 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 Woodhouse Washlands through the formation of a Reserve Users Forum. Information provision to the public will be improved on site and on the Trust's website. An annual programme of events will be held to attract visitors to the site and to promote public understanding of its wildlife and history. The opportunity for volunteers to participate in practical work days will also be offered.

Through the implementation of this plan, the Trust intends to ensure Woodhouse Washlands remains true to this vision for the site:

A tranquil landscape, with a wealth of floodplain habitats supporting a richness of wildlife, where people are welcome and nature is conserved and celebrated.

Introduction

Sitting on the boundary between Sheffield and Rotherham, on Sheffield's eastern edge, Woodhouse Washlands comprises 53 hectares of grassland, scrub and floodplain grazing marsh. The River Rother bisects the site from north to south, with land falling to the east of the river being in the jurisdiction of Rotherham Metropolitan Borough Council (RMBC) and that to the west under Sheffield City Council (SCC). A section of the Trans Pennine Trail (TPT) runs through the eastern part of the site, and is open to walkers and cyclists. The Washlands is owned by the Environment Agency (EA) and is managed by Sheffield and Rotherham Wildlife Trust (SRWT) under a long lease.

Viewed in its wider context, Woodhouse Washlands forms one of a chain of green spaces located near the southernmost end of the Rotherham Rivers Living Landscape area - a swathe of green space running along the River Rother from Conisbrough in the north to Killamarsh to the south (**Figure 1**).

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

Our vision is to see a Living Landscape – an amazing, green landscape for the wildlife and people of Sheffield and Rotherham, a landscape which is understood, enjoyed and cared for by local people and 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 key long-term aims and the associated objectives which form the framework of management;
- To outline the rationale for management so as to give a clear and comprehensive explanation of why aspects need management and in what form that management will take;
- To provide a key document from which projects are developed and associated funding sought;
- To provide consistency and continuity, so that when changes of staff take place, or changes in ownership or disposal of the land occurs, then management aims, objectives and prescriptions are continued.

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

1.2 How to use this plan

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

Section 1.3 contains the **vision statement** for Woodhouse Washlands and lists the **management aims** on which this plan is based.

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

Section 8.0 comprises a **table of aims and objectives**. This describes the work that will be delivered to achieve each aim during the period covered by this management plan. The primacy of individual objectives is given as HIGH, MEDIUM or LOW. This system will be used to prioritise work when resources are limited. It is, however, our intention to deliver all objectives contained within this plan.

Section 9.0 is the **work programme**, which is used to schedule management works and shows when individual pieces of work will be carried out. Costings for the work programme for the first 3 years of the plan are given here.

Section 10.0 contains the **Figures** – maps and charts that support the plan and which are referred to in the text.

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

1.3 Management aims

SRWT has adopted the following management aims for Woodhouse Washlands:

Aim 1: To conserve and increase the area of botanically rich grassland on the reserve.

Aim 2: To conserve, protect and extend the reserve's wetland and riverine communities.

Aim 3: To manage the reserve's existing scrub habitat.

Aim 4: To manage and retain the reserve's mature trees and hedgerows.

Aim 5: To increase the number of ponds supporting breeding populations of great crested newts from three to six, with the intention of increasing the total population of newts supported by the reserve.

Aim 6: To increase the breeding success of skylark and other ground-nesting species on the reserve.

Aim 7: To undertake survey work to increase knowledge of the reserve's biodiversity and assess the impact of site management and recreational usage.

Aim 8. Maintain and restore the reserve's infrastructure.

Aim 9: To protect and interpret the reserve's archaeology

Aim 10. To maintain and improve public access to the reserve, taking a zoned approach to reduce disturbance to sensitive areas.

Aim 11: Promote public participation in the management of the reserve and in enjoyment of its natural heritage by people of all ages and backgrounds.

Aim 12. Continue to develop ongoing sources of grant aid and other income to support the management of the nature reserve.

Aim 13. Raise public awareness of the reserve's fauna and flora, and increase understanding of and support for management works.

For more information concerning the rationale behind these aims, please see the relevant sections of the plan.

2. Site Details

2.1 Location, extent and ownership

Woodhouse Washlands is located on Sheffield's eastern fringe and straddles the River Rother. It covers an area of 56 hectares (138 acres) and is centred on OS Grid Reference SK 438 852 **(Figure 2)**. The Washlands is owned by the Environment Agency (EA) and is managed by Sheffield and Rotherham Wildlife Trust (SRWT) under a long lease.

Approximately 15 hectares of the reserve lies within the Sheffield unitary area, with the remaining 41 hectares within the metropolitan borough of Rotherham.

2.2 Landscape value and context

Woodhouse Washlands falls within Natural England's Natural Character Assessment (NCA) Profile 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield. This area has seen great change over the past few centuries due to widespread industrialisation and development. A generally low-lying area, with hills and escarpments above wide valleys, the landscape over half of the NCA (64 per cent) is currently designated as greenbelt land. Very little of the NCA is designated for geology or nature conservation, but instead the landscape is dotted with many pockets and patches of habitat where species find refuge.

The Washlands' mosaic of wet and dry grasslands, swamp, wet ditches, ponds and scrub are typical of the landscape which once fringed the River Rother as it passed through its floodplain. Over time, much of this primary habitat has been lost to housing and industrial development (in particular, open casting), giving the local area an urban and industrial character. The area immediately surrounding the Washlands was once worked for minerals or occupied by major industry, and as these enterprises have declined the land they once dominated has opened up, and a new green landscape is developing in which the river and adjacent waterbodies are an important feature. Consequently, the Washlands today now form one of a chain of green sites through which both people and wildlife can move.

The reserve lies at the bottom of a wide valley, with views over adjacent housing and industrial premises. Both a railway line and a major road pass over the site on viaducts. The course of the River Rother has itself been greatly modified as it passes through the Washlands, with the straightening of the river channel during the 1950s, and the installation of a sluice to regulate water levels during flooding events in 1959 (**Figure 3**). It should be noted that the source of the water which characterises this landscape lies outside the NCA, meaning that the area is a key user of ecosystem services provided by surrounding NCAs.

2.3 Site Designation and Policy Context

Woodhouse Washlands is owned by the Environment Agency and functions as a flood plain in times of heavy rainfall, when the Woodhouse Mill regulator may be closed to control downstream flows. It is leased to SRWT on a long lease. As such, it is imperative that any future management works comply with the terms of this lease and, in particular, the flood management requirements for the reserve. This includes the exact sighting of tree and scrub planting, the disposal of spoil generated by excavations on site, the import of materials onto the Washlands and any works within the river channel. **SRWT will work closely with the EA, seeking opportunities to work together for mutual benefit of both organisations and the site.**

Woodhouse Washlands supports a population of great crested newts (*Triturus cristatus*). Great crested newts, their eggs, breeding sites and resting places are all protected from disturbance and destruction

under European Law. A licence from Natural England is required for all activities on site where damage to, or disturbance of, their habitats (ponds and the land around ponds, hibernacula) cannot be avoided, and mitigation measures may be required.

Woodhouse Washlands nature reserve is split between Sheffield and Rotherham Planning Authorities, with the boundary running along the River Rother. As a result, the land to the west of the river is covered by the **Sheffield Nature Conservation Strategy** and **Sheffield Plan**, while that to the east comes under **RMBC's Local Plan**.

Woodhouse Washlands is designated as a **Local Wildlife Site** under the Rotherham Local Plan and as a **Local Nature Reserve** (LNR) and a **Local Wildlife Site** (no. 258) under the Sheffield Plan. As such, it receives protection from development and damage under policies G1-G3 relating to Safeguarding and Enhancing Biodiversity and Features of Geological Importance, the Green Belt and Trees, Woodland and South Yorkshire Forest (Sheffield City Council) and under policies SP1, SP 33, SP34, SP35 and SP 36 (Rotherham).

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

The Trans Pennine Trail, a long distance path running from coast to coast across Northern England runs through the Rotherham side of the Washlands (Figure 4). It forms part of European walking route E8 and is part of the National Cycle Network as Route 62

2.4 Partnerships

The **River Rother Restoration Project** is a partnership between SRWT and the EA which intends to restore river habitats and floodplain wetlands along the River Rother, including Woodhouse Washlands.

The Rother has been extensively altered in the past to accommodate agriculture, industries such as open cast coal mining and to protect people and property from flooding. This Project aims to mitigate the impact of these past activities in order to establish a healthy river with thriving wildlife that is an attractive place for people to enjoy.

The Project will carry out a feasibility study into the feasibility of restoring river and floodplain habitats on the reserve during the period covered by this plan (see section 4.2.1).

The Trust will work with SCC and the EA to investigate the feasibility of establishing a population of young black poplar (*Populus x canadensis*) on the reserve. (see section 4.2.4).

SRWT will work in partnership with local riders, the PRoW unit, local land owners and other interested parties to investigate the feasibility of opening the TPT at the Washlands and ensure safe routes lead to the wider Bridleway network. (see section 6.2.3).

2.5 Rights of Way

The TPT, a long distance walking/cycle route passes north-south through the eastern half of the reserve. The section running through the Washlands is currently open to walkers and cyclists only.

With the exception of this route no other statutory public rights of way (PRoW) are present on site, although access is allowed at many points and a network of desire lines is present **(Figure 4).**

The reserve has four main access points:

Furnace Lane, Woodhouse Mill, Sheffield. S13 9XD (SK 433 855)

Retford Road, Woodhouse Mill, Sheffield S13 9WG (SK 435 857)

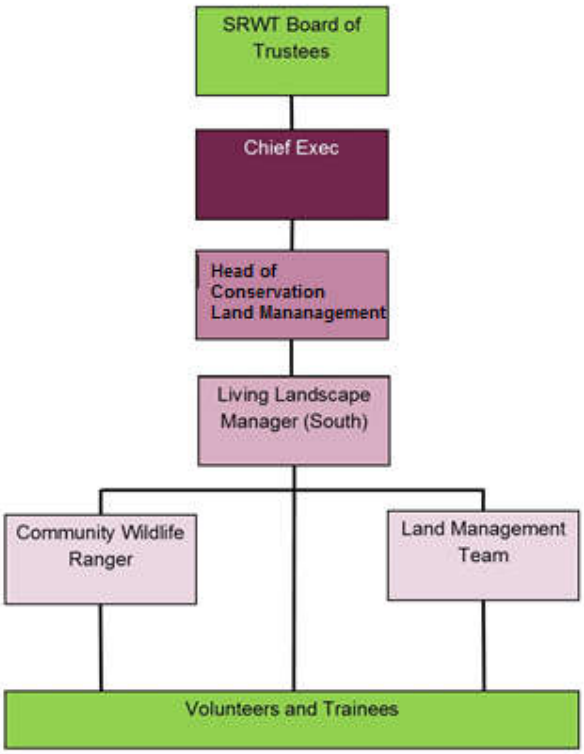
John Hibbard Avenue, Sheffield. S13 9UT (SK 435 853)

Crown Works, Rotherham Road, Swallownest. S20 1AH. (SK445 843)

The Rotherham RoW service clear vegetation along c700m of the TPT twice a year.

2.6 SRWT staff structure for reserve management

The organogram below shows all staff who are directly involved with management of the site. Please note that this structure is correct at the time of writing but may change over the period covered by this plan.



2.7 Site safety, security and maintenance

2.7.1 Site safety

Both the EA and SRWT have developed site-specific risk assessments for Woodhouse Washlands and is reviewed on an annual basis. Further risk assessments are prepared for specific tasks and events at the site as necessary. SRWT also manages the reserve in line with its environmental management and Health & Safety policies. These are amended and updated at regular intervals or to reflect legislative changes.

Woodhouse Washlands is regularly patrolled by SRWT staff and volunteers. Any problems, such as broken fencing or trees that have fallen across footpaths etc, are logged and addressed as soon as practical. Problems and incidents reported by members of the public are also logged on the spreadsheet and are dealt with as necessary. Any known accidents or incidents that occur on Woodhouse Washlands are recorded on the relevant accident forms. An accident book is kept at SRWT headquarters.

Tree inspections are carried out in line with the Trust's tree safety policy. Associated remedial work is undertaken as recommended by the surveyor.

2.5.2 Site Security

Woodhouse Washlands' boundaries are marked and secured by fencing, the majority of which is the property of neighbouring landowners (**Figure 5**). Access points to the reserve are provided with gates or squeezes (as appropriate) to allow access by legitimate users of the site whilst excluding entry by cars (other than management vehicles), quad bikes and motorcycles.

2.5.3 Biosecurity and disease

Biosecurity refers to procedures or measures designed to protect against harmful biological or biochemical substances. SRWT has a number of core policies and procedures relating to biosecurity, covering the control of substances hazardous to health and the environment, and to prevent the accidental transfer of invasive species.

SRWT will produce a biosecurity brief covering these issues on Woodhouse Washlands during the period covered by this plan.

There has previously been an outbreak of blackleg disease on the Washlands. In consequence, **all cattle to be used as part of the grazing scheme must be vaccinated against this disease** before being brought onto site.

2.5.4 Litter, cleanliness and vandalism

No litter bins or dog waste bins are present on site, although a bin is available just outside the Furnace Lane entrance. The installation of litter/dog waste bins on site has been discounted due to the cost of collections.

A dedicated patrol team visit the site to undertake regular litter picks and report issues of vandalism. We have a dedicated Land Management Team who visit the site once per month on average.

The site receives a number of daily visitors who are encouraged to report vandalism, fly tipping, graffiti etc to SRWT when it occurs.

2.8 Past, recent and current land use

The place name Woodhouse is derived from the Old English words 'wudu' collection of trees and 'hus' house. The earliest reference to a mill at Woodhouse is in around 1200 when it was recorded that Gerard de Furnival gave half the rents of the mill to the monks of Kirkstead Abbey. A mill and dam at Wodehus are also referred to in a document written during the reign of Edward I (1272 – 1307), relating to the conveyance of land and buildings from Jociamus le Scrob to Henry son of William de Wodetorp.

The earliest ordnance survey map of the area, dated 1850, shows a number of elongated rectangular fields which were probably established at the time of enclosure. The absence of field boundaries close to the river suggests that the ground there was too wet for occupation and cultivation and it is probable that this seasonal inundation has both given the Washlands their name and caused them to remain undeveloped.

The historic landscape of the area surrounding the Washlands appears to change from agricultural to one increasingly dominated by small-scale industries as one moves through the post-medieval period, with the River Rother itself attracting a succession of water-powered mills, whilst local deposits of coal were also exploited.

The North Midlands Railway line runs along the eastern edge of the nature reserve. Opening in 1840, it linked Derby and Leeds, thus opening up many limestone quarries and coalfields. The Sheffield to Gainsborough railway line, which crosses the Washlands on the Beighton Viaduct, was opened in 1849. At this time Woodhouse was the hub of two colliery branch lines: to the west a branch to Orgreave and Treeton Collieries, and, to the east, from Woodhouse East Junction, the Birley Branch, which served the Birley Collieries, belonging to the Sheffield Coal Company.

During this period, the Washlands is likely to have been grazed by cattle (and possibly by sheep) during winter, spring and autumn, with a hay crop being taken in the summer months. Grazing pressure would have been relatively low. During the post-war period this pressure increased, and much of the area was drained and reseeded with higher-yielding grass species.

