



Sheffield &
Rotherham

Management Plan for Crabtree Ponds Local Nature Reserve

April 2016 – March 2025

DRAFT

Acknowledgements

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1 INTRODUCTION

Sheffield & 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. Sheffield & Rotherham Wildlife Trust aims to promote conservation, advance education in environmental matters and improve the quality of life in Sheffield and Rotherham, through the development and promotion of sustainable land management practices, linked directly to both rural and urban regeneration.

Crabtree Ponds is a small, inner city reserve consisting of woodland and open water habitat. The reserve forms part of the wider Living Don, Living Landscapes programme. The River Don itself forms one of the key corridors within the network for nature. The river flows from its headwaters in the Peak District, through South Yorkshire before joining the Humber. The programme area is essentially the Upper Don Basin within South Yorkshire - upstream of Sprotbrough, Doncaster. A partnership project, 'The Living Don', led by Sheffield and Rotherham Wildlife Trust, is working to enhance a number of ecological networks or 'Living Landscape' areas by creating or enhancing habitats, naturalising water bodies and improving green infrastructure such as footpath links and cycleways. Community engagement is central to all these activities to ensure that local needs are met, and the Living Landscape is sustainable for the future.

The objectives of the Living Don Living Landscapes programme are as follows:

- ❖ To manage core sites within the landscape to provide quality areas for biodiversity and recreation.
- ❖ To connect the core sites with other green spaces including other nature reserves, parks, allotments and gardens.
- ❖ To undertake and promote positive management of the natural environment to provide an ecologically functional landscape that provides ecological, economic, social and environmental services.
- ❖ To promote and enable appropriate public access to, and enjoyment of, wildlife reserves throughout Sheffield and Rotherham.
- ❖ To increase public understanding of the Living Don area's local natural heritage, and participation of local people in the care and enjoyment of their local environment.

1.1 Purpose and Formulation of the Plan

Crabtree Ponds was originally constructed during the 19th century as an ornamental pond in the grounds of Crabtree Lodge. In the 1940s the lodge was demolished and the site occupied by a nursing home. This nursing home has recently closed and the land is currently up for sale. Sheffield Wildlife Trust has had a relatively long history of involvement with Crabtree Ponds, and has been involved in projects since 1988, in partnership with Sheffield City Council. The freehold ownership of the site, held by Sheffield City Council's Departments of Parks, Woodlands and Countryside, Highway Services and Social Services, was leased to Sheffield & Rotherham Wildlife Trust in 2002 for a period of 30 years.

The first SRWT management plan covered from 2002 to 2006. A second and third management Plan covered 2006 to 2011 and 2011 to 2016 respectively. Given that Crabtree Ponds is small compared to other Sheffield and Rotherham Wildlife Trust reserves, and is therefore relatively uncomplicated, it has been decided to extend the period that this plan will cover from 5 years to 9 years. The current plan sets out a detailed work programme for this period, and aims to continue with a programme of management for the continued benefit of wildlife and local people who use the site.

Following a review of previous management plans, and community consultation through RAG meetings and visitor surveys, a series of aims and objectives for Crabtree Ponds have been compiled. These were further consulted on, and combined to provide a continuing, up to date, comprehensive management plan,

which can be used for the long-term conservation management of the reserve. The plan will be revised in 2024/25.

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 that form the framework of management.
- ❖ To outline the rationale for management so as to give a clear and comprehensive explanation of why aspects need management and what form that management will take.
- ❖ To provide a key document from which projects are developed and associated funding sought.
- ❖ The plan allows consistency and continuity so that when changes of staff take place, or changes in ownership or disposal of the land occurs, then management aims, objectives and prescriptions are continued.

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

1.2 Vision Statement

Crabtree Ponds provides a quiet sanctuary in a busy part of Sheffield, where the appeal of open water attracts a wide range of people with varying cultural backgrounds to enjoy its peacefulness. This natural draw can be utilised to involve and engage people further in the care and management of the nature reserve.

2 MANAGEMENT AIMS AND OBJECTIVES

	Aims	Objectives
2.1 BIODIVERSITY		
Aim 1	Conserve and maintain the ponds to a high standard to optimise the wildlife potential.	<ul style="list-style-type: none"> a) Reduce leaf litter and amount of shading in the ponds through a regular process of selective pruning and removal of trees located at the edge of the ponds. b) Improve the habitat adjacent to the main pond by increasing the amount of ground vegetation cover. c) Reduce the impact of litter and dumping in the ponds by regular litter removal. d) Manage or remove invasive vegetation. Continue to treat Japanese knotweed until eradicated from the site. e) Pond weed was removed every other year in the previous management. The management regime for pond weed removal is different in this management plan, taking place more frequently but with the inclusion of 'break' years in which no weed is removed. Remove only a proportion of the weed present and focus on non-native species, such as Canadian waterweed. f) Continue to manage vegetation on the island within the pond. Remove trees and keep the vegetation short and 'tussocky' to provide good breeding habitat for birds.
Aim 2	Enhance the biodiversity value of the woodland.	<ul style="list-style-type: none"> a) Promote the natural regeneration of the shrub layer and ground flora through selective pruning, felling and thinning. Particularly through the removal of privet from the site and selective felling of a few large poplar and sycamore trees. b) Supplement natural regeneration with planting of suitable native shrub layer, ground flora and replacement tree species, such as hawthorn or blackthorn, if necessary. c) Maintain and create a quantity of dead wood on site, to increase biodiversity value whilst maintaining a low risk of fires. Felled trees and other wooden debris will be used to create small habitat piles on site away from the pond. d) Coppice management of larger trees on dam wall so as to diversify the structure of