Until the late 1950s, the River Rother meandered, south to north, through extensive marshland and flooded on a regular basis (**Figure 3**). In the 1950s, a flood alleviation scheme was put into operation to prevent this flooding and free up land for development. Under this scheme the river channel was straightened where it passes through the reserve and the sides of the channel banked, resulting in a lowering of the water table across the site. However, in the late 1950s it was realised that these measures, which took place not just at the Washlands but on adjacent stretches of the river, were contributing to increased flooding events in downstream Rotherham and Doncaster, and a regulatory sluice installed to allow flooding on the Washlands once more.

In the early 1990s the route of the A57 locally was revised, resulting in the construction of the Beigton flyover across the southern half of the reserve.

During the early 1990s plans to designate Woodhouse Washlands as an area for nature conservation began to pick up momentum, triggered by possible threats to the site by plans to build additional housing on its western boundary. Modifications to the plan for the housing scheme to decrease its impact were agreed and the reserve was designated a Local Nature Reserve in 1999. It was initially managed by Sheffield Wildlife Action partnership, then later passed into management by the Yorkshire Wildlife Trust. During this period a wide variety of work to benefit wildlife and improve public access were carried out on site, for example the creation of several new ponds through the Froglife Project, which was carried out in partnership with the Sheffield City Ecology Unit.

2.9 Adjacent Land Ownership

The land surrounding Woodhouse Washlands is owned, or tenanted by a variety of individuals and organisations. The majority of land is under use either for housing, transport or light industry. Two railway lines and several roads bound or cross the reserve. A map showing the ownership of the reserve's boundaries reflects this pattern of land use and is given in **Figure 5**.

Rother Valley Country Park lies to the south of the reserve, with the Shirebrook Valley to the south-west and Waverley to the north. Linked by Public Rights of Way, the reserve therefore forms a link in a chain of wildlife-rich sites offering good recreational opportunities in the vicinity.

2.10 Services

Overhead high voltage transmission lines run northeast-southwest through the centre of the reserve and also across the far south-eastern corner (**Figure 6**.). Overhead power lines also run east-west through the centre of the reserve. An underground gas pipe also runs east-west through the centre of the reserve adjacent to these power lines. No water supply pipes run through the reserve but two underground combined sewers run through the northern section, one on each side of the Rother. No fibre optic cables run through the reserve but two overhead phone poles are present to the far north-west. Up-to-date versions of utilities maps should be referred to when planning works, as well as on-site checks.

3. Environmental Information

3.1 Topography

The reserve is situated immediately east of Woodhouse Mill at an elevation of between 30 and 40m OD and within the floodplain of the River Rother. The reserve is largely flat, with the majority of ground lying at between 32m and 34m but some slightly lower-lying areas are present immediately to the west of the River Rother, at the far southern end of the reserve and adjacent to the Jeld-Wen factory (west and south). An area of higher ground (to 46m) is present at the western extent of the reserve adjacent to the railway line (**Figure 7**).

3.2 Geology and Soils

The solid geology of Woodhouse Washlands Nature Reserve lies within the Middle Coal Measures of the Upper Carboniferous Westphalian B series and is characterised by a series of mudstones and coarse sandstones. The High Hazles Coal Seam also outcrops within the nature reserve. Strata are dissected by a north-east to south-westerly orientated fault line, which intersects with the Spa Fault at Aston (**Figure 13**).

These deposits are overlain with alluvium across much of the reserve. The upper sections comprise a clayey loam which is sandy in places. The lower levels comprise gravels.

A soil survey, taken in 1993 in the area north of the viaduct, suggested that open-cast mining may have occurred on site during the post-war period, however, this has never been corroborated.

On the north-eastern section of the reserve, the boundary bank and adjacent area comprises an artificial deposit including rubble and wood chippings, resulting from the demolition of the previous sewage works and (historic) tipping from the nearby factory. Also historically, the working colliery (Woodhouse Mill) has affected soils to the far north west. One historical landfill site, which accepted non-biodegradable wastes, was registered adjacent to the former railway viaduct in the south of the site.

Engineers from Alfred MacAlpine plc who worked on the construction of the A57 flyover indicated that the footings for the flyover were filled with a foundation of furnace rubble during construction.

A series of soil test pits was dug across the central area of the reserve in 2016, as part of the 'Habitat Creation Feasibility Study' carried out by Ecus Environmental Consultants. Analysis of the soils collected from these pits showed a variety of soil types: made ground of sand, clinker and ash, sandy topsoils and silts with gravel or peat. These topsoils were generally between 0.1 and 0.4m in depth and were underlain with natural subsoils of peat, soft silty clay or sand and gravel.

Chemical analysis of the topsoils from the soil pits showed widespread contamination of the soils by heavy metals, hydrocarbons and polychlorinated biphenyls (PCBs). Many of these will have been deposited on site during previous flood events by contaminated river silts. Of these contaminants, only two are present at levels high enough to pose a potential risk to human health: lead and PCBs. The effect of their presence within the soil to the management of the reserve is discussed further in section 4.2.2 of this report.

3.3 Hydrology

Woodhouse Washlands is a locally wet site drained by the River Rother. It supports a number of natural wetland features such as swamps, as well as artificially created ponds and ditches (**Figure 9**).

The River Rother bisects the reserve, flowing from south to north between raised banks. The flow regime is heavily influenced by 3 regulators (at Rother Valley Country Park, Woodhouse Mill and Canklow) which are used to control water levels during periods of high rainfall and is also modified by multiple storage and abstraction points in northeast Derbyshire, Chesterfield, Bolsover and Clowne.

Since 1960 the reserve has been flooded or partially flooded ten times, with the most recent flood event occurring in 2007.

The canalisation of the river channel in the late 1950s made a substantive and permanent change to the hydrology of the Washlands, lowering the water table and changing the site from one supplied by water directly from river (fluvial) inundation to one primary supplied by rainfall, supplemented by groundwater flow to the valley bottom. Direct inflows are limited to drains located at several points, such as at compartment A1, the factory sites to the east and north and Beighton Mill Tail Goit. Simple modelling of the reserve's water balance show that it is in deficit between mid-February and mid-October each year i.e. the reserve looses more water than it gains during these times.

Climate change models predict that the Yorkshire and Humber area will become warmer and drier as the century progresses. In particular, it is predicted that rainfall will become more seasonal (heavier rainfall in winter, lighter in summer) and also that extreme weather events will become more common. The Washland's role as an area capable of absorbing and storing excess water is therefore likely to become highly significant.

4. Biodiversity

4.1 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 summarized in the table below:

Table 1: BAP Priority habitats and species

UK BAP Priorities	
Habitats	**Species (short and medium list only)**
Rivers and streams Lowland meadows Floodplain grazing marsh Ponds	**Great crested newt** (*Triturus cristatus*) **Water vole** (*Arvicola terrestris*)-may now be locally extinct **Brown hare** (*Lepus europaeus*) **Song thrush** (*Turdus philomelos*) **Skylark (***Alauda arvensis***)**
Rotherham BAP Priorities	
Habitats	**Species**
Grassland (lowland meadows) Wetlands (ponds, floodplain grazing marsh)	
Sheffield BAP Priorities	
Habitats	**Species**
Grassland semi-improved grasslands, floodplain grazing marsh) Wetlands (ponds)	**Great crested newt** (*Triturus cristatus*) Grass snake (*Natrix natrix*) Lapwing (*Vanellus vanellus*) Snipe (*Gallinago gallinago*) Sand martin (*Riparia riparia*) Kingfisher (*Alcedo atthis*) Barn owl (*Tyto alba*) **Water vole** (*Arvicola terrestris*) - may now be locally extinct **Brown hare** (*Lepus europaeus*) Harvest mouse (*Micromys minutus*)

Species highlighted in bold are on the UK short list of globally threatened and declining species, and are therefore afforded the highest priority.

Species-rich grasslands and floodplain grazing marsh have been defined as priority habitats in the UK Biodiversity Action Plan and the Sheffield and Rotherham Local BAPs. The reserve contains areas of both

these habitats, which support the following Red Data Book plant species: common meadow rue (*Thalictrum flavum*), greater burnet (*Sanguisorba officinalis*), amphibious bistort (*Persicaria amphibia*) celery-leaved buttercup (*Ranunculus sceleratus*), southern marsh orchid (*Dactylorhiza praetermissa*), common reed (*Phragmites australis*) and water figwort (*Scrophularia auriculata*).

A number of Local Red Data Book (LRDB) invertebrate species have also been recorded.

14 bird species that have been red-listed as Birds of Conservation Concern by the British Trust for Ornithology, have been recorded as being present on site. These are discussed further in section 4.3.5 below.

4.2 Habitats

Woodhouse Washlands Nature Reserve forms one part of a chain of remnant and secondary wetland sites set in an industrial landscape along the River Rother. These include Treeton Dyke, Waverley and Catcliffe Flash to the north, Rother Valley Country Park to the south and Shirebrook Valley LNR to the west. Together, these support a wide variety of species-rich habitats.

When classified using the JNCC's guidelines for Phase One Habitat surveys, Woodhouse Washlands contains a variety of natural and semi-natural habitats, including neutral grasslands, marshy grassland, swamp, marginal vegetation and scrub (**Figures 10a** and **10b**). These are described and evaluated below.

4.2.1 Grassland

Grassland is the dominant habitat type present on the reserve. The grasslands of Woodhouse Washlands fall into three categories: large expanses of semi-improved neutral grassland to the south-east and north-west of the reserve, areas of poor semi-improved grassland to the north and south west and areas of mosaic of floodplain grazing marsh which dominate to the east of the reserve, but fragments of which appear wherever groundwater is high.

Historically, much of Woodhouse Washlands would have been classed as floodplain grazing marsh. This habitat is one where the water table is permanently close to the soil surface or which is subject to periodic inundation when adjacent waterbodies overflow. The habitat is characterised by the interlinking of marshy grassland and wet ditch communities and is often grazed by cattle. Although areas of the Washlands still fit these criteria, the canalisation of the river channel and the bunding of its banks have resulted in an ecosystem where the majority of the hydrological input comes from pluvial sources and inundation is rare. As a result the area of the Washlands covered by this habitat has contracted, giving way to drier grassland communities, the most botanically diverse of which are managed as hay meadows.

The reserve's grasslands are described below, according to their management regime i.e. as grazing pasture or hay meadows (**Figure 11**) but it should be noted that floodplain grazing marsh occurs within both these categories.

Grazing pasture

Currently, 36.1 hectares of the reserve's grasslands are managed as traditional grazing pasture (compartments A and B). This means that they are grazed between April and October each year to produce a sward height of 5-15cm by the end of the growing season. Cattle are used to graze the reserve, previously with a grazing regime of up to two livestock units per hectare per annum. The reserve's pastures have previously been grazed extensively i.e. the cattle were free to roam across compartments

A (except A1) and B, crossing the River Rother as they chose. However, additional fencing in compartment B means that, from 2017 onwards, greater control of pasture areas in compartments B1, B2, B3 and B4 will be possible (see below).

The reserve's pastures comprise a mosaic of semi-improved, poor semi-improved and marshy grassland. In drier areas the sward comprises abundant Yorkshire fog (*Holcus lanatus*) and common bent *(Agrostis capillaris)*, frequent crested dog's tail *(Cynosurus cristatus)*, common ragwort *(Jacobaea vulgaris)*, creeping thistle *(Cirsium arvense)*, white clover (*Trifolium repens*) and ribwort plantain *(Plantago lanceolata)*, and occasional meadow vetchling (*Lathyrus pratensis),* bird's-foot trefoil (*Lotus corniculatus*), meadow buttercup *(Ranunculus acris)*, common sorrel *(Rumex acetosa)*, curled dock *(Rumex crispus)*, common nettle *(Urtica dioica)*, meadow foxtail *(Alopecurus pratensis),* false oat-grass (*Arrenatherum elatius*), cocksfoot *(Dactylis glomerata)*, perennial rye grass (*Lolium perenne*), Timothy *(Phleum pratense)* and rough meadow grass (*Poa trivialis*).

The grassland is a mosaic, patchy and transitional, with some areas quite diverse, almost to the point of being unimproved and in other places (usually the flatter areas) the sward becoming so dominated by only two or three species that it is classified as poor semi-improved grassland. In less poor areas, patches of creeping cinquefoil (*Potentilla reptans*), cut-leaved cranesbill (*Geranium dissectum*) and silverweed (*Potentilla anserina*) have been recorded. Species such as common knapweed (*Centaurea nigra*), lesser stitchwort *(Stellaria graminea)* and yarrow (*Achillea millefolium*) which indicate old grassland are present infrequently across the reserve.

There are several areas of floodplain grazing marsh throughout the pastures, forming wherever the water table is high or the ground low, e.g. scrapes and ditches and around ponds. All have similar characteristics and are dominated by rush species.

This grassland is dominated by rushes, with abundant soft rush *(Juncus effusus)* and frequent hard rush (*J.inflexus*). There are also frequent clumps of false fox sedge *(Carex otrubae)*. Other grasses, rushes and sedges include occasional areas of marsh foxtail (*Alopecurus geniculatus*), tufted hair grass *(Deschampsia cespitosa)* and floating sweet grass *(Glyceria fluitans)*, with rare patches of common spike rush *(Eleocharis palustris)*, sharp-flowered rush *(Juncus acutiflorus)* and locally abundant patches of marsh horsetail *(Equisetum palustre)*.

Herbs that are scattered throughout this grassland include occasional great willowherb *(Epilobium hirsutum)*, creeping buttercup, clustered dock *(Rumex conglomeratus)*, water figwort *(Scrophularia auriculata)* and marsh ragwort *(Jacobaea aquatica)*, with a good mix of other species found more rarely, including locally abundant patches of meadowsweet *(Filipendula ulmaria)*, amphibious bistort, lesser water parsnip *(Berula erecta)*, and celery-leaved buttercup. One notable species is common meadow rue *(Thalictrum flavum)* which is present but rare; this is a Sheffield Red Data Book species.

Compartments B1 and B2 were seeded with green hay in 2016, to improve their botanical diversity. From 2017, these compartments **will be managed under an autumn grazing regime**, whereby the compartments will be closed to cattle grazing during the growing season (April – August), then opened for late grazing once the seed has dropped in September.

Compartments B3 and B4 will likewise be closed to cattle grazing (and the public) during April and early May to allow ground nesting birds to establish their territories (see section 4.3.5). **This closure will be maintained until sward height reaches 40cm**, after which **they will be opened and closed as necessary to maintain a length of 30-40cm this throughout the bird breeding season** (until end July), after which they will remain open and subject to aftermath grazing to result in a sward height of between 10 and 15cm by the end of the growing season, after which they will remain open until the following March.

Hay meadows

15.2 hectares of the reserve's grasslands will be managed as hay meadow under this plan (compartments C1 and C2). This means that the grass within them will be subject to up to 6 weeks of spring grazing before being closed to cattle, with the sward then being allowed to grow until early August, after which the hay crop will be cut and removed and the area opened up to aftermath grazing to result in a sward height of between 10 and 15cm by the end of the growing season.

The hay meadow in compartment C2 is fairly homogenous, and supports a diverse assemblage of species. The dominant grass species is abundant Yorkshire fog over most of the habitat with frequent crested dog's-tail, occasional common bent, false oat-grass, meadow foxtail, cocksfoot, red fescue and rough meadow grass. In terms of herbs, there is abundant meadow buttercup throughout, with frequent common sorrel and occasional common mouse ear (*Cerastium fontanum*), hogweed (*Heracleum sphondylium*), ribwort plantain, creeping buttercup (*R. repens*), lesser trefoil and red and white clovers. There are infrequent amounts of a diverse range of meadow plants including yarrow, common cat's ear, meadow vetchling, ox-eye daisy (mostly around the edges), birdsfoot trefoil, lesser stitchwort and a range of vetch species. Pignut *(Conopodium majus)* and wild carrot *(Daucus carota)* are present but local.

Orchids are scattered throughout the hay meadows at the far southern end of the reserve. The majority are Southern Marsh Orchids (*Dactylorhiza praetermissa*), although a number of hybrid individuals have also been noted.

Areas of marshy grassland are present within the reserve's hay meadows, again forming where the water level is high. These are very similar in species composition to those described above.

Grassland evaluation

SRWT's aim for grassland on the reserve is:

Aim 1: To conserve and increase the area of botanically rich grassland on the reserve.

Changes in water level, waste tipping and overgrazing by sheep in the period prior to it being designated as a LNR have impoverished the sward at Woodhouse Washlands in past years. Nonetheless, the reserve's grazing marsh and hay meadow grasslands represent a scarce and shrinking resource both nationally and locally. These habitats still support a good range of plants, including a number of locally scarce species such as celery-leaved buttercup, common meadow rue, great burnet, amphibious bistort, water figwort, Southern marsh orchid and common reed– all species listed in the 1991 Sheffield Red Data book plants list.

Work to counteract the impoverishment of the reserve's grasslands has been taking place since its designation as a LNR in 1999, with a reversion to cattle grazing and the adoption of a conservation grazing regime. Additional work to control injurious weeds such as creeping thistle (*Circium arvense*) and common ragwort (*Senecio jacobaea*) has taken place sporadically over this period but both species are locally abundant to date, partly as a result of over-grazing.

Sward height varies across the reserve, particularly in its pastures, due to the extensive nature of the grazing regime. A varied sward height is desirable in ecological terms, with different lengths providing niches suitable for different species. In general a short sward length is desirable across the majority of the reserve, providing as it does a suitable habitat for ground-nesting birds, wax cap fungi and many species of plant, with a longer sward providing alternative habitat in areas that are seasonally or permanently ungrazed.

Floodplain grazing marsh and hay meadows are habitats of both national and local conservation significance and their presence on Woodhouse Washland are key to the reserve's designation as a LNR. Both are man-made habitats and, as such, require active management – through grazing and cutting to

preserve them. Without such management these habitats would, in time, be colonised by scrub and gradually revert to woodland through a process of natural succession.

At Woodhouse Washlands, mechanical cutting is rejected as a suitable management technique for all areas outside the hay meadows due cost and practicality. Additionally, a programme of cutting would fail to provide additional benefits such as poaching, dunging and seed dispersal and would result in a less subtly varied and rich habitat mosaic. Consequently, **conservation grazing with cattle, supplemented by the manual control of scrub and injurious weed species will be used across the reserve's pastures, with grazing of meadow areas following an August hay cut in the hay meadows**. Sheep grazing is rejected as a suitable management technique due to their tendency to selectively graze out herbaceous species from the sward and due to the number of dogs using the reserve.

The reserve's grasslands, wetlands and woodlands, are vulnerable to invasion from Japanese knotweed (*Fallopia japonica*) and Indian balsam (*Impatiens glandulifera*), both of which occur extensively along the banks of the Rother. These non-native colonise damp ground and outcompete much of the native ground flora in wet areas, which are some of the most botanically diverse on the reserve. Indian balsam is to be particularly feared in this respect as it is capable of rapid colonization, although, being palatable to cattle, it is effectively kept in check by grazing.

In order to protect these habitats from damage, **SRWT will carry out regular monitoring to detect any incursion of these species into the reserves ditches or wetland habitats**. **Indian balsam and Japanese knotweed will be tolerated in the river channel but will be eradicated elsewhere on the reserve**

4.2.2 Swamp, ponds, ditches, and marginal vegetation

In addition to the grazing marsh described above, Woodhouse Washlands contains a number of wetland habitats including swamps, scrapes and ponds. These make an important contribution to the reserve's ecological diversity, providing a feeding and breeding ground for many invertebrate and amphibian species, and thus insectivorous birds and mammals.

Three areas of bulrush (*Typha latifolia*) dominated swamp are present on the reserve. The largest of these liesin compartment A1, adjacent to the western boundary of the reserve and has formed where surface water drainage from the nearby housing estate is piped into the site. This area is fenced off to prevent public access and this, plus the nature of the terrain, meant that little can be ascertained about its species composition, however, meadowsweet, water figwort and greater willowherb were recorded. Along the western edge of the swamp is an area with a mix of aquatic marginal plants, including frequent reed canary-grass (*Phalaris arundinacea*) and occasional branched bur-reed (*Sparganium erectum*), floating sweet grass and marsh ragwort are present.

The swamp within the hay meadow at the southern end of the reserve (compartment C1) is also dominated by bulrush, with large stands of soft and hard rush and of reed canary grass.

Two small wader scrapes were created in compartment B4 during 2016. These scrapes aim to provide bands of damp, vegetation free soils in which wading species can feed.

In addition to the areas of swamp, the reserve contains a number of bodies of fresh water (**Figure 9**). The largest of these is the ox-bow pond to the north which is regularly fished. The others comprise a number of small ponds, the majority of which are concentrated to the west of the River Rother.

These ponds are very varied in age, character and vegetation type. They range in depth from approximately half a metre to over a metre, some are scarcely vegetated, whilst others support varied

aquatic and marginal plant communities. One – known as the dipping pond - is dominated by water soldier (*Stratiotes aloides*), a red data book species in the east of England but here introduced. Others support extensive colonies of duckweed and marginal species such as branched bur-reed, soft rush, water plantain (*Alisma plantago-aquatica*), gypsywort (*Lycopus europaeus*) and water figwort.

Lying adjacent to the eastern boundary of compartment C is Beighton Mill Tail Goit, a winding watercourse with abundant hawthorn and frequent goat willow (*Salix capraea*), crack willow (*Salix fragilis*) and bramble (*Rubus fruticosus*) forming scattered scrub on the banks. The channel is variously wide with slow moving/still water, or deep but choked with marginal aquatic vegetation such as reed canary grass, bulrush and yellow flag iris (*Iris pseudacorus*).

The reserve's ditches are botanically very varied. Where they retain water throughout the year they support a diverse flora but the majority are wet only seasonally and dominated by *Juncus* species.

Evaluation

As with the reserve's grazing marsh, its ponds are one of its most biodiverse and ecologically important habitats. They are home to many of its rarer plant species and providing a breeding ground for great crested newts. In addition, they provide a vital habitat for many of the reserve's invertebrate species and its amphibian population which in turn support grass snake. It should be noted that all ponds were great crested newt are recorded as breeding are protected by law.

4.2.3 Watercourses

The River Rother bisects the reserve, with 1.75km of river length existing within it. Water depth is typically no more than a metre, and in places considerably less, although it can rise to a depth of several meters during flood events. The river bed is largely muddy, but riffles where it passes over rocks and gravel are present in places. Aquatic vegetation is occasional within the channel.

In 2015 water quality as the river passes through the reserve has been assessed as moderate (ecological status: moderate, chemical status: good, overall status: moderate) by the EA, under the criteria by which English rivers are surveyed.

The river's banks are steep as a result of the canalisation process, and rise far above normal water levels. They are densely vegetated by trees and scrub along much of their length, with stands of marginal and tall ruderals, including Indian balsam, abundant. The reserve's cattle are able to ford the river at several points where they have created muddy wades.

The reserves wetland habitats are in currently in mixed condition, but are variously vulnerable to damage from cattle, drying up, succession, periodic inundation and inappropriate recreational access. SRWT's aims for wetland on the reserve is:

Aim 2: To conserve, protect and extend the reserve's wetland and riverine communities.

To achieve this aim **SRWT will actively manage these wetland features** to maximise their benefit to biodiversity. This will involve **ensuring that all ponds hold water throughout the summer for at least nine years out of ten** (occasional drying of small ponds can prove beneficial to biodiversity by keeping them free of fish). Additionally, all ponds will be **kept free from cattle disturbance** which increases turbidity and which can result in excess nutrients (in the form of faeces and urine) entering the water.

Ponds (and other wetland habitats) are particularly vulnerable to ecological succession, a process by which increasing volumes of vegetation transform open water to dry land over time). To counter succession two options are available: the periodic removal of excess vegetation to retain open water, or

the intermittent creation of new ponds to replace the old. During the course of this management plan, SRWT will favour the former approach, **managing each pond to retain both open water in its centre and an ecotone of marginal and marshy vegetation at the edge**.

Periodic inundation from the River Rother during flood events is a threat to the reserve's most low-lying ponds (2, 3, 4, 8). Such inundation can seriously damage the biodiversity value of these ponds because the incoming water carries a heavy (and often contaminated) silt load which can smother plants and animals directly, or indirectly by triggering eutrophication. Additionally, incoming river water can wash away plant and animal life, and also introduce fish which prey on newt larvae and other invertebrates, thereby lowering the biodiversity value of the pond.

The feasibility of creating larger bodies of water on the western half of the reserve have been considered but discounted. Soil contamination and the soil profile on the reserve is such that such that the creation of such a water body would risk of the mobilization of contaminants within the groundwater, and the eventual release of these contaminants into the river channel. As an alternative, SRWT will supplement the reserve's existing wetland resource, and help mitigate against the possible loss /degradation of some ponds during flood events, through **the creation of additional ponds and wet ditches within compartment C** during the period covered by this plan (**Figure 12**). Work to **create an area of open water within the reserve's largest swamp community** (compartment A1) will also be carried out. **The Beighton Mill Tail Goit will be restored through scrub removal, reprofiling and potentially by raising the water level if feasible**.

The scrapes lying within compartment B4 will maintained with margins of bare earth during the period covered by this plan.

Canalisation of the river channel during the 1950s led to a loss of biodiversity, both in the channel itself and on the adjacent Washlands, as the seasonal pattern of inundation was disrupted and the water level on site lowered. **SRWT will work with the EA to investigate the feasibility of a re-meandering scheme or other measures to increase the diversity of the river channel**, during the period covered by this plan and then may create and enhance habitats by:

- Returning straightened river sections to meandering courses,
- Forming in-channel habitat features such as berms, bays and pools;
- Forming floodplain wetlands connected to the river.

Individual actions for each waterbody are given in Section 8.0 of this report.

4.2.4 Trees and scrub

Trees and scrub form a minor but important component of the reserve's vegetation. The majority of scrub is concentrated on the eastern and western boundaries, and along the river channel. Extensive scrub habitat is also present on the sides of the road and railway embankments on the periphery of the reserve. A number of significant mature trees are also present on site.

A permissive footpath runs along the edge of the reserve's western boundary, from which access onto the reserve can be gained. Towards the north of this path is a species-rich hedge which was planted during the 1990s and has been recently relaid. The hedge contains a good mixture of native species including hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), dog rose (*Rosa canina* agg.) and guelder rose (*Viburnum opulus*). To the south this hedgerow grades into a dense belt of scrub planted on the reserve's western bund. This comprises mature goat willow (*Salix*

caprea), field maple (*Acer campestre*) and occasional aspen (*Populus tremula*), as well as dense blackthorn.

A second hedgerow forms part of the southern boundary of Compartment A. It is composed of abundant hawthorn and hazel with locally abundant bramble and occasional dog rose. There are scattered herbs at the base of the hedgerow which are a continuation of the meadow area, including small quantities of common centaury (*Centaureum erythreae*), common cat's ear, meadow vetchling, ox-eye daisy, autumn hawkbit (*Scorzoneroides autumnalis*) and common knapweed. The presence of hops (*Humulus lupulus*) in this hedgerow is also notable.

Recently restored hedgerows run along the northern boundary of Compartment B1 and southern boundary of C2. These contain mature and over-mature hawthorn and elder and the gaps replanted with a mix of native broadleaved species.

A mosaic of dense hawthorn scrub and neutral grassland covers the reserve's eastern embankment leading up to the railway line. In the south-east corner of the site the bank leading up to the A57 flyover is covered in dense scrub and trees. A mixture of species uncommon on site, are present, suggesting that this area was originally planted. Species present include occasional hawthorn, alder (*Alnus glutinosa*), damson (*Prunus domestica*) field maple (*Acer campestre*), dogwood (*Cornus sanguinea*), spindle (*Euonymous europaeus*), holly (*Ilex aquifolium*) and apple (*Malus domestica*).

Few mature trees are present on the reserve. Those of note include a number of veteran crack willow which have been recently pollarded in compartment C2 and a mature black poplar adjacent to the dipping pond in compartment A.

SCC are running a project looking to re-establish populations of black poplar across the city. The Trust will work with SCC and the EA to investigate the feasibility of establishing a population of young black poplar (*Populus x canadensis*) on the reserve.

Evaluation

Aim 3: To manage the reserve's existing scrub habitat.

Aim 4: To manage and retain the reserve's mature trees and hedgerows.

Scrub currently comprises a limited but important component of the reserve's vegetation, providing a valuable habitat for a number of invertebrate and bird species, which require scrub habitat for food and shelter. **Coppicing areas of this scrub on a rotational basis** will help to further diversify the height and density of this habitat on the reserve, as well as allowing the establishment of ground flora in some places and providing an ecotone between areas of scrub and the surrounding grassland.

Trees and shrubs can alter the soil by cycling nutrients from deeper down and increasing nutrients within the soil, increasing their pH and nutrient levels. This changes in turn makes conditions more suitable for fast-growing species such as bramble and willowherb, which can then outcompete meadow species, a change that is exacerbated by increased shading. An increase in the overall proportion of scrub and trees on the reserve is therefore not considered desirable. However the benefits (both aesthetic and ecological) of scrub belts on the reserve margins, or along the River Rother are recognised. **Scrub management will not therefore aim to eradicate all the scrub on the reserve but will instead aim to maintain existing areas in good condition in line with the HLS agreement and prevent encroachment into grassland areas.**

In the pastures and hay meadows the spread of scrub and/or trees is kept in check grazing and mowing of young seedlings. Where blackthorn is suckering into the grassland of compartment A however, some manual control may be required.

The reserve's population of veteran willow trees are an important ecological and historical feature. However, even with periodic management in the form of pollarding, these trees are vulnerable to the effects of age and decay which will ultimately result in their loss. It is therefore proposed that **cuttings of these trees be taken and planted** adjacent to the old and protected from cattle, to form a new generation of willows in this area.