		<p>the vegetation and prevent damage to the wall.</p> <p>e) Provide additional refuges, in the form of artificial boxes, for birds and bats.</p> <p>f) Creation of wildflower habitat by the Crabtree Close and southern Barnsley Road entrances to increase habitat diversity and improve the aesthetics of the entrances.</p>
Aim 3	Record and monitor the ecological features of the reserve.	<p>a) Maintain an up-to-date record of biological information from surveying and by encouraging the reporting of observations from SRWT staff, members of the public and local groups.</p> <p>b) Undertake invertebrate surveys to monitor further changes since the restoration work and other management practices. One early-on in the plan and one in the plan's later years.</p> <p>c) Undertake surveys of reptiles and amphibians, and fish present in the pond throughout the course of the plan. Again one early-on in the plan and one in the plan's later years.</p> <p>d) Monitor Local Biodiversity Action Plan species and habitats in accordance with nationally and locally agreed plans and processes.</p> <p>e) Undertake a bat survey, particularly to monitor changes after woodland thinning works and the installation of any additional bat boxes. Preferably a survey would also be conducted prior to additional bat box installation to provide findings with which to compare the 'after' results. Monitor the use of bat boxes.</p> <p>f) Undertake a fungi survey towards the middle and end of the management plan.</p> <p>g) Undertake a Common Bird Census survey towards the middle and end of the management plan. Monitor the use of bird boxes.</p> <p>h) Undertake small mammal surveys throughout the management plan. One early-on in the plan and one in the plan's later years.</p> <p>i) Towards the end of the management plan undertake a Phase One Habitat Survey, particularly to monitor changes after woodland thinning works.</p>

2.2 INFRASTRUCTURE		
Aim 4	Maintain the quality and quantity of historical features on the reserve.	<ul style="list-style-type: none"> a) Undertake minor repairs and remove any vegetation that is damaging boundary walls when required. b) Secure funding for major repointing work to the Barnsley Road and Crabtree Road walls, and carry out the necessary works. c) Prevent damage to the dam wall by managing trees and shrubs as coppice to maintain the integrity of the structure. Also remove trees from the retaining wall in the sink area to prevent damage. d) Maintain & undertake repairs to the newly installed interpretive metal railings and knee rails along Crabtree Close and part of Barnsley Road. Re-paint as required to maintain their quality.
Aim 5	Provide and maintain access routes and appropriate on-site furniture in order to allow for accessible and safe enjoyment of the reserve.	<ul style="list-style-type: none"> a) Continue regular patrolling to ensure site is kept to a safe, attractive and suitable standard. b) Improve and maintain the main path network (including steps and the boardwalk) by resurfacing and revetment work where necessary. Surfaces should be swept or scraped free of slippery leaf litter in the winter months, with a particular focus on steps, the path along the dam wall of the pond, and the boardwalk. c) Continue regular clearance of encroaching and over-hanging vegetation. d) Continue to seek funding for boardwalk repairs or replacement. Alternatively, consider the eventual closure and removal of the boardwalk if funding cannot be secured. e) Maintain suitable seating facilities to a safe, attractive and serviceable standard. Some benches will be removed once fully deteriorated leaving a minimum of two. May then need to consider moving the bin closer to remaining benches. f) Seek funding for further interpretive features, such as another carved bench or a sculpture.

		<ul style="list-style-type: none"> g) Maintain signage, ensuring legible, fit for purpose and free from graffiti. h) Secure funding & replace the interpretation board and rubbings posts. i) Ensure the emptying of the litter bin on a regular basis. j) Undertake minor repairs to boundary fences as necessary. k) Reinstate the missing sections of boundary to the west of the site – next to the derelict Norbury nursing home site as required. l) Undertake tree safety work as necessary. Seek funding for the removal of large trees along site boundaries that require a tree surgeon.
2.3 CULTURAL		
Aim 6	Improve access to the reserve for all sections of the local community.	<ul style="list-style-type: none"> a) Encourage and support people of all ages to use and enjoy the reserve, through the provision of a range of events and activities (further details within aim 8). b) Encourage responsible use of the site by dog walkers. c) Open and maintain sightlines across the site by clearance of privet ground storey and over-hanging branches to increase light levels in the site and enhance the feeling of safety for users.
Aim 7	Promote and encourage community involvement in the reserve.	<ul style="list-style-type: none"> a) Continue to support the existing Reserve Advisory Group members, and encourage further involvement by community members. b) Increase awareness of the importance of the site for people and wildlife by holding events at the reserve and providing information. c) Encourage users of the reserve, including local groups, to report observations such as biological information and vandalism. d) Forge greater links with local wildlife groups in Burngreave who could then support SRWT work, promote Crabtree Ponds at local events and encourage greater interest and involvement in the reserve's management.