At the current time, the reserve has few hedgerows. Hedgerows provide an important habitat for many species, such as harvest mouse, and support wildlife in a way that fences cannot. A well-managed hedgerow is dense and without gaps, but may contain a number of standard trees. **The reserve's existing hedgerows will be managed**, as necessary, to bring them into good ecological condition**. An additional native species hedgerow will be created** along the western boundary of compartment C2.

4.2.5 Bare ground

Areas of bare ground are present on the reserve, due either to poaching by cattle, or over-shading by trees or recent site works. Small areas of bare ground are desirable for many types of wildlife. Seeds require them to germinate, whilst many invertebrates will use them for basking or ovipositing and others require them for mineral licks. Soft, invertebrate-rich mud provides a vital feeding resource for birds such as snipe and lapwing. However, large expanses of bare ground, are not desirable in the long term. Where these are caused by poaching e.g. as in compartment B2 in winter 2016, these indicate over-grazing and should be avoided. Consequently, care must be taken to ensure that the cattle-grazing season is strictly adhered to, with **cattle removed from site promptly at the end of October**, or earlier if feed becomes sparse or conditions are particularly wet. The seeding of bare earth with a suitable meadow mixture or green hay will also be considered where necessary.

4.3 Species

4.3.1 Fungi

Little is known about the reserve's fungal communities, and consequently their significance on a local or regional level. Such records as have been made appear to be the result of casual recording rather than systematic survey. Casual records suggest that parts of the site support a number of waxcap species.

4.3.2 Invertebrates

In contrast with its fungi, the reserve's invertebrate fauna has been well-recorded. That said, Woodhouse Washlands is an extremely rich site in terms of invertebrate diversity and more study will be required to gather a full and comprehensive species list.

The range of habitats present on site provide food and shelter for a wide variety of invertebrates, from those like *Phalangium opilio* (a harvestman) which are nationally widespread to a number of regionally rare species. Its wetland habitats support the greatest diversity of species, including many that are wholly or partially aquatic.

16 species dragonfly and damselfly have been recorded on the reserve, including the emperor dragonfly (*Anax imperator*), the emerald damselfly (*Lestes sponsa*), the banded demoiselle (*Calopteryx splendens*) and the broad-bodied chaser (*Libellula depressa*). A good range of other aquatic invertebrates including water beetle species such as *Helophorus aequalis* and *H. brevipalpis,* pond skaters, the water boatmen

Hesperocorixa linnei, H. sahlbergi and *Callicorixa praeusta,* the diving beetles *Hyphydrus ovatus* and *H. riparius,* water snails, leeches, water stick insect (*Ranatra linearis*), and water scorpion (*Nepa cinerea)* have also been recorded.

The reserve supports a vast array of Diptera (flies), including species such as *Ptychoptera albimana* and the hoverflies *Platycheirus rosarum* and *P. granditarsus* typical of wet areas and marshy grassland. A range of species more typical of dry grasslands, including the peacock (*Aglais io*), orange tip (*Anthocharis cardamines*), small tortoiseshell (*Aglais urticae*) and meadow brown (*Maniola jurtina*) butterflies have also been recorded. An initial moth survey in 2016 recorded 15 species in a short time, including the wetland species *Agapeta hamana* and the Water Veneer (*Acentria ephemerella*), suggesting the reserve supports a rich lepidopteron fauna that warrants further investigation.

The reserve's invertebrate fauna is a key indicator of its importance for biodiversity. Additionally, the profusion of invertebrates form an important part of the food chain, without which many other species of conservation importance such as wading birds, great crested newts and bats. Maintaining its range of habitats, particularly its wetland and grazing marsh, in a condition friendly to invertebrates is of vital importance, meaning that **any management that decreases the net amount of water held on site, overgrazing and the use of pesticides will be avoided where possible.**

Further recording, particularly of groups and taxa for which there exist few records, is also recommended (see section 4.4 below).

4.3.3 Fish

Virtually no fish records are held for the reserve, with the exception of records for three-spined stickleback (*Gasterosteus aculeatus*) which are recorded in several ponds (especially pond 1). However grayling (*Thymallus thymallus*), common roach (*Rutilus rutilus*), tench (*Tinca tinca*), gudgeon (*Gobio gobio*) and silver eel (*Anguilla anguilla*) are reportedly found in the Rother in the area adjacent to the reserve and may be present in the oxbow pond.

4.3.4 Reptiles and Amphibians

Woodhouse Washlands support a number of amphibians and reptiles, namely common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newts (*Lissotriton vulgaris*), great crested newts and grass snake.

The reserve's amphibian populations are concentrated around the ponds, which are used for breeding during the spring, thereafter dispersing into the adjacent grassland and woodland for the rest of the year. Not all ponds are used for breeding. Those which contain little or no vegetation, have turbid waters or which support a large stickleback population are largely shunned. Amphibian numbers generally appear to be higher on the western half of the reserve than the east, probably due to the greater amount of breeding habitat present. The size and speed of flow of the River Rother means it is likely to prove a barrier to the movement of amphibians across the reserve and is itself unsuitable for amphibian breeding. Thus, the amphibian populations on the eastern and western halves of the reserve should be considered as being distinct (although the transfer of individuals during flood events remains a possibility).

Smooth and great crested newts were found only on the western half of the reserve during the 2016 survey. eDNA results show that great crested newt were wholly absent from the eastern half of the Washlands in 2016, although there is anecdotal evidence of their presence in the oxbow in previous years. On the western half of the reserve, smooth newts were found to breed in four ponds on the reserve, and great crested newt in three. A negative correlation between the presence of sticklebacks newts was found.

Grass snake are periodically recorded on the reserve. These reptiles prey on amphibians and additionally require access to basking spots, dry areas with shelter for hibernation and mounds of rotting vegetation for breeding.

The protection and preservation of the amphibian and reptile population is a prime conservation priority for this reserve. This will require the **careful management of the reserve's ponds to provide suitable breeding habitat, management of surrounding areas to provide additional feeding areas and shelter, and the provision and protection of suitable hibernation areas (hibernacula) for overwintering**. In particular, ponds must be kept free of pollutants and disturbance and be managed so that areas of open water remain (newts require some visibility for mating displays).

All ponds will be closed to the general public, except by prior arrangement for biological recording or for volunteer work days. The exception to this is the dipping pond (pond 1) which will be available for events and outdoor learning once the boardwalk has been repaired.

Amphibian diseases such as red leg, and catastrophic events such as inundation during flood events, can threaten the entire amphibian population of a single pond, whilst the introduction of fish or invasive weeds such as New Zealand pigmyweed (*Crassula helmsii*) can severely affect the breeding success of frogs and newts. In order to "spread the risk" SRWT aims to:

Aim 5 To increase the number of ponds supporting breeding populations of great crested newts from three to six, with the intention of increasing the total population of newts supported by the reserve.

Additionally, **measures to safeguard ponds from the accidental transfer of diseases and invasive plant species will be implemented.**

4.3.5 Avifauna (bird life)

Aim 6: To increase the breeding success of skylark and other ground-nesting species on the reserve.

The variety of habitats on the reserve, its position in the Rotherham Rivers Living Landscape area and its relatively large size all make Woodhouse Washlands a high quality site, which supports a varied avifauna. The habitats can be described in three broad categories: grassland, wetland and scrub, each of which plays an important role for specific species, although many species require a number of specific habitats in close proximity for feeding, breeding and nesting.

95 species of bird have been recorded on Woodhouse Washlands. Of these 34 species were recorded as breeding on site during 2016, although the survey technique used may mean that this list may not be exhaustive. 18 of the species recorded are Red listed on the British Trust for Ornithology's Birds of Conservation Concern, meaning that they are experiencing widespread population declines in the UK. A further 24 are Amber listed under the same system. These species are shown in the table below:

Table 2. Birds of Conservation Concern Recorded on Woodhouse Washlands

Red Listed		**Status on site**	**Amber Listed**		**Status on site**
Corn Bunting	*Miliaria calandra*	H	Black-headed Gull	*Chroicocephalus ridibundus*	H
Curlew	*Numenius arquata*	R	Barnacle goose	*Branta leucopsis*	R
Grey Partridge	*Perdix perdix*	H	Bullfinch	*Pyrrhula pyrrhula*	R
Grey Wagtail	*Motacila cinerea*	RB	Common Sandpiper	*Actitis hypoleucos*	H
House Sparrow	*Passer domesticus*	R	Dunnock	*Prunella modularis*	RB
Kittiwake	*Rissa tridactyla*	H	Gadwall	*Anas strepera*	R
Lapwing	*Vanellus vanellus*	R, HB	Goldeneye	*Bucephala clangula*	R
Linnet	*Carduelis cannabina*	R	Greylag Goose	*Anser anser*	RB
Merlin	*Falco columbarius*	H	Greenshank	*Tringa nebularia*	R
Mistle Thrush	*Turdus viscivorous*	RB	Green sandpiper	Tringa ochropus	R
Sky Lark	*Alauda arvensis*	RB	House Martin	*Delichon urbicum*	R
Song Thrush	*Turdus philomelos*	RB	Lesser Black-backed Gull	*Larus fuscus*	H
Starling	*Sturnus vulgaris*	R	Kestrel	*Falco tinnunculus*	R
Whinchat	*Saxicola rubetra*	H	Kingfisher	*Alcedo atthis*	RB
Willow Tit	*Poecile montanus*	R	Meadow Pipit	*Anthus pratensis*	RB
Woodcock	*Scolopax rusticola*	R	Mute Swan	*Cygnus olor*	RB
Yellowhammer	*Emberiza citrinella*	R	Redshank	*Tringa totanus*	H
Yellow wagtail	*Motacilla flava*	R	Reed Bunting	*Asio flammeus*	RB
			Short-eared Owl	*Asio flammeus*	H
			Snipe	*Gallinago gallinago*	R, HB
			Stock Dove	*Columba oenas*	RB
			Swift	*Apus apus*	R
			Teal	*Anas crecca*	R
			Whooper swan	Cygnus cygnus	R
			Wigeon	*Anas penelope*	R
			Willow Warbler	*Phylloscopus trochilus*	RB

H = historic (pre 2006) records only HB = known to have once bred on site R=recent records of site use (post 2005) RB = known to have bred on site since 2005

As can be seen from the table above, four red listed and seven amber listed species are known to breed on the reserve. Another five red listed and ten amber listed species feed there but are not recorded as breeding in recent times, although at least one of these (snipe) has bred there in the past.

For species historically reported as breeding pre 2006, the likelihood of breeding re-occuring on the future varies from species to species. For example, whinchat has undergone a very large decline in the lowlands to the east of Sheffield and is now virtually absent so breeding may be very unlikely, especially as this species appears to be semi-colonial. The potential for encouraging lapwing and snipe to breed again seems much greater as they still occur in winter and should hopefully benefit from wetland habitat improvements. **Management to benefit these species (where possible) is a conservation priority for the reserve** and is further discussed below.

Grassland Birds

The reserve's grasslands are home to a number of ground-nesting species, including lapwing, skylark and meadow pipit. Of these, skylark and meadow pipit both breed on the reserve today, whereas lapwing is a historic breeder. Ground nesting birds are especially vulnerable to disturbance during the breeding season, and egg predation by predators such as badgers, foxes and hedgehogs can significantly increase failure rates when breeding populations are small. **SRWT aims to increase the breeding success of skylark on the reserve** during the period covered by this management plan. This will be achieved by reducing disturbance to nesting pairs, providing excellent feeding habitat and combating predation as required. It is hoped that these measures will also benefit meadow pipit.

The UK skylark population fell by 54% between 1970 and 2001 due largely to changes in farming practise, although the species has fared better in the Sheffield area where it has declined only by 13% since 1975. The selection of nesting sites by skylark is heavily influenced by both sward length and disturbance. Skylarks nest on the ground, in vegetation that is 20–50 cm high and open enough to give easy access to the ground. They need to make two or three nesting attempts between April and August to sustain the population, therefore require meadows that are not cut before late May, with subsequent cuts *at least* seven weeks apart. These requirements mean that, if managed as outlined in section 4.2 above, both the reserves pastures and its hay meadows will offer a suitable sward height for skylark breeding.

Skylark also favour mid-field areas in which to nest and feed to avoid predators. Nesting skylark are vulnerable to disturbance and will abandon nests where this occurs regularly. Disturbance will occur if one of their natural predators approaches the nest but can also occur if people, dogs and grazing animals come too close. On the Washlands disturbance from dogs and cattle are thought to be a particular problem, as these animals range across the large grassland areas of compartments A and B.

To reduce disturbance to breeding skylark, **SRWT will encourage those that leave the footpaths to adopt circular walking routes on the periphery of Compartments A, B and C.** In compartment A this will be done by **way-marking the preferred route** from the permissive footpath behind the bund, along the river bank and back again. In compartment B the creation of the grazing enclosure B4 will limit access across the central grassy area during the nesting season to people, dogs and cattle, although access will be permitted at other times of year. Access to compartment C from the south and east will be discouraged, except via the TPT entrance to the reserve, which will be improved to make it more welcoming (see section 6.2.1 below). Here again the public will be urged to walk around the periphery of the meadow rather than through its centre.

Dogs should be kept on leads or under close control during the breeding birds season (1st March - 31st July), and at other times in the vicinity of cattle. SRWT will use clear on site signage at the main entrances to encourage this positive behaviour from dog owners and explain the reasons they are requesting this.

The creation of the grazing enclosure B4 will also help limit predator access to the eggs of birds nesting in this area. The fencing will exclude fox and badger, **and will be hedgehog proofed if necessary due to egg predation**.

Lapwings are birds of farmland and open countryside, and feed mainly on earthworms, leatherjackets, insects and their larvae. They generally feed where they can find lots of these, such as in grazed pasture and especially on wet grassland.

The UK population of the lapwing fell by at least 40% between 1970 and 1998, a decline largely caused by the loss of mixed farming and spring cropping, and the intensification of grassland management. These declines have been mirrored by a 22% declines in the Sheffield area between 1975 and 2008, with the species being particularly badly affected by changing farming practise along the moorland fringe.

Records for lapwing on the reserve suggest it appears to be almost exclusively a wintering species here. In order to support breeding pairs of lapwing, the reserve must provide areas of short grassland with a low stocking rate for nesting from mid-March to June, and abundant soil and ground invertebrates throughout the year. The second of these conditions is easily managed, hence individuals being regularly sighted here. However, the stocking rate on the pastures (2 LSU/ha/pa) is twice that recommended for lapwing suggesting that birds that do nest on the pastures run a high risk of losing eggs to trampling cows. As in the case of skylark, inadvertent disturbance by people and dogs is also likely to be a factor in the failure of this species to breed on the reserve.

Unfortunately, the sward requirements of skylark and lapwing are not compatible, with skylark preferring a longer sward than lapwing will tolerate. For that reason, lapwing are unlikely to utilize compartments B3 and B4 for breeding purposes, despite its lack of disturbance, although they may utilise the scrapes within the area to feed. In order to promote breeding lapwing on the reserve **SRWT will review its grazing density on the reserve with a view to decreasing it by 50% (to 1 lu/ha) during the period April –June each year from 2018.**

Wetland Bird Assemblage

The reserve's wetlands (and also its grasslands) support a large variety and biomass of invertebrates, which in turn allow it to support a number of insectivorous or omnivorous bird species. For some, such as swallow (*Hirundo rustica*), house martin, swallow, teal, and gadwell, the reserve forms a suitable feeding habitat, but does not contain the correct habitat for nesting. Others, such as grey wagtail and reed bunting breed on site. For yet others –snipe and jack snipe– the reserve proves attractive for feeding but does not currently provide conditions suitable for breeding, although these could be created in the future.

Snipe are plentiful on the reserve and are regularly reported in large numbers. Snipe breed in wet flushes on moorland, damp pasture and at the edges of watercourses, favouring wet areas with tussocky vegetation 10-30 cm tall for breeding between April and July. They require soft, damp soil which they probe for earthworms, leatherjackets, beetles and caterpillars. Young chicks are generally fed on earthworms collected by the parents around the nesting site.

In the UK snipe have declined in range by 19% between 1970 and 1990 largely due to the drainage of grassland and moorland. In the Sheffield area the species has fared far worse, declining by 44% between

1975 and 2008, with eastern lowland areas including the Rother Valley being particularly badly affected. Snipe are historically recorded as breeding on Woodhouse Washlands but breeding has not been recorded here for many years. It is likely that the lowering of the water table with its associated habitat changes has rendered the site unsuitable.

The creation of new scrapes and extension of wetland areas on the reserve will prove beneficial to snipe, as well as other species such as redshank, greenshank and green sandpiper which favour such areas in which to feed. Likewise any decrease in disturbance by humans and dogs will benefit this ground-nesting species. However, as with lapwing, the livestock density on the reserve may be too high from mid-March – July and would need to be reduced during these times if the possibility of re-establishing breeding snipe is to be maximised.

As well as species that require wet grassland and swamp, the reserve supports a number of birds of open and flowing water, including mute swan, teal, gadwell, kingfisher and greylag goose. Teal are dabbling ducks, feeding on seeds and small invertebrates. This species is one that over-winters in lowlands such as the Rother Valley, preferring upland areas with oligotrophic waters in which to breed. Although this species has seen a 57% decline in Sheffield area between 1975 and 2008, this is the result of declines in breeding rather than over-wintering habitat and so are not relevant to the management of this reserve.

Gadwall and Greylag goose are new species to the Sheffield area. Present along Rother Valley they breed in waterbodies larger than those found on the reserve.

Kingfisher numbers are stable in the Sheffield area, this species having benefitted from improvements in water quality in Sheffield's main rivers (including the Rother). SRWT **will encourage scrub and tree development on of the river banks** to perpetuate the presence of suitable breeding habitat for this species on the reserve.

Birds of Woodland, Scrub and Hedge Habitat

The reserve's wooded, scrub and hedgerow habitats contains those species typical of many wooded sites across the Sheffield area, and additionally support a number of species which, due to severely declining populations, are no longer typical elsewhere. Wren (*Troglodytes troglodytes*), robin (*Erithacus rubecula*), blackcap (*Sylvia atricapilla*), blackbird (*Turdus merula*), wood pigeon (*Columba palumbus*) chaffinch (*Fringilla coelebs*) and several tit species (family *Paridae*) commonly breed on the reserve. In addition, the Red and Amber listed species song thrush, mistle thrush, dunnock and willow warbler are resident or migratory breeders, whilst yellowhammer and linnet are present only as vagrants.

The UK yellowhammer population fell by 54% between 1970 and 1998, with the Sheffield area suffering 26% decline since 1975. The main factor in this decline is low overwinter survival, probably because of decreasing availability of seed food sources on farmland. Yellowhammers nest on or close to the ground in ditch vegetation or at the base of short, thick hedgerows and scrub. Adults feed mainly on seeds throughout the year, and seek places where they can find lots of seed food. However, yellowhammer chicks depend largely on insects for food and adult birds also feed on insects in the breeding season.

Superficially Woodhouse Washlands would appear to provide a good breeding habitat for yellowhammer. It may be that a lack of arable farmland in the vicinity makes the reserve less desirable for overwintering and therefore breeding, or it may be that yellowhammer do actually breed on the reserve but have remained undetected by previous transect surveys. The increase in hedgerows and introduction of autumn grazing pasture described in section 4.2.1 may increase the suitability of the reserve for breeding yellowhammer, whilst the full Common Bird Census recommended in section 4.4 below would provide definitive data on whether the species breeds on the reserve.

Linnet also frequents woodland edge habitats and scrub habitats, utilizing mixed grassland as a feeding ground. This species is a seed eater, and is particularly dependent on the seeds of "weeds" such as thistle (*Cirsium* spp.), common sorrel (*Rumex acetosa*) and docks (*Rumex* spp.) and favouring dense, thorny scrub and hedgerows in which to breed.

Linnet numbers have declined substantially over the past few decades, with a 57% nationwide decline between 1970 and 2008. In the Sheffield area the species has also declined, but less severely (13% between 1975 and 2008). This decline is linked to agricultural intensification and, in particular, the conversion of traditionally-managed hay meadows to silage.

As with yellowhammer, the **creation of additional hay meadow and autumn grazing grassland on the reserve will benefit linnet,** the retention of dense scrub along its eastern and southern boundaries, and the creation of a new hedgerow, will provide suitable cover for nesting.

Birds of prey

A number of birds of prey have been recorded on or over-flying the reserve. Most important of these in conservation terms are kestrel and barn owl which are regularly recorded on the reserve and which breed here or in the vicinity.

Both kestrel and barn owl feed on small mammals, particularly mice and voles, suggesting that the reserve supports healthy populations of these creatures. The two predators are able to coexist despite sharing a food source as one is diurnal and the other nocturnal.

Barn owl numbers have fallen drastically in the Sheffield area, with a decline of 64% between 1975 and 2008. This is a greater rate of decline than has been seen nationally. The reason for this decline is not clear but is thought to relate to decreases in prey numbers caused by changes in farmland management. Barn owl are also vulnerable to poisoning from rodenticides and from collisions with vehicles when hunting adjacent to roads.

Kestrel numbers have decreased slightly in the Sheffield area, with a decline of 8.7% between 1975 and 2008. This rate of decline is less than has been seen nationally and the post-2005 population decline highlighted by the BBS does not seem to have been reflected locally.

4.3.6 Mammals

The reserve supports a diverse mammal fauna, including several species of conservation concern.

45kHz Pipistrelle (*Pipistrellus pipistrellus 45kHz*) and brown long-eared bat (*Plecotus auritus*) have both been recorded feeding over the reserve, though neither species is believed to roost there.

A badger (*Meles meles*) sett is present on site and badger roam widely across the area. Details of sett location are lodged with Sheffield and Rotherham Wildlife Trust. Badgers are constantly under threat from badger baiters, consequently 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.

Brown hare (*Lepus europaeus*) is present but rare on the Washlands. Rabbits (*Oryctolagus cuniculus*) are widespread, whilst their natural predators weasel (*Mustela nivalis*) and fox (*Vulpes vulpes*) are both regularly recorded. Field vole (*Microtus agrestis*) are also present on banks and areas of dry grassland. A recent record of roe deer (*Capreolus capreolus*) on site has also been received.

Common hedgehog (*Erinaceus europaeus*) is often spotted on the reserve. This once common species is now under threat from habitat fragmentation and loss and increasing intensification of the agricultural landscape. Consequently, the Washlands provide a valuable habitat for this species in the Woodhouse area. However, the presence of hedgehog on the reserve conflict directly with SRWT's stated aim to increase breeding populations of ground-nesting birds such as skylark, hedgehog being voracious predators of the eggs of ground nesting birds – an effect that is particularly significant when populations of ground-nesters are already significant or low. Consequently, **hedgehog-proof fencing may be used to protect breeding birds in compartment B4** (only) should egg predation by this species become problematic**.** With the exception of this area however, **the Trust will promote the free movement of hedgehogs** across the reserve.

Harvest mouse (*Micromys minutus*) is present both on the Washlands and on other adjacent sites such as Beighton Marsh. This species has suffered a 71% decline nationally over 18 years. A frequenter of field margins, wet habitats and hedgerows, it is vulnerable to the impacts of landscape change, and habitat loss and fragmentation.

Harvest mice are extremely active climbers and feed in the stalk zone of tall grass and reeds. At Woodhouse Washlands they are strongly associated with swamp habitats and areas of bramble but may also be present in wet ditches. The reserve's population of harvest mice appears to have fallen following flooding of the site in 2007, and insufficient data is available to show the extent to which the species has recovered. Recent records of nests relate only to the south-eastern corner of the reserve. Measures for the good management and extension of wetland and grassland habitats outlined elsewhere in this plan will provide suitable habitat for this species. In addition**, a systematic survey of the reserve to establish the extent and distribution of harvest mice** will be carried out during the course of this management plan.

A population of water vole (*Arvicola terrestris*) was present on Woodhouse Washlands and on a number of other sites along the Rother prior to the 2007 flood. However, the extent of flooding resulted in the destruction of many of these populations and the species has not been recorded on the reserve or on other adjacent sites since that time.

National surveys suggest that the water vole has been in decline since the beginning of the twentieth century due to habitat loss, degradation and fragmentation – a decline which accelerated sharply from the 1960s onwards, coinciding with the spread of feral American mink (*Mustela vison*). Today, evidence indicates that water vole have disappeared from 94% of their former sites nationwide and are now a species of high conservation concern in the UK.

Water voles live along the banks of rivers, streams, ditches, pools and lakes, and areas of marsh or reedbed habitats can also support populations. They ideally prefer watercourses that have in-channel vegetation and/or are fringed with lush vegetation such as reeds, grasses, rushes, sedges and other marginal species to provide food and cover.

Woodhouse Washlands is well placed to support a population of water vole, and the works outlined elsewhere outlined in this plan will help make the site more attractive to this species. However, survey data confirming the existence of adjacent populations from which the Washlands could be recolonised does not currently exist. It is therefore likely that re-establishing a breeding population of water vole on the Washlands is not possible at the present time. Consequently, conservation actions for water voles on the Washlands will be firstly to increase the positive management of wetland habitats elsewhere on the reserve (as outlined elsewhere in this plan), thus increasing the amount of habitat available to support voles. Secondly, **the creation of a new system of ponds and ditches (Figure 12) will be carried out to provide water vole-friendly habitat, with the profile and depth of ditches designed to promote their**

use as (potential) breeding habitat. Finally, **SRWT will seek funding for a new water vole survey of the Washlands and other adjacent sites** to establish the likelihood of natural recolonization of this species.

Otter (*Lutra lutra*) has not been recorded on the reserve or in the adjacent river, however, as populations increase both nationally and regionally, it is likely that this secretive species is already present but unrecorded, or likely to recolonise in the near future. Otters are a semi-aquatic species, which travel over large areas (both in and out of water) and feed on fish (particularly eels and salmonids, as well as frogs and water birds. **Monitoring of the River Rother for signs of otter** will be carried out during the course of this management plan. Should the species recolonise, measures for the good management and extension of wetland habitats outlined elsewhere in this plan will provide supplementary feeding grounds. Measures to protect sections of the banks of the Rother from disturbance e.g. by limiting access for fishing, would also prove beneficial by providing quiet daytime refuges.

4.4 Survey and Monitoring

Aim 7: To undertake survey work to increase knowledge of the reserve's biodiversity and assess the impact of site management and recreational usage.

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

Over the course of this plan SRWT **aims to collect comprehensive breeding bird data** for the reserve, focusing in particular on the numbers and location of skylark, lapwing, snipe, linnet and yellowhammer breeding pairs on the reserve. Particular attention will be paid to the species using the habitat compartments C2, B1, B2, B3 and B4 where the grassland management regime has changed.

A systematic survey of the reserve to establish the extent and distribution of harvest mice and grass snake populations will be carried out during the course of this management plan.

SRWT will seek funding for **a water vole survey of the Washlands and other adjacent sites** to establish their presence or absence in the vicinity.

Wildlife trail cameras will be used to assess the presence or absence of otters on this stretch of the River Rother.

The Phase One habitat survey of the reserve should be repeated in 2024 and the location and distribution of red data book species and habitats compared with the 2016 survey. **I**n 2023, **the reserve's ponds will be surveyed using the National Pond Survey methodology and the extent and size of the great crested newt population reassessed,** with an expectation that the total number of great-crested newts recorded and the number of ponds in which they are found will have increased.

The recording of biological data for groups where this is lacking, in particular lower plants, moths, bats and fungi, will be encouraged.

The **visitor survey for the reserve should be repeated in 2022**.

All biological data gathered will be shared with the Sheffield Biological Records Centre. The baseline data collected will form the basis of long term monitoring of key habitats and species.

5. Reserve Infrastructure

Aim 8. Maintain and restore the reserve's infrastructure**.**

5.1 Fencing and boundaries

The reserve's external boundaries and infrastructure are shown in **Figure 5**. These, together with the access gates, secure the reserve against illegal access by cars, quadbikes and motorcycles.

A network of stock fencing is present within the reserve, and is used to delineate and secure the various habitat compartments on the reserve. Following an extensive programme of refurbishment in 2016 this is generally in good condition but will be replaced as required during the period covered by this plan. A **small amount of heavy duty metal fencing is required to secure the southern boundary of Compartment C1.**

5.2 Surfaced paths

Woodhouse Washlands contains two surfaced paths, one on each side of the river. To the west this comprises the permissive footpath from Furnace Lane which runs along the reserve boundary adjacent to the John Hibbard estate. On the eastern side of the reserve the only surfaced track is the TPT.

Woodhouse Washlands is one of the few Wildlife Trust reserves where the topography really lends itself to the provision of good wheel chair access. The paths mentioned above were both installed with this in mind but, over time the condition of the surface of each has deteriorated, becoming narrow and often wet and muddy. During the period covered by the management plan, **SRWT will work with the Rotherham Rights of Way service to improve the condition of the TPT as it passes through the reserve**, draining and resurfacing it as necessary to re-establish it as a wheelchair accessible route as funds become available. **It will also seek funding to carry out similar work on the permissive footpath to the west.**

5.3 Access furniture (way-marking, benches, gates and stiles)

The site currently contains little in the way of way-marking due to the dearth of Public Rights of Way. Given that the Trust is now encouraging the use of certain permissive routes to minimise disturbance to wildlife (see section 4.3.5) **the way-marking of these routes would be desirable** and will be carried out in line with the standard SRWT house style.

One bench is currently situated along the route of the TPT. **The Trust will install two further benches along this route** for use by visitors.

Access onto the reserve for visitors has previously been possible using a variety of squeezes, stiles and gates. During 2016 work has been carried out to rationalise access points into compartments A and B and kissing gates installed to allow easier and safer access onto the reserve.

5.4 Bunds and bridges

An earth bund runs along the western side boundary of the reserve, separating the permissive footpath from Compartment A. This bund was built to screen the housing estates of Kirkstead Gardens and John Hibbard housinganglers. The bund was planted up with a variety of native tree species at the time it was created which are now maturing. The presence of dense woodland and scrub bund has resulted in the obstruction of views over the reserve and has led to the permissive footpath becoming unpleasantly enclosed and densely shaded. To counteract this, **the Trust will begin a programme of rotational coppicing of the scrub and young trees on the bund**.