<p>Aim 8</p>	<p>Promote awareness and understanding of the importance of biodiversity and the natural world.</p>	<ul style="list-style-type: none"> a) Organise 2 annual events for members of the public from any age group and background, such as one bat walk and one pond dipping session per year. b) Encourage schools to undertake visits independently and unsupervised by SRWT, and also with WildPlay Outdoor Learning staff, if contacted by the school. c) Encourage Wild at Heart project groups to visit the site regularly to conduct a variety of activities, such as health walks, and wildlife watching or photography. d) Run at least 2 community workdays per year. e) Provide information on-site in the form of interpretation boards and rubbings posts to increase knowledge of the site's wildlife and encourage visitors of all ages to better engage with the site. If funding becomes available create an interpretation board with nature trail specifically to highlight the bat and/or bird boxes.
<p>Aim 9</p>	<p>Monitor and improve the way the reserve is perceived, used and valued by the public.</p>	<ul style="list-style-type: none"> a) Conduct a visitor survey towards the middle and end of this management plan to assess recreational usage trends, activities and perceptions. b) Analyse the requirements of the Burngreave ward's citizens provided by the results of the 2021 National Census. c) Continually invite informal feedback from partner organisations, site users, local residents, and interest groups by communicating effectively with such groups and providing contact information. d) Encourage SRWT staff to communicate and record users' perceptions and feedback. e) Keep the local community informed of project progress through the use of publicity. f) Undertake regular litter picking / clearance of fly-tipped rubbish.
<p>2.4 ECONOMIC</p>		
<p>Aim 10</p>	<p>Continue and develop sources of grant aid and other income to support the management of the reserve.</p>	<ul style="list-style-type: none"> a) Investigate further funding opportunities and apply whenever appropriate. b) Recruit SRWT members to support the ongoing management of the reserves.

3 SITE DETAILS

3.1 Location and Extent

Figure 1 – Crabtree Ponds is situated to the north of Sheffield city centre (Grid Reference SK 362 899). It covers an area of 1.4 ha and is located within the electoral ward of Burngreave, although it also serves the neighbouring population of Firth Park. The River Crab runs along the Northern edge of the site, later joining Bagley Dyke.

The reserve is bound on all sides by housing and other developments, with housing backing onto the reserve from the north, Crabtree Close to the east, Crabtree Road and the Norbury site to the west, and Barnsley Road running along the boundary to the south. There are footpath entrances to the site from each road (Figure 3). Vehicles cannot access the site and there is no designated car parking, but parking can be found along nearby roads, such as Crabtree Close.

Crabtree Ponds is a small, inner city reserve, located in a densely populated area with little green space. Despite its small size, the reserve has a rich variety of plant and animal species. It is largely used for its 'naturalness', which contrasts strongly with the surrounding area.

3.2 Landscape Value and Context

Crabtree Ponds is a small, urban reserve located in a densely populated area with little green space. Despite its small size, the reserve provides a green haven for a rich variety of plant, animal and fungal species.

Whilst bordered by roads and other developments, the site does have links to the nearby Little Roe Wood and Roe Wood (which is Ancient Semi Natural Woodland) (Figure 1). As a result, the Roe Woods and Crabtree Ponds sites combine to form an important green corridor for the movement of wildlife around the city. Notably, Crabtree Ponds provides open water habitat that serves as an important feeding site for populations of bats. The conservation of such open water habitats is becoming of increasingly high priority in Biodiversity Action Plans, more information on which can be found in Sheffield's Wetland Habitat Action Plan.

As a public site, Crabtree is very popular with the local population who value the site for its 'peace and quiet'. Dog walkers are regularly seen around the site. In terms of history, the site is the last remnant of the former Crabtree Lodge and its once extensive grounds.

As previously mentioned the reserve forms part of the wider Living Don, Living Landscapes programme - the River Don itself forms one of the key corridors within the network for nature. Led by Sheffield and Rotherham Wildlife Trust, this 'Living Don' project is working to enhance a number of ecological networks or 'Living Landscape' areas by creating or enhancing habitats, naturalising water bodies and improving green infrastructure such as footpath links and cycleways. Community engagement is central to all these activities to ensure that local needs are met, and the Living Landscape is sustainable for the future.

3.3 Site Tenure and Occupancy

Figure 4 – the freehold ownership of the site, held by Sheffield City Council's Departments of Parks, Woodlands and Countryside, Highway Services and Social Services, was leased to Sheffield & Rotherham Wildlife Trust in 2002 for a period of 30 years.

3.4 Designations and Policy Context

Crabtree Ponds is protected by legislation found in the **Sheffield Unitary Development Plan (1998)** as an Area of Natural History Interest, an Area of Special Character, a Public Open Space, and a Local Nature Reserve, together with Little Roe Wood and Roe Wood. These designations provide the site with a good level of protection from development.

The **Sheffield Countryside Strategy (1999)** set out the Council's '**Out and about in Sheffield's Countryside**' approach to maintaining and improving access to and in the countryside. Under this document the Council set out the following policy:

ASC4 - In seeking to improve the footpaths network in Sheffield, the City Council will give high priority to:

- iii Paths, which would extend access to the countryside for people with disabilities;
- vi Access to features of interest or sites for active recreation;
- vii Areas where new development creates a natural route for people to follow;
- viii Strategic routes and green links.

Sheffield's **Green and Open Space Strategy (2010 – 2030)** sets out the Council's approach to nature and biodiversity management and the creation of green connections for people and wildlife. Under this document the council sets out the following policies:

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

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

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

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

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

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

3.5 Adjacent Land Ownership

Three roads surround the site - Barnsley Road, Crabtree Close and Crabtree Road, all of which are owned by Sheffield City Council's Highways Department. To the north, the land is occupied by a row of private housing.

In addition to Crabtree Road, the Norbury site also forms part of the adjacent land along the western border. This land was previously the site of the Norbury Nursing Home, however the home is now closed and the land is up for sale. Attention should be paid to any change of ownership or proposed development on the site over the course of this management plan.

3.6 Site history and Past Management

Crabtree Ponds was originally constructed during the 19th century as an ornamental pond in the grounds of Crabtree Lodge. In the 1940s the lodge was demolished and the site occupied by a

nursing home. This nursing home has recently closed and the land is currently up for sale. Sheffield Wildlife Trust has had a relatively long history of involvement with Crabtree Ponds, and has been involved in projects since 1988, in partnership with Sheffield City Council.

The central pond was dredged during the 1970s and involved the use of a crane. The silt was dug out of the pond, left to drain and then removed from the site by a conveyor belt. It was then loaded on to trucks and disposed of in the surrounding area, spread on the ground where the adjacent housing estate now stands. During the 1980s and early 1990s Sheffield City Council undertook some thinning work in order to open the canopy and removed the last of the mature elms, which had become infected by Dutch elm disease.

Between 1988 and 2002, the Wildlife Trust undertook simple pond management work (such as the removal of litter from the pond), removed fly tipped rubbish and excessive algal bloom. The Trust also installed a substantial boardwalk in 1993 / 94 and has carried out on-going maintenance as necessary. Similarly the site's rustic wooden benches were installed by the Trust at the same time. Between 2002 and 2006 (the first 5 years of the 30 year lease), more substantial works took place, which included general maintenance, repairs of benches and footpaths, installation of an interpretation board and rubbings posts, and most significantly the dredging of the Sink and the main pond in 2006.

There has been a history of fishing at the main pond, and although there was no evidence of this taking place between 2002 and 2006, local people were observed fishing again from 2008 onwards.

The Trust's work continued between 2007 and 2011 and included replacing the Sheffield Wildlife Trust entrance signs, enhancing the bank walls of the pond, general maintenance, upgrading some of the footpaths and strimming the encroaching vegetation.

Similarly, general maintenance of the reserve by the Trust continued between 2011 and 2016, with regular litter picking, sign maintenance, strimming, and fly-tipping removal by both the land management and nature reserves teams. Larger projects have also taken place, such as the treatment of Japanese knotweed, installation of bat and bird boxes, coppicing of trees around the pond, and the removal of branches overhanging the footpaths and pond. Selective vegetation removal has opened-up the reserve, increasing the light level and accessibility of the pond for wildlife. Attempts to introduce marginal and aquatic plants to the stream area (known as the 'sink') were unsuccessful as the plants did not grow. Such attempts will not be continued. Work has also taken place to improve access around the site for people, with footpath repairs and the replacement of various steps including those at the western end of the boardwalk, those at the Crabtree Road entrance, and those with a handrail leading down from the southern entrance off Barnsley road. Thought has been given to encouraging more local support for the care of Crabtree Ponds, and the installation of an interpretively designed bench was a step towards giving the reserve its own flair. The installation of interpretively designed railings featuring wildlife designs by local schools and youth groups has furthered the reserve's local distinctiveness, with the hope of bringing the community together to put their own stamp on the reserve and encourage its protection.

3.7 Services

There are no services present on site, though services run alongside the boundaries (see utilities maps in the SRWT files for details).

3.8 Infrastructure

3.8.1 Public Rights of Way and Informal Paths

There is a good network of desire lines with one designated public footpath running through the reserve (Figure 3). They can be prone to encroaching vegetation, which leads to a sense of insecurity and reduces the ease of access. Work continues on a regular basis to cut back vegetation and keep the boardwalk in usable condition. The boardwalk runs along the eastern side of the pond.