A wooden bridge crosses a dry ditch on the eastern side of the reserve along the TPT. This is the property and maintenance responsibility of the Rotherham Rights of Way service.

5.5 Interpretation

Two new interpretation panels were installed adjacent to the Furnace Lane and Retford Road entrances to the reserve in early 2017. Three metalwork sculptures depicting reserve wildlife are and a mining wheel from a pit head, which represents the reserve's industrial past, present along the TPT. A decorative metalwork entrance panel designed by local children, is present at the entrance to the John Hibbard housing estate**. All these features will be retained and maintained as necessary.**

6. Cultural Context

6.1 Site Archaeology

Aim 9: To protect and interpret the reserve's archaeology.

Very few archaeological features pre-dating the post-medieval period (pre-1485) have been recorded on Woodhouse Washlands. The site's history of repeated flooding with associated drops of silt and alluvium river straightening and drainage works, are likely to have obscured many archaeological features.

One of the biggest changes to Woodhouse Washlands took place in the 1950's when the River Rother which had previously meandered across the site was canalised into one deeper, faster flowing water course. When the canalisation took place, the workers discovered a woolly mammoth tooth which was taken to Weston Park museum in Sheffield. This represents the oldest archaeological find on site to date.

Two archaeological surveys of Woodhouse Washlands were carried out in 2004. These surveys identified 37 archaeological sites within the boundaries of the nature reserve. Most of the features on site are post-medieval (c.1500-c.1800) or industrial (c.1800- c.2000) in nature. There is evidence for coal mining, sites of previous mills and small scale industrial buildings.

One feature thought to date from the medieval period (c.800 - c.1500) is an area of ridge and furrow south of the Beighton Viaduct. This site has suffered from some disturbance and can only been clearly seen in low light conditions.

The Bell Pit sited on the permissive path on the western reserve boundary is a significant feature. Bell Pits were formed when people dug for coal from the open air and is a style associated with earlier mining attempts. There is evidence for coal mining in Woodhouse from 1700 and the Bell Pit could be linked to these earlier times.

Overall the archaeological features found on Woodhouse Washlands were considered to be of low archaeological significance. Most were dated within the last 200 years and included mine workings, dismantled tram lines and old field boundaries. Current site management practices will not affect the features but **the Trust will consult with an archaeologist before undertaking any significant ground works in their vicinity.**

6.2 Recreation

Aim 10: To maintain and improve public access to the reserve, taking a zoned approach to reduce disturbance to sensitive areas.

6.2.1 Recreational facilities

Woodhouse Washlands has been designated as a LNR since 1999. The reserve has four main entrances – at Furnace Lane and Retford Road to the north, at John Hibbard Avenue to the west and from Rotherham Road to the south (Figure 2).

SRWT welcomes visitors to Woodhouse Washlands and wishes to ensure that its entrances reflect this. Work to renovate the Furnace Lane entrance was carried out in 2016 **and will be completed with the installation of a noticeboard** in due course. A new interpretation panel has also been installed at the Retford Road entrance to the reserve, replacing the old, **and a noticeboard will be installed here also.**

An open area with planters exists at the reserve entrance from the John Hibbard estate. The planters are overgrown but are thought to be used as newt hibernacula so will be preserved on site. **SRWT will renovate the planters in spring, once the newts have left, and reseed with wildflower mix.** These notice boards will be used to communicate with site visitors and to advertise walks and events on the reserve, and meetings regarding its management.

Entry to the reserve from the south is officially via the TPT, which enters the site to the east of Rotherham Road through a stretch of land not managed by the Trust. This entrance is somewhat obscure and not clearly signed and is often overgrown and blighted by litter and fly tipping. In order to minimise disturbance to ground nesting birds in Compartment C, the Trust would like to promote access to the reserve via this TPT entrance, rather than through the non-public entrance adjacent to the Crown Works. In order to encourage visitors to use this entrance, **the Trust will work with Rotherham PRoW unit, RMBC waste services and the owner of this land to improve the appearance of this entrance**, **to signpost visitors along it and to keep the path clear of vegetation**.

As previously stated, the reserve includes a stretch of the Trans Pennine Trail (TPT) running from Retford Rd to the Rotherham Road (**Figure 4).** This is a Public Right of Way open to walkers and cyclists that joins Catcliffe to Rother Valley Country Park and onwards to the whole TPT network. Use of this path is likely to increase in the future as people move into the new housing developments at Waverley and any future housing that is created in the area.

On the western side of the reserve, a permissive footpath runs from Furnace Lane along the reserve boundary and adjacent to Compartment A. Funding will be sought to resurface this path, making it accessible to wheelchairs and buggies (see section 5.2 above). **Additionally, the Trust will begin a programme of rotational coppicing of the scrub and young trees on the bund** to open up the permissive pathway here and offer better views out over the site (see 5.4 above).

On street car parking for visitors to Woodhouse Washlands is available at the northern and southern boundaries of the reserve.

The River Rother bisects the site from north to south, and is not bridged within the boundaries of the reserve. In consequence, anyone wishing to visit the entire reserve must exit it at the north or south and cross the river on the road bridges provided at these points. Circular walks around the separate halves of the reserve are possible using the existing rights of way and the main desire lines.

The River Rother running through the centre of the reserve is fished by anglers, who must hold the correct rod licence from the EA, who own the fishing rights for the river. The river is closed to fishing between 15th March and the 15th June each year for the fish spawning season.

The oxbow lake on the eastern side of the river has a long history of unofficial fishing and there has been interest in leasing the fishing here by a local angling club.

6.2.2 Recreational usage

The main groups using the reserve are local dog walkers, people walking or cycling the TPT and anglers on the river and the ox bow lake. A visitor survey, conducted in 2016, showed that visitors to Woodhouse Washlands come mainly from the local area, although the Trans Pennine Trail does bring some longer distance walkers or cyclists onto the site. The majority of visitors arrive on foot as it is their local site.

Both halves of the reserve receive similar volumes of visitor 'traffic' and people generally use only one half of the reserve or the other during a single visit. Visitor numbers to both parts of the reserve have increased over the past 20 years, due to additional housing in the area and the construction of the TPT.

Visitors to the reserve enjoy the variety of possible circular walks, following existing desire lines. This is especially the case on the Rotherham side of the reserve where the ground is drier. Visitors to the Sheffield side of the reserve tend to follow major desire lines to avoid wet and muddy areas.

Local families previously used the pond dipping pond near the Furnace Lane entrance way and in the past it has been very popular with schools and groups. The pond had a good dipping platform which has fallen into disrepair and is currently unsafe, hence access to the public has been withdrawn. **The Trust will seek funding to repair the dipping platform/boardwalk around this pond with a view to bringing it back into safe usage again.**

The reserve is frequently used by anglers, most (but not all) of whom fish legally and responsibly. Both SRWT and the EA acknowledge the need to balance the needs of anglers with those of protecting wildlife on the reserve.

Woodhouse Washlands has in the past suffered from misuse by quad bikers and motorcyclists who can churn up the site and disturb wildlife. Currently the site has very secure entrance points that are difficult to bring bikes through, however sometimes people vandalise fencing to gain access.

6.2.3 Barriers to recreation and opportunities for improvement

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

Litter/ fly tipping.

Levels of littering on Woodhouse Washlands are generally low, due in part to low numbers of visitors compared with other Trust reserves. Litter is generally a problem around the entrance ways and at the ox bow pond. This litter is both unsightly and dangerous to the cattle which graze the reserve and to its wildlife, particularly when it enters the reserve's waterbodies or watercourses.

SRWT policy is not to install litter bins because of the ongoing maintenance and costs of emptying them. Instead we encourage people to take litter home with them to dispose of it, or to use one of the on-street bins in the vicinity of the reserve.

Fly tipping is a particularly a problem at the southern entrance to the reserve on Rotherham Road. A strategy for dealing with this is outlined in section 6.2.1 above.

SRWT will conduct regular litter picks on the reserve during patrols as part of the reserve maintenance regime, to combat this problem.

Dog Fouling

Dog fouling is not a widespread problem on site as the reserve is large. However certain hotspots, such the permissive footpath from Furnace Lane suffer from significant dog fouling. This spoils the footpath for

other users and makes it unsafe SRWT workers who have to remove waste from this area before they can undertake maintenance tasks. **SRWT will add signage here encouraging the removal of dog waste** and will **work with Sheffield City Council to aim to reduce fouling on site.**

Disturbance of wildlife by people and dogs.

As outlined in section 4.3.5 above, the reserve is home to a number of bird species whose numbers are declining both nationally and in the Sheffield area. Species such as skylark, which build their nests on the ground are particularly vulnerable to accidental disturbance by people and especially by dogs during the nesting season (March –end July) and repeated disturbance will make these birds abandon their eggs, even if the eggs themselves are not harmed (or even seen) by the interloper. Measures to combat this disturbance have been outlined in sections 4.3.5 and 5.3 above.

Disturbance of people and dogs by cattle

Woodhouse Washlands is grazed by cattle between April and October. The cattle help to manage the site by keeping the grass at an optimum sward level for wildflowers and ground-nesting birds, and by preventing colonisation of the site by scrub or invasive species such as Indian balsam.

During the 2016 community consultation a number of site users commented that the presence of cattle can make them feel uneasy on site. Some would prefer the cattle to be kept separate from the public by fences, whilst others would not want the vistas and open nature of the site broken up with what could be seen as unnecessary barriers.

The practice on Woodhouse Washlands has been to select docile, hardy breeds of cattle for grazing the reserve. **SRWT will work with the grazier annually to manage cattle grazing following comprehensive risk assessments to minimise the risk of negative encounters. SRWT will monitor the interactions between the site users and the cattle and take any future action as it becomes necessary.**

Lack of horse riding access along the TPT on the reserve

A large community of horse riders is based in the vicinity of the reserve. Currently no horse riding is permitted on the Washlands, and the length of the TPT that passes through the reserve is designated for walking and cycling only, although the TPT is open for horse riders the majority of its length.

Local riders would like to see the section of TPT that passes through the Washlands opened up to horse riding, thereby extending the network available to them. Such a change could only be made with the agreement of the EA who own the site. The EA's Asset Performance Team have given in principle permission for this scheme, subject to an exact route that does not pass over the flood embankments being agreed and provided that any works carried out in association with such a scheme are carried out in accordance with the current Environmental Permitting Regulations..

SRWT is generally supportive of extensions to the bridleway network on the reserves it manages, provided that the routes chosen are sustainable, safe and do not conflict with the needs of other reserve user groups or the needs of wildlife.

In the case of this section of the TPT, the Trust believes that this has the potential to provide a safe, sustainable route that could be ridden without causing undue disturbance to wildlife, or to other site users. However, the Trust's intention is that this route would form one link in a chain and lead riders onward to other sites rather than allowing access onto the Washlands itself. In order for this potential to be realised a number of preconditions would need to be met:

1. The agreement of the two land owners involved (Environment Agency and unknown), the Rotherham's Public Rights of Way unit and the reserve user forum (see section 6.3.2).

2. An upgrade of the condition of the route, improving drainage and resurfacing as necessary to bring it to a good state of repair and returning it to a minimum width of 1.8m along its length.
3. The installation of suitable entrance furniture such as horse hops at the southern entrance to the section, to allow access to walkers, cyclists and horse riders whilst excluding motorised vehicles.
4. The creation of a new section of bridleway leading to a new entrance on Retford Road at the northern end of the reserve, secured as above.
5. Improvements in adjacent sections of the Trans Pennine Trail leading both north towards Waverley and south to Rother Valley Country Park to allow riders safe access to these areas.

SRWT will work in partnership with local riders, the PRoW unit, local land owners and other interested **parties to investigate the feasibility of opening the TPT at the Washlands and ensure safe routes lead to the wider Bridleway network.**

Visitor numbers

SRWT aim to manage all our nature reserves for people and wildlife and to promote environmental-based recreational activities on our reserves to increase public understanding of, and appreciation for wildlife and wild places. SRWT views Woodhouse Washlands as one of our "Flagship" reserves due to its size and high wildlife value. However, due to the sensitivity of its habitats and wildlife, it is not the Trust's intention to promote an increase in visitor numbers to the reserve by, for example, publicising it widely as a recreational destination across the city. Rather, the Trust aims to **maintain visitor numbers and provide a good visitor experience for those who do visit.** This will include **keeping the paths and major desire lines clear of encroaching vegetation and in good condition.** Intended improvements in litter clearance, dog fouling and way-marking are discussed elsewhere in this report.

6.3 Community

6.3.1 Community profile

Woodhouse Ward covers Handsworth and Woodhouse in the southeast of Sheffield, extending to the border with Rotherham. Woodhouse Ward scores slightly below the city average for many of the indices of health, wealth and well-being as measured by figures taken from the Office for National Statistics based on the 2011 Sheffield Census.

Woodhouse scores below the city average for people in very good health (40.9% ,Sheffield average 46.7%) and above average for people whose day to day activities are limited by ill health (12.7 %, Sheffield average 9.1%) . It has a significantly high proportion of the community without any formal qualifications (33.5%, Sheffield average 24.3%). The Woodhouse populations is about average for levels of home ownership, both out right and with a mortgage. The Ward scores above average for levels of people being economically active in full time work, but also above average for people who are unemployed.

Woodhouse has a significantly lower population of BME groups than the rest of Sheffield (17.1%, Sheffield average 30.5%)

Figures taken from Sheffield Neighbourhood Health and Wellbeing Profile 2012 show that Woodhouse is statistically significantly worse for many health indicators than the Sheffield average. Male mortality and alcohol-related hospital admissions are significantly higher in Woodhouse than the Sheffield average. Smoking mortality and smoking mothers at birth are higher in Woodhouse. Obesity levels in the adults and children of the community in Woodhouse are both higher than the Sheffield average.

These figures suggest that the presence of a well-managed, easily accessible area of wildlife-rich green space such as the Washlands could benefit many of the people who make up the community of Woodhouse, by providing a suitable site for tranquillity and exercise and so promoting health and well-being. The reserve also provides a variety of opportunities for skills development, in terms of practical conservation techniques, habitat management and ecological identification. To date, the Trust's practical conservation work teams, which include trainees and volunteers, work regularly on site. A number of guided walks have also provided opportunities for people from the local community and across the city to acquire new knowledge.

6.3.2 Community engagement

Aim 11: Promote public participation in the management of the reserve and in enjoyment of its natural heritage by people of all ages and backgrounds.

SRWT actively encourages people to become involved with, and take action to protect, their local green spaces. The Woodhouse area already has a strong group of dedicated local people who have a great deal of ecological knowledge**,** many of whom have long-standing ties to the reserve and who have contributed to its past management and development. Additionally, the reserve enjoys great support from many of its regular users, who are passionate about both public access and the protection of its wildlife.

The Trust will work closely with both these groups, plus any other interested individuals, to deliver the work programme outlined in this management plan (once agreed) and to communicate its plans to the wider community.

The Reserve User Forum system of meetings that SRWT has runs very effectively on many of its other nature reserves **will be introduced at Woodhouse Washlands to allow members of the public the opportunity to discuss the management of the reserve with each other and SRWT**. Under this system, the reserve will have a spring/summer (on site) and an autumn/winter (indoor) meeting each year. These meetings will be advertised on site, on the Trust's website and by mailing list, and will be open to all. At the meetings all aspects of site management will be discussed and people will have the chance to ask questions and put their ideas across. Minutes for these meetings will be published.

6.3.3 Events and Work Days

The Trust is already running and **will continue to run regular Volunteer Work Days on the reserve.** These provide an opportunity for members of the public both from the local community and across the city to participate in the management of the reserve. Volunteer Work Days currently take place on the third Friday of every month, for further details please see the Trust's website at www.wildsheffield.com

SRWT will include Woodhouse Washlands within its annual events programme, which delivers a broad range of environmental and heritage activities across all Trust nature reserves. This typically includes the larger reserves hosting on average 2public events per year.

All events will be promoted through posters on site, notices in local publications, on the SRWT website and on social media, and through the Kingfisher magazine which goes to SRWT members.

6.4 Outdoor Learning

6.4.1 Local educational provision

5 primary and 2 secondary schools serve the communities surrounding the reserve. These are the Becton Centre, Reignhead Primary School, Beighton Nursery Infant School, Brook House Junior School, Brunswick

Community Primary, Aston Fence Primary and Handsworth Grange Secondary School. Of these 3 schools - Brunswick Community Primary, Aston Fence Primary and Handsworth Grange Secondary School – lie within reasonable walking distance of the reserve and could therefore visit it for educational activities without requiring transport.

6.4.2 Outdoor learning

Since 2013 SRWT has been working with primary schools, secondary schools and youth groups across the city and bringing them to Ecclesall and Greno Woods to take part in outdoor learning sessions. Outdoor learning is a key area of development for SRWT. The Trust provide environmental education sessions which support the National Curriculum, as well as accredited/non-accredited training to support young people and adults to develop life skills, and gain skills and experience in the environmental sector. We also provide learning opportunities for all the family.

The size, location and variety of habitats within Woodhouse Washlands provide many opportunities for outdoor learning not available on other Trust reserves. For example, its high quality wetland and grassland habitats are ideal for comparative habitat surveys. The reserve's topography makes it easily accessible and its open vistas make it possible to supervise a class of thirty easily. Coach drop offs can be safely accomplished at both Furnace Lane and Rotherham Road.

Conversely, the reserve also has a number of drawbacks as a site for outdoor learning. These include the presence of a number of sensitive habitats and species, the presence of cattle for part of the year, the dilapidation of the boardwalk surrounding the dipping pond and a lack of basic facilities such as shelter and toilets.

In 2014, the Trust put together a business case which identified key sites for developing outdoor learning sessions. Woodhouse Washlands is not currently a priority for the development of outdoor learning provision, but may become so in the future, at which points the drawbacks listed above would need to be considered in detail and mitigated in some way. The reserve's location in the south of the city would make it a natural third outdoor learning site to compliment facilities available to the north and west.

SRWT will apply for funding to improve the boardwalk on the dipping pond during the period covered by this plan to allow this pond to be used for pond dipping in the future.

7. Economic Context

Woodhouse Washlands received considerable investment funding in 2016/17 with the receipt of Section 106 planning monies, HLS Capital Funding, a Veolia Environmental Trust grant and a grant from the Environment Agency. This funding was given for habitat management and creation, infrastructure refreshment and access improvements. Expenditure for ecological surveys was also received from the Heritage Lottery Fund "Nature Counts" project.

In order that such investment can continue, SRWT has adopted the following aim:

Aim 12. Continue to develop ongoing sources of grant aid and other income to support the management of the nature reserve.

The economic opportunities offered by the reserve are considered below.

7.1 Current funding

The majority of Woodhouse Washlands was placed under Higher Level Stewardship in 2015. This grant provides an annual area payment on condition that the reserve's habitats comply with agreed conservation standards regarding the length and composition of the grass sward and the management of wetland features.

The reserve forms part of the area covered by the River Rother Restoration Project, a partnership between SRWT and the EA, intended to restore river habitats and floodplain wetlands along the River Rother and attracts EA funding through this partnership.

7.2 Farming and forestry

Woodhouse Washlands holds little potential for productive land use other than that associated with grazing livestock, which are viewed primarily as a management tool rather than a source of income. The Washlands are let for cattle grazing, although the income generated is small, reflecting the low grazing levels. SRWT receive the Single Farm Payment entitlements for the reserve.

7.3 Membership recruitment

Woodhouse Washlands is a large and locally well-known nature reserve. As such, it has the potential to raise the Trust's profile and to showcase its work. Positive management of the reserve could help to support the Trust membership, which is vital to its work, demonstrating a level public support for its work, as well as providing a campaigning resource and a source of funding.

Wildlife Trust membership across Sheffield and Rotherham is steadily increasing, and a pro-active approach has been adopted by the Trust to ensure that the trend continues. Our work at Woodhouse Washlands, if perceived positively by members and the public, can support membership recruitment locally and across the city and into Rotherham where the Trust is less well known. Conversely, any negative publicity or public perception about management of the reserve could hinder the same. Consequently, the work carried out at the Washlands must not only be of the highest standard, but must be communicated well to the general public.

SRWT will continue to publicise its work on Woodhouse Washlands, and the rationale behind it, using both local and city-wide media. Equally, **the Trust will continue to promote and support public engagement with the work on the reserve.**

When recruitment campaigns have been targeted at communities neighbouring the Trust's reserves, these have met with a large degree of success. There is great potential to recruit members in Woodhouse, Beigton, Swallownest and Aston through events held on site.

7.4 Employment and training

Woodhouse Washlands currently provides employment or part-employment to three people directly (through the Trust), and also contributes indirectly to many others, such as the grazier and 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.

7.5 Marketing

As an organisation, SRWT's vision is the creation of "a Living Landscape – an amazing, green landscape for the wildlife and people of Sheffield and Rotherham – which is understood, enjoyed and cared for by local people and organisations".

As a result of its work, the Trust wants more local people to understand, enjoy, value and be inspired by local nature and wildlife. To this end, it is critical that SRWT communicates its aims and objectives, and planned management activities on the nature reserves they manage.

The aim of SRWT marketing activities is to encourage more people to visit wildlife sites and green spaces regularly, for leisure, interest, exercise, health and wellbeing. Consequently, at Woodhouse Washlands the Trust will works to:

Aim 13. Raise public awareness of the reserve's fauna, flora and archaeology, and increase understanding of and support for management works.

7.5.1 On-site presence

At the current time, welcome signage, in the form of the Trust's standard wooden 'Welcome to Woodhouse Washlands' sign, is present at all main entrances to the reserve.

SRWT will work to ensure joint branding of the reserve, highlighting both SRWT and the EA, during the period covered by this plan. As well as the measures outlined above, we will maintain appropriately welcome signs at all site entrances, giving the reserve's name, its LNR status and contact information for the Trust/EA as appropriate.

Finally, the Trust will utilise the opportunities offered by events and guided walks to raise its profile and bring the Washlands to a new audience.

7.5.2 Printed materials

News and articles about the reserve are printed in the Trust's 'Kingfisher' magazine, which is sent out to members three times a year. **News releases will be sent to the Sheffield Star and the Sheffield Telegraph to mark key events during the period covered by this plan.**

SRWT will create a reserve leaflet, and release it in downloadable format, during the period covered by this plan.

7.5.3 Website and Social Media

Woodhouse Washlands has a page on the SRWT website. This gives general information about the reserve and access to electronic documents. http://www.wildsheffield.com/nature-reserves/local-reserves/woodhouse washlands

The events programme for the Washlands is also advertised on the Trust website.

SRWT increasingly uses social media to circulate regular updates about reserve management and to advertise events.

The Woodhouse pages of the website will be periodically updated during the period covered by this management plan, and the reserve leaflet and reserve map will be provided in downloadable format. **Social media will also be used to communicate news of the reserve**, as appropriate. **Regular updates regarding reserve management and up and coming events will be circulated using social media.**

8. Management Aims and Objectives

Tabulated below are the management aims contained within this plan, together with the objectives intended to deliver them. These will provide the basis for the work programme which SRWT will carry out over the period 2017-2025.

The Trust considers all these objectives to be important, and anticipates their completion during the period covered by this plan. Nevertheless, the work contained here is aspirational, and funding sufficient to resource all the listed works has not yet been secured. Consequently, objectives are classified as being of HIGH, MEDIUM or LOW priority, to aid prioritisation of resources.

High priority objectives are those whose delivery in the period covered by this plan is fundamental to the realisation of their associated aim, and/or those where failure to achieve them would result in active damage to the reserve's biodiversity, archaeology, recreational or community interest. Conversely, objectives given a LOW priority rating are those which, although they provide additional value, are not critical to the successful management of the reserve. Objectives classified as being of MEDIUM priority fall, as would be expected, somewhere between the two.

Cross references to the sections of the plan which support these aims and objectives are given in the fourth column of the table.

Please note that the costing of works is not contained here, but will be contained in Section 9.0 of the finished plan.

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 7)		
Aim 1: To conserve and increase the area of botanically rich grassland on the reserve.	1.1 **Maintain a management regime beneficial to the reserve's grasslands, to promote maximum benefit for their botanical, invertebrate and ornithological interest.** • Continue to cattle graze the reserve's pastures (comp A, B) at a stocking density of no more than 1 Livestock Units per hectare pa between 1st April and 31st July, and 2 Livestock Units per hectare pa from 1st August – 31st October, to result in a final sward height of 5-15cm by the end of the growing season. • Continue to manage comp C and C2 as hay meadows, with an early August cut and the hay left on the ground for at least 36 hours to allow for seed drop, followed 3 weeks later by aftermath grazing to produce an uneven sward, height 5 - 15cm, by the end of the growing season. • Manage comp B1 and B2 as autumn grazing, with the sward being allowed to grow undisturbed until September, followed by aftermath grazing to produce an uneven sward, height 5 - 15cm, in line with the HLS agreement. • Manage comp B3 and B4 for skylark and meadow pipit , being allowed to grow between April and July to a maximum height of 40cm which will be maintained as necessary with periodic cattle grazing, followed by aftermath grazing to produce an uneven sward, height 5 - 15cm in line with the HLS agreement. • Control the spread of ragwort and both creeping thistle across the reserve as required. • Prevent the spread of Indian balsam and Japanese knotweed onto the reserve's wetlands from the river channel. • Prevent excessive poaching of the reserve's habitats by cattle.	***Sec 4.2.1; 4.3.5*** ***Figure 11***	HIGH HIGH HIGH HIGH MEDIUM HIGH HIGH

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 7)		
Aim 2: To conserve, protect and extend the reserve's wetland and riverine communities.	**2.1 Manage the reserve's existing ponds to improve their potential to support wildlife.** • Dredge pond 1 (dipping pond) to remove 80% of existing water soldier colony • Dredge pond 2 (left pond) to remove 50% of existing aquatic and emergent vegetation. • Dredge pond 3 (right pond) to remove 50% of existing aquatic and emergent vegetation. • Exclude cattle from pond 4 (cow pond) and introduce suitable marginal and emergent species from adjacent ponds. • Dredge pond 5 (top pond) to remove 50% of existing aquatic free floating vegetation. • Re-line pond 6 (dry pond) to allow it to hold water, and introduce suitable marginal and emergent species from adjacent ponds. • Introduce suitable marginal and emergent species from adjacent ponds to pond 7 (high pond). • Manage the periphery of the pond 8 (oxbow) to remove litter and discarded angling tackle. • Dredge ponds 9 (B3 north) and 10 (B3 south) to remove 50% of existing aquatic and emergent vegetation and clear adjacent ditches.	***Sec 4.2.2; 4.3.4*** ***Figure 9***	 LOW HIGH HIGH MEDIUM HIGH MEDIUM MEDIUM HIGH MEDIUM

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 7)		
Aim 2 cont.	**2.2 Create additional pond and wet ditch habitat on the reserve.** • Create a complex of additional ponds and wet ditches within compartment C to create habitat of potential benefit to water voles • Create an area of open water within the swamp community (compartment A1) • Restore Beighton Mill Tail Goit through scrub removal, reprofiling and potentially by raising the water level if feasible. • Work with the Environment Agency to investigate the feasibility of a re-meandering scheme or other measures to increase the diversity of the river channel.	***Sec 4.2.2; Figures 3, 8, and 12***	HIGH MEDIUM HIGH HIGH
Aim 3: To manage the reserve's existing scrub habitat.	**3.1 Create a mixed aged scrub profile across the reserve.** • Coppice areas of scrub on the bund a rotational basis to open up vistas across the reserve. • Create clearings within dense scrub on the reserve's eastern embankments.	***4.2.3 Figures 10a and 10b***	MEDIUM MEDIUM
Aim 4. To manage and retain the reserve's mature trees and hedgerows.	**4.1 Prevent scrub encroachment into the reserve's grasslands.** • Control the spread of blackthorn into comp A, as required.	***4.2.3 Figures 10a and 10b***	LOW
	4.2 Increase the reserve's tree and hedgerow resource. • Plant cuttings from the reserve's veteran crack willow trees on the reserve (protect young saplings from cattle and other grazing animals). • Plant a double thickness native species hedgerow along the western boundary of compartment C2. • Work with SCC and the EA to investigate the feasibility of establishing a poplar of young black poplar on the reserve.	***4.2.3, Figure 11***	LOW MEDIUM LOW

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 7)		
Aim 5. To increase the number of ponds supporting breeding populations of great crested newts from three to six, with the intention of increasing the total population of newts supported by the reserve.	**5.1 Manage wetland and woodland habitats to benefit great crested newt** • Manage existing ponds as outlined in prescription 2.1 above. • Create a complex of additional ponds within compartment C as outlined in prescription 2.2 above. • Investigate the feasibility of extending the water-holding part of Beighton Mill Tail Goit and instigate if possible. • Safeguard reserve from the accidental transfer of disease and invasive plant species by through the production of a biosecurity brief. • Coppice areas of scrub on the bund on a rotational basis and habitat pile cuttings to create newt hibernaculae.	***Sec 4.2.2; Figures 8, and 12***	HIGH HIGH MEDIUM HIGH HIGH
Aim 6: To increase the breeding success of skylark and other ground-nesting species on the reserve.	**6.1 Decrease disturbance and risk of egg loss to ground nesting birds.** • Manage compartments B1, B2, B3, B4 and C2 as refuges for ground nesting birds during the breeding season. • Adjust grazing levels and sward height in compartments B3 and B4 to promote skylark nesting. • Adjust grazing levels and sward height in compartments A and B to promote lapwing and snipe nesting. • Encourage dog owners to keep their dogs on the lead during bird breeding season. • Improve the entrance at Rotherham Road to encourage visitors to enter the reserve at this point. • Install way-marking of main desire lines in compartments A and C to encourage visitors to use these routes. • Install hedgehog proof fencing around compartment B4 if required.	***4.3.5 Figure11***	HIGH HIGH HIGH HIGH MEDIUM HIGH LOW