3.8.2 Boundaries

Figure 5 – The site boundary consists of several different types of fences and walls, all varying in condition. The western boundary, along Crabtree Road, is a wetstone wall, which is occasionally damaged by car collisions. The boundary running past the Norbury site is a fence varying in condition along its length. Along this length there are sections without fencing where the boundary is not clearly defined. It will become particularly important to reinstate these sections of fencing as development begins on the Norbury site. It may be necessary to check the boundary location stated on the lease agreement. There are also two sections of post and rail fence along the boardwalk. Up the bank to the East of the pond is a section of now defunct fencing. This should be removed throughout the course of the plan.

Private housing backs onto the site along the northern edge. The site boundary along this northern edge officially runs along the river Crab as it flows through the site.

The southern/ south-eastern boundaries, along Crabtree Close and Barnsley Road, are composed of a mixture of wetstone wall, railings and knee rails, please see section '6.2 Boundaries' for more information.

3.8.3 Interpretation Features and Other Structures

There are five simple wooden benches located around the central pond. These vary in condition and are occasionally vandalised. Along the western edge of the pond there is one interpretation style bench, featuring designs of local wildlife. This bench receives noticeably less graffiti and damage than the other benches.

On the north, south and west sides of the pond, there are retaining walls made of stone and cement. Engineering surveys from 2004 have highlighted areas required for their maintenance, and monitoring required. In response to recommendations, the mature trees have been removed to reduce the risk of wind throw and the consequent undermining of the dam structure. The coppicing of larger trees behind the dam wall the north of the pond will continue as often as necessary to protect the structure of the retaining wall.

A metal litterbin, provided by the Burngreave Environmental Panel is located on the north-eastern corner of the pond.

There is one interpretation sign located along the path down to the pond from Crabtree Close. There are 'rubbings posts' along the path around the pond with information on different species of invertebrates, birds and amphibians. These will be replaced during this management plan. Reserve name boards can be found at all three entrances. They were replaced in 2008 after their condition had deteriorated. They receive a small amount of vandalism.

3.9 Archaeological interest and Existing Features

Built during the 19th Century, the 1200m² pond, located in the centre of the site, was originally created as part of a network of ornamental fishing ponds for Crabtree Lodge. Crabtree Lodge was demolished during the 1940s and became the site of Norbury Nursing Home. The home has now closed and the land is for sale. Over the years the ponds were filled-in to leave the site as it is today, with the central pond being a key feature for this area of Sheffield due to the importance of conserving open water habitat.

4 ENVIRONMENTAL INFORMATION

4.1 Topography

The whole site consists of a gentle slope that meets the steep valley of the River Crab along the northern edge. The site is approximately 85 metres above sea level.

4.2 Geology and Pedology

The site is situated on the Lower Coal Measures with brown earth soils. The alkaline nature of the pond water is unusual and suggests that this could be due to the mortar and building materials used in its construction.

4.3 Climate

Data is available for the thirty-year average (1981 - 2010) from the following local weather station.

Location	Mean Annual Rainfall (mm)	Mean Annual Sunshine (hrs)	Average Temperature (°C)	
			Max	Min
Sheffield (131m)	834.6	1444.9	13.4	6.6

The prevailing wind is from the southwest.

4.4 Hydrology

Figure 6 - The site is fairly well drained due to the steep slopes which grade down to the River Crab at the north end of the site. There is no structure that feeds water from the main pond to the stream, so they are regarded as two separate water bodies.

During the dredging works on the main pond, an inlet was found at the shortest edge of the pond to the southwest. It is located where the newly constructed (nicospan) revetment joins the wall. The pond is also fed by rainwater. A leak in the main pond was found on the north-eastern edge of the pond (where the concrete cap of the dam is). It was thought that the leak existed where the clay had come away from the concrete cap. During the dredging work, this seam was tamped with clay. However, although there was no evidence of further leakage, the water levels did not change. The water level of the main pond still fluctuates very little throughout the year, although at the time of writing there have been reports from locals that the concrete cap may have started to leak again. The water level of the pond should be monitored throughout this management plan to assess the potential leak. Further action will be taken as deemed necessary from the results of the monitoring.

The stream (known as the 'sink') leads into a brick outlet, which then goes via a culvert to Bagley Dyke. However, it is thought that this culvert has collapsed and silted up. Despite efforts to flush it clear by Sheffield City Council Engineering Department in 2006, it remains blocked. This results in the accumulation of silt and water at the bottom of the stream, which from time to time will need to be

dredged for health and safety reasons. Sufficient revetment has been built to accommodate future dredging.

4.5 Biodiversity and Biodiversity Action Plan overview

Crabtree Ponds comprises two main habitats: semi-natural deciduous woodlands and standing water (see Figure 7: Phase 1 Habitat Survey 2009). These provide a valuable resource for wildlife, in particular bats, invertebrates and amphibians.

Species and Habitats

The following species and habitats have been recorded on site:

	Species	Habitats
UKBAP Species and Habitats (2007)	Common toad (<i>Bufo bufo</i>) House sparrow (<i>Passer domesticus</i>) Dunnock (<i>Prunella modularis</i>) Brown Long-eared bat (<i>Plecotus auritus</i>)	Pond, Stream, Marginal aquatic vegetation/ plants
Sheffield LBAP Species and Habitats (2002)	Common Pipistrelle bat (<i>Pipistrellus pipistrellus</i>) Brown Long-eared bat (<i>Plecotus auritus</i>) Whiskered/ Brandt's bat (<i>Myotis mystacinus/ M. brandtii</i>)	
Sheffield Associated LBAP Species and Habitats (2002)	Common frog (<i>Rana temporaria</i>) Common toad (<i>Bufo bufo</i>) Smooth newt (<i>Triturus vulgaris</i>) Palmate newt (<i>Triturus helveticus</i>) Chiffchaff (<i>Phylloscopus collybita</i>)	
IUCN Red List Species	At the time of writing, all species currently recorded at the Crabtree Ponds site are listed on the IUCN Red List as of 'Least Concern'.	

Note: There are no up-to-date Local BAP species lists, however an updated Sheffield Red Data Book is due to be released during this management plan listing threatened species in the local area. The above table could be updated once this is released to reflect the findings of the Red Data Book. However, species listed in existing LBAP records are still classed as priority species for conservation. Recent Local Biodiversity Action Plans focus on priority habitats for conservation instead of specific species. Crabtree Ponds is listed as a target site in Sheffield Council's Biodiversity Action Plan for Wetlands (2012) due to the importance of the habitats and LBAP species listed in the table above.

4.6 List of Surveys, Monitoring Schemes and Reports

Author	Date	Survey	Summary
Chris Milego	2000	Bats into BAPs	Bat Survey Report in woodlands in North Sheffield, including Crabtree, showing flight paths and suspected roosts. Pipistrelles were seen at Crabtree.
Sheffield City Council	2001	Structural Surveys for Sheffield Wildlife Trust	Design and Property Engineering Division. Various recommendations for improvements such as work to walls and management of trees on the dam wall.
Matty Levan	2001	Ecological Information on Crabtree Ponds and Woods	A summary of existing records, including maps, management plans, species lists from 1980 to 2001
Belinda Wiggs & Susan Shorter	2001	Phase 1 Habitat Survey of Crabtree Ponds	The site comprises two main habitats, semi-natural deciduous woodland and open water. The woodland is dominated by sycamore with some ash, poplar, aspen and birch. The shrub layer consists of ash, elder, hawthorn and holly. In some areas on the steep slopes above the stream there are bluebells. The large pond contains duckweed and hornwort.
Brett Nuttall	2001	Tree safety survey	Identifies a number of trees, mainly on the peripheries of the site, which require some tree safety works.
Michael Senkans	2001	Fungi Survey	A good site for fungi as there is a lot of dead wood on the ground, also it is dark and damp. 27 species identified.
Jim Flanagan	2001	Preliminary Invertebrate Survey	Using nets and physical hand collection, over 40 species were found, both terrestrial and aquatic. The first record of a bug in the local area made. Two scarce local species were found, a 2 spot ladybird and a leaf beetle.
Cheryl Gibson	2001	Butterfly Survey	This is not a good site for butterflies. The woodland is dark and shady. There is little ground flora and almost no grasses, which could be food plants.

Matt Shaw & Nabil Abbas	2001	Small Mammal Survey	Small mammal trapping using Longworth live traps. Only 2 wood mice found.
Jim Flanagan	2001	Reptile survey	Smooth and palmate newts found.
Matt Shaw	2001	CBC Bird Survey	18 bird species seen, 8 of these held territories. One red listed species, song thrush, held a territory. One amber list species, dunnock, seen.
Emerald Ecology	2001	Preliminary Invertebrate Survey	Species list of invertebrates. Undertaken by J. Flanagan.
Nik Baker & Ceris Probert	2003	CBC Bird Survey	15 species seen, 11 species held territories. 2 red list species, song thrush and bullfinch, seen. One amber list species, dunnock, seen.
Several	2001, 2003	Fish records	List of fish sighted.
Annabelle Kennedy	2003	Bird boxes survey	Map showing the position of bird boxes.
Karen Graham (RAG member)	2002, 2003, 2004	Bird lists	List of species seen at the reserve in the last few years.
Brett Nuttall	2003	Tree safety survey	Identifies, lists and maps trees in some need of silvicultural attention.
Annabelle Kennedy & Gareth Taylor	2004	Water levels and silt measurements	Water levels measured, and the volume of silt calculated through the use of ranging poles and calculations of total depth minus water depth (giving silt depth). Measurements taken at a number of locations throughout the pond.
Andrew McCarthy Associates	2004	Ecological Survey of freshwater macro-invertebrates and plant macrophytes	A scientific report giving pond scores using the Predictive System for Multimetrics (PSYM). 16 emergent or submerged plant species recorded. Smooth and palmate newts found. The ponds were found to be of poor quality due to the accumulation of silt and nutrients. Recommendations given for dredging the ponds.
Belinda Wiggs	2002, 2003, 2004, 2005.	Monitoring	Photo monitoring across the pond & site.