Aims	Objectives and prescriptions	Cross Ref	Priority
	BIODIVERSITY (Aims 1 to 7)		
Aim 6 cont.	**6.2 Improve the reserve's habitats for feeding waders.** • Retain water on the reserve wherever possible. • Ensure newly created ponds, ditches and scrapes hold water between March and August. • Manage edges of scrapes to ensure bare ground is retained. • Thin ditch and scrape vegetation if necessary to allow wading birds access to the ground beneath.	***4.3.5 Figure 12***	HIGH HIGH HIGH HIGH
Aim 7 To undertake survey work to increase knowledge of the reserve's biodiversity and assess the impact of site management and recreational usage.	• Collect additional breeding bird data regarding the number of pairs of skylark, lapwing, snipe, linnet and yellowhammer breeding on the reserve. • Carry out a systematic search of the reserve to establish the extent and distribution of the harvest mouse and grass snake populations. • Carry out a water vole survey of the Washlands and adjacent sites. • Confirm the presence or absence of otters on this stretch of the River Rother. • Repeat the Phase One habitat survey of the reserve. • Repeat the Great Crested Newt survey of the reserve's ponds. • Survey the reserve's ponds using the National Pond Survey methodology. • Encourage the recording of biological data for groups where this is lacking, in particular lower plants, moths, bats and fungi. • Repeat the visitor survey. • Share all biological data collected with the Sheffield Biological Records Centre	***4.4***	HIGH HIGH MEDIUM HIGH MEDIUM HIGH HIGH MEDIUM HIGH HIGH

Aims	Objectives and prescriptions	Cross Ref	Priority
	Infrastructure (Aim 8)		
Aim 8. Maintain and restore the reserve's infrastructure**.**	• Repair and replace fences and gates as required. • Add a section of heavy duty metal fencing to secure the southern boundary of compartment C1**.** • Work with the Rotherham Rights of Way service to improve the condition of the TPT as it passes through the reserve, draining and resurfacing it to a width of 1.8m. • Resurface the permissive pathway leading south-west from Furnace Lane behind the bund. • Renovate the dipping platform/boardwalk around pond 1.	***5.1, 5.2, 5.3, Figure 4.***	HIGH MEDIUM MEDIUM HIGH LOW
	Archaeology (Aim 9)		
Aim 9. To protect and interpret the reserve's archaeology.	• Consult with an archaeologist before undertaking any significant ground works in the vicinity of archaeological features. • Run events to explain and interpret the reserve's wildlife and landscapes in the context of its past.	***6.1***	MEDIUM LOW

Aims	Objectives and prescriptions	Cross Ref	Priority
	Recreation and Community Engagement (Aims 10 - 11)		
Aim 10. To maintain and improve public access to the reserve, taking a zoned approach to reduce disturbance to sensitive areas. .	**10.1 Improve visitor access to the reserve.** • Install two oak benches with back rests along the TPT. • Improve made paths. • Keep main paths and desire lines free from overhanging and encroaching vegetation. • Improve the Rotherham Road entrance to the reserve. • Renovate the planters and reseeded with wildflower mix. • Work in partnership with local riders, the PRoW unit, local land owners and other interested parties to investigate the feasibility of opening the TPT through the Washlands to horses and connecting it with the wider bridleway network.	***Sec 6.2***	LOW MEDIUM HIGH HIGH LOW MEDIUM
	10.2 Carry out works to improve visitor safety on the reserve. • Keep all entrances and main paths free of litter. • Work with SCC and RMBC to decrease dog fouling on site and prosecute offenders. • Work with the grazier to risk assess each new group of cattle to minimise the risk of negative encounters. • Monitor the interactions between the site users and the cattle and modify risk assessment as necessary.	***Sec 6.2***	HIGH MEDIUM HIGH HIGH

Aims	Objectives and prescriptions	Cross Ref	Priority
	Recreation and Community Engagement (Aims 10 - 11)		
Aim 11 Promote public participation in the management of the reserve and in enjoyment of its natural heritage by people of all ages and backgrounds.	**11.1 Work closely with interested individuals to deliver the work programme outlined in this management plan.** • Form a Reserve User Forum with associated mailing list for the reserve. • Run regular Volunteer Work Days on the reserve to allow participation in site management.	***Sec 6.3***	HIGH HIGH
	Economic Context (Aims 12-13)		
Aim 12. Continue to develop ongoing sources of grant aid and other income to support the management of the nature reserve.	**12.1 Continue to make grant applications and associated claims for revenue and capital works.** • Submit claims for HLS as required. • Manage payments in relation to the annual grazing license. • Investigate additional funding for projects and capital works.	***7.1***	HIGH HIGH HIGH
Aim 13: Raise public awareness of the reserve's fauna, flora and archaeology, and increase understanding of and support for management works	**13.1 Communicate the Trust's plans for the reserve to the wider community.** • Install notice boards at major site entrances. • Ensure joint SRWT/EA branding of the reserve at all entrances. • Include Woodhouse Washlands within the Trust's annual events programme, and delivers environmental and heritage activities e.g. guided walks on the reserve. • Promote events, work days and RAG meetings through posters on site, notices in local publications, on the SRWT website, social media and through the Kingfisher magazine. • Create a reserve leaflet, and release it in downloadable format.	***7.1***	MEDIUM HIGH HIGH HIGH LOW

9. Work Programme

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
1.1	Graze compartments A and at a stocking density =/< than 2 LU/ha/pa between 1st April and 31st July, and 2 LU/ha/ pa from 1st August – 31st October, to result in a final sward height of 5-15cm by the end of the growing season.	HIGH	X								
1.1	Graze compartments A and at a stocking density =/< than 1 LU/ha/pa between 1st April and 31st July, and 2 LU/ha/ pa from 1st August – 31st October, to result in a final sward height of 5-15cm by the end of the growing season.	HIGH		X	X	X	X	X	X	X	X
1.1	Manage compartments C and C2 as hay meadows, with an early August cut and followed by aftermath grazing to produce an uneven sward, height 5 - 15cm, by the end of the growing season.	HIGH	X	X	X	X	X	X	X	X	X
1.1	Manage compartments B1 and B2 as autumn grazing, with the sward growing undisturbed until September, followed by aftermath grazing to produce an uneven sward, height 5 - 15cm, by the end of the growing season.	HIGH	X	X	X	X	X	X	X	X	X

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
1.1	Manage comp B3 and B4 for skylark and meadow pipit, with sward growing undisturbed between April and July to a maximum height of 40 cm, followed by aftermath grazing to produce an uneven sward, height 5 - 15cm, by the end of the growing season.	HIGH	X	X	X	X	X	X	X	X	X
1.1	Control the spread of ragwort and both creeping thistle across the reserve as required.	MEDIUM	X	X	X	X	X	X	X	X	X
1.1	Monitor reserve's wetlands for Indian balsam and Japanese knotweed each spring and eradicate when found.	HIGH	X	X	X	X	X	X	X	X	X
1.1	Ensure all cattle are removed from the reserve promptly each October to prevent excessive poaching.	HIGH	X	X	X	X	X	X	X	X	X
2.1/5.1	Dredge pond 1 (dipping pond) to remove 80% of existing water soldier colony	LOW				X					
2.1/5.2	Dredge pond 2 (left pond) to remove 50% of existing aquatic and emergent vegetation.	HIGH		X							
2.1/5.3	Dredge pond 3 (right pond) to remove 50% of existing aquatic and emergent vegetation.	HIGH		X							
2.1/5.4	Introduce suitable marginal and emergent species from adjacent ponds to pond 4 (cow pond).	MEDIUM		X							
2.1/5.5	Dredge pond 5 (top pond) to remove 50% of existing aquatic free floating vegetation.	HIGH			X						

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
2.1/5.6/6.2	Re-line pond 6 (dry pond) and introduce suitable marginal and emergent species from adjacent ponds.	MEDIUM			X						
2.1/5.7	Introduce suitable marginal and emergent species from adjacent ponds to pond 7 (high pond).	MEDIUM			X						
1.2	Manage the periphery of the pond 8 (oxbow) to remove litter and discarded angling tackle.	HIGH	X	X	X	X	X	X	X	X	X
2.1/6.2	Dredge ponds 9 (B3 north) and 10 (B3 south) to remove 50% of existing aquatic and emergent vegetation and clear adjacent ditches.	MEDIUM	X								
2.2/5.1/6.2	Create a complex of additional ponds and scrapes within compartment C.	HIGH	X								
2.2/5.2/6.2	Restore ditches within compartment B3	HIGH	X								
2.2/6.2	Create a complex of wet ditches within compartment C with steep sides and which hold a minimum water depth of 10cm .	HIGH	X								
2.2/5.1	Create an area of open water within the swamp community (compartment A1)	MEDIUM					X				
2.2/6.2	Restore Beighton Mill Tail Goit through scrub removal, reprofiling and potentially by raising the water level if feasible.	HIGH	X								
2.2/6.2	Work with the Environment Agency to investigate the feasibility of a re-meandering scheme or other measures to increase the diversity of the river channel.	HIGH	X								
3.1	Coppice areas of scrub on the western bund	MEDIUM	X			X			X		

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
3.1/5.1	Create clearings within dense scrub on the reserve's eastern embankments and use cutting to create newt hibernaculae.	MEDIUM		X			X			X	
4.1	Control the spread of blackthorn into compartment A.	LOW									
4.2	Plant and protect 6 cuttings from the reserve's veteran crack willow trees.	LOW							X		
4.2	Plant a double thickness native species hedgerow along the western boundary of compartment C2.	MEDIUM						X			
4.2	Work with SCC and the EA to investigate the feasibility of establishing a poplar of young black poplar on the reserve.	LOW	X	X							
5.1	Produce a biosecurity brief for the reserve.	HIGH	X								
6.1	Monitor and adjust grazing levels and sward height in compartments B3 and B4 to suit skylark.	HIGH	X	X	X	X	X	X	X	X	X
6.1	Erect "dogs on lead" signs on site during the bird breeding season.	HIGH	X	X	X	X	X	X	X	X	X
6.1/10.1	Cut back vegetation and clear litter at entrance G	MEDIUM									
6.1/10.1	Sign entrance G as a gateway to Woodhouse Washlands	MEDIUM							X		
6.1	Way-mark main desire lines in compartment A	HIGH		X							
6.1	Way-mark main desire lines in compartment C	HIGH		X							
6.2	Review breeding success of lapwing and snipe across the reserve and adjust grazing levels as required.	HIGH	X	X	X	X	X	X	X	X	X

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
6.2	Manage edges of all scrapes to ensure bare ground is retained.	HIGH			X			X			X
6.2	Monitor water levels in newly created ponds, ditches and scrapes between March and August.	HIGH		X	X	X					
6.2	Thin ditch and scrape vegetation to allow wading birds access to the ground beneath.	HIGH				X		X		X	
7	CBC of the reserve	HIGH	X								X
7	Collect breeding bird data for skylark.	HIGH	X	X	X		X		X		
7	Collect breeding bird data for lapwing and snipe.	HIGH	X	X	X		X		X		X
7	Determine the extent and distribution of the reserve's harvest mouse population.	HIGH				X					
7	Carry out a reptile survey to determine the extent and distribution of the reserve's grass snake population.	HIGH								X	
7	Carry out a water vole survey of the Washlands and adjacent sites.	MEDIUM			X						
7	Install wildlife trail cameras on the River Rother as it passes through the reserve.	HIGH	X								
7	Phase One habitat survey of the reserve	HIGH									X
7	Great crested newt survey of the reserve's ponds	HIGH								X	
7	National Pond Survey of reserve's ponds	HIGH								X	
7	Encourage the recording of biological data for groups where this is lacking.	MEDIUM	X	X	X	X	X	X	X	X	X
7	Visitor survey.	HIGH							X		

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
7	Carry out a water vole survey of the Washlands and other adjacent sites.	MEDIUM				X					
7	Share all biological data collected with the Sheffield Biological Records Centre	HIGH	X	X	X	X	X	X	X	X	X
8	Repair and replace fences and gates as required.	HIGH									
8	Repare heavy duty metal fencing adjacent to entrance H	MEDIUM	X								
8/10.1	Work with the Rotherham Rights of Way service to improve the condition of the TPT as it passes through the reserve, draining and resurfacing it to a width of 1.8m.	MEDIUM		X	X	X	X	X			
8/10.1	Resurface the permissive pathway connecting entrances A and C	HIGH	X								
8	Renovate the dipping platform/boardwalk around pond 1	LOW					X				
9	Consult with an archaeologist before undertaking any significant ground works in the vicinity of archaeological features.	MEDIUM	X	X	X	X	X	X	X	X	X
9	Run events to explain and interpret the reserve's wildlife and landscapes in the context of its past.	LOW				X				X	
10.1	Install two oak benches with back rests along the TPT.	LOW						X			
10.1	Keep main paths and desire lines free from overhanging and encroaching vegetation.	HIGH	X	X	X	X	X	X	X	X	X
10.1	Renovate the planters at entrance C1 and reseeded with wildflower mix.	LOW		X							

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
10.1	Work in partnership with local riders, the PRoW unit, local land owners and other interested parties to investigate the feasibility of opening the TPT through the Washlands to horses and connecting it with the wider bridleway network.	MEDIUM				X	X				
10.1	Litter pick across reserve	HIGH	X	X	X	X	X	X	X	X	X
10.2	Maintain anti fouling signage on reserve entrances	MEDIUM	X	X	X	X	X	X	X	X	X
10.2	Work with SCC and RMBC to support anti-fouling initiatives.	MEDIUM	X	X	X	X	X	X	X	X	X
10.2	Risk assess new group of cattle.	HIGH	X	X	X	X	X	X	X	X	X
10.2	Maintain patrol log.	HIGH	X	X	X	X	X	X	X	X	X
11.1	Run Reserve User Forum with associated mailing list.	HIGH	X	X	X	X	X	X	X	X	X
11.1	Hold regular Volunteer Work Days	HIGH	X	X	X	X	X	X	X	X	X
12.1	Submit claims for HLS.	HIGH	X	X	X	X	X	X	X	X	X
12.1	Manage payments in relation to the annual grazing license.	HIGH	X	X	X	X	X	X	X	X	X
12.1	Secure additional funding for projects and capital works.	HIGH	X	X	X	X	X	X	X	X	X
13.1	Install notice boards at entrances A, C1, F and G.	MEDIUM		X					X		
13.1	Ensure joint SRWT/EA branding of the reserve at all entrances.	HIGH	X								

Objective	Prescription	Priority	2017/18	2018/19	2019/20	2020/21	2021/22	2021/22	2022/23	2023/24	2024/2025
13.1	Deliver environmental and heritage activities on the reserve.	HIGH	X	X	X	X	X	X	X	X	X
13.1	Promote events, work days and reserve user forum meetings	HIGH	X	X	X	X	X	X	X	X	X
13.1	Create a reserve leaflet in PDF format and upload to SRWT website	LOW							X		

Glossary

BAP	Biodiversity Action Plan
EA	Environment Agency
JNCC	Joint Nature Conservation Committee
LNR	Local Nature Reserve
LRDB	Local Red Data Book
PRoW	Public Right of Way
RMBC	Rotherham Metropolitan Borough Council
SBSG	Sheffield Bird Study Group
SCC	Sheffield City Council
SRWT	Sheffield and Rotherham Wildlife Trust
TPT	Trans Pennine Trail