Matt Shaw	2005	Common Bird Census	CBC methodology. 20 species recorded, 15 species holding territories. 2 red list species, song thrush and bullfinch had territories. One amber list species, dunnoek, had territories.
Author unknown	2005	Visitor survey	Over 70% of people confirmed that the site has improved over the last two years. Concerns mainly about personal safety, levels of litter, rats and the state of the pond. Encouragingly, people remain enthusiastic, showing a particular interest in the wildlife and a desire to see more site information.
Eszter Horvath	2005	Phase One Habitat Survey	Detailed description of the habitats. Mixed deciduous woodland, with about 10 tree species, dominated by sycamore, and some ancient woodland ground flora.
Jim Flanagan & Bob Eades	2008	Ecological Survey of freshwater macro-invertebrates and plant macrophytes	A scientific report giving pond scores using the Predictive System for Multimetrics (PSYM). 27 emergent or submerged plant species recorded in the main pond, 10 or submerged plant species recorded in the sink. 10 macro-invertebrate taxa found in the main pond, 6 macro-invertebrate taxa found in the sink. Smooth newt larvae recorded. Management recommendations provided.
Julie Riley, Laura Dennis, Lauren Garside & James Owers	2009	Phase One Habitat Survey	The dominant habitat type of the reserve is semi-natural woodland, which extends across the entire site; there is also a central standing water pond with a planted island and a stream near the northern boundary.
Simone Slack (edited by Sarah Sidgwick)	2011	Visitor survey	The results of the 2011 survey show that many of the same problems from the previous survey still exist. These mainly consist of concerns for personal safety and levels of litter. It is still encouraging to hear that people enjoy the reserve and value the work being done to conserve the site for the benefit of wildlife.
Author Unknown	2011	Common Bird Census	CBC methodology. 19 species recorded.
Nick White	2011	Bat survey	Dawn and evening surveys. The pond area saw the greatest levels of bat activity, mostly foraging behaviour.
Sorby Natural History Society (Steve Clements)	2011, 2012	Fungi Records	Species list of fungi at Crabtree Ponds from Sorby Natural History Society records. Undertaken by Steve Clements.
Steve Clements	2015	Fungi Survey	36 species identified. A lot of ivy on site may be leading to a decline of fungal species, particularly mycorrhizal species. Consider reducing ground cover of ivy and increasing dead wood on site to benefit fungi in the future.

5 BIODIVERSITY

5.1 Overview

Crabtree Ponds is a small, inner city reserve, located in a densely populated area with little green space. Despite its small size, the reserve has a rich variety of plant and animal species. It is largely used for its 'naturalness', which contrasts strongly with the surrounding area. It contains mainly semi-natural deciduous woodland and open water habitat.

Phase One Habitat Surveys, following the technique for environmental audit written by the Joint Nature Conservation Committee, were carried out on the reserve in 2001, 2005 and 2009. These Phase One Surveys described and mapped the habitats present on site. Future Phase One Habitat Surveys should ideally be carried out after any significant woodland management has taken place, in order to follow any major changes in the vegetation.

5.2 Woodland and Scrub

The dominant habitat type of the reserve is semi-natural deciduous woodland which extends across the entire site, the dominant species being sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*). There are also some patches of poplar (*Populus sp.*) and hawthorn (*Crataegus monogyna*). At the Crabtree Road entrance there is a steep semi-natural wooded bank north of the footpath, which continues south of the footpath and follows the path into the centre of the reserve. The woodland canopy in this area is dominated by sycamore and ash. Moving towards the Barnsley Road entrance and around the south side of the pond, horse chestnut (*Aesculus hippocastanum*) and poplar become more frequent in the canopy layer. Wild cherry (*Prunus avium*) dominates the canopy layer at the Crabtree Close entrance, north of the footpath. South of the path is a large crab apple (*Malus sylvestris*) tree. North of the pond are several aspen (*Populus tremula*) trees and also hazel (*Corylus avellana*).

The shrub layer consists largely of regenerated tree species including ash, sycamore (*Acer pseudoplatanus*), holly (*Ilex aquifolium*) and privet (*Ligustrum sp.*). In places this layer has become extremely dense, due to thinning work by Sheffield City Council during the 1980s.

The woodland trees are of a similar age, creating a dense canopy cover. This restricts the amount of light reaching lower layers in the woodland. Similarly, the shrub layer is very dense in places. Both would benefit from thinning to increase the penetration of light into the wood and diversify the ground flora, whilst also maintaining the diversity of the shrub layer. Much of the shade is caused by the dominance of sycamore and privet, the planned thinning of which will be of particular benefit. Given the small size of the site and its importance for recreation and as a visual amenity, it will be essential to select trees for removal very carefully. Once any thinning work has taken place, if any supplementary planting is required due to a lack of natural regeneration, the use of native species, for example oak (*Quercus petraea*), would benefit biodiversity. In addition, the planting of species that produce fruit or seed, such as blackthorn (*Prunus spinosa*) or hawthorn, would benefit a variety of bird species.

The woodland structure was not particularly diverse until the trees on the dam wall were removed. Many of the trees have survived and are coppiced. This has resulted in a more diverse vegetation structure on site, creating a greater variety of niches for different wildlife. The site was deemed to be poor for Lepidoptera (butterflies and moths) and this management may have improved conditions for this family.

Management

The dense canopy of the woodland prevents the development of complex structural diversity that is associated with a diversity of wildlife. However, as the woodlands are small, limited thinning or

selective felling can take place to open up the structure. Selective felling of, for example, large sycamore or poplar trees would enable younger trees to grow straight up into the canopy, providing a more diverse canopy structure and preventing trees from arching over footpaths. Resources should be concentrated on managing the woodland edges, particularly around the pond and along access routes, in order to achieve the desired variation in heights and densities of trees and shrubs. This would create woodland rides, which are beneficial to a variety of species including bats. The continued cutting back of encroaching or overhanging vegetation along footpaths will open up the reserve and let more light in, helping site users to feel safer on the reserve. Overhanging vegetation will also be cut back from the boundary edges, ideally so that there is a two to three metre strip running along the inside of the boundary that is clear of all trees and overgrown scrub. The focus early on in this management plan will be on removing younger trees from along the boundaries whilst they are of a manageable size. Throughout the duration of this work programme efforts should be made to seek funding for a tree surgeon to handle the larger trees.

The area of land adjacent to the Norbury site has so far received little management. Privet clearance will open up this area. Additionally, the removal of two large sycamore trees located within the centre of this area, along with some of the ivy (*Hedera helix*) covering the ground, will create glades, allowing sunlight to reach the woodland floor and encourage the growth of ground flora.

During felling, consideration should be given to trees that are covered in ivy, which provides a valuable source of nectar to invertebrates in winter and can be used by bats as roosts. In addition, mature trees and younger trees that are damaged should be left (unless they are a health and safety risk) due to their potential to provide bat roosts. Whilst some thinning has already taken place in the north-west of the site and in the patch of woodland running alongside the path by the Barnsley Road wall, thinning works will continue across the rest of the site to produce woodland that contains trees of a variety of ages as well as a healthy and diverse canopy, shrub layer and ground flora.

Privet is widespread, significantly blocking sightlines across the site and preventing light from reaching the ground layer. Management will focus on removing all privet from the site to encourage the growth of a more diverse ground storey. This will also open-up sightlines across the reserve, making it easier to see along paths and down to the pond. Additionally, the removal of larger trees along the path from the Crabtree Road entrance should be considered. There are about five large trees next to where the path bends slightly, the removal of which would enable site users to see clearly along the entire stretch of the path. In addition, wildflowers will be planted in place of scrub at the Barnsley Road entrance, adding another dimension to the habitat and further improving visibility into the site. This work will ensure that site users feel safer on the reserve, and will also reduce anti-social behaviour and vandalism, as areas that were previously obscured from view will be more visible. Habitat piles will be created with the brash generated from tree and privet clearance, adding another dimension to the habitat by creating favourable conditions for fungi, invertebrates, lichen and mosses. Such piles should be kept low and compact so as not to block sightlines and prevent light from reaching large areas of ground.

Ivy is widespread on site, and in places a dense ground layer of ivy is limiting the growth of ground flora and fungi. Whilst the selective removal of the ivy ground layer would benefit the development of ground flora and fungal colonies, it is important to maintain areas of ivy cover for the benefit of birds, bats and small mammals on site. Throughout this management plan it will be important to strike a balance in ivy cover such that all groups benefit.

5.2.1 Ground Flora

There is relatively little ground flora. At the Crabtree Close entrance, the ground flora consists of planted daffodils (*Narcissus sp.*) and crocus (*Crocus sp.*). Amenity grasses were sown after the dredging (see sections 3.6 Site History and Past Management and 5.3.1 The Main Pond for information on past dredging work). In other more naturalised areas the ground cover consists of woodland flora such as herb robert (*Geranium robertianum*), cow parsley (*Anthriscus sylvestris*), ivy, dock (*Rumex sp.*), bramble (*Rubus fruticosus*), nettle (*Urtica dioica*), creeping buttercup (*Ranunculus repens*), hogweed (*Heracleum sphondylium*) and moss. In the stream valley the ground flora consists of an abundance of lesser celandine (*Ranunculus ficaria*).

The ground flora should increase as a result of the woodland thinning works described in the previous section. However, if supplementary planting is deemed necessary, species planted could include spring flowering species (that would take advantage of the period before deciduous trees come into

leaf) and evening scented flowers (which would attract moths and therefore bats), such as bluebell (*Hyacinthoides non-scripta*) and honeysuckle (*Lonicera periclymenum*). Regeneration should be monitored through Phase One Habitat Surveys.

The planting of native wildflowers after scrub removal at the Crabtree Close entrance will provide another dimension to the ground flora of the site. Wildflowers will also be planted by the southern Barnsley Road entrance. Such flowers attract a variety of insects and other invertebrates including butterflies, moths and bees, which in turn support populations of birds and small mammals.

5.2.2 Fungi

Fungi surveys were conducted in 2001, 2011, 2012 and 2015. In the most recent fungi survey, conducted by Steve Clements, a variety of fungal species were recorded.

Over a quarter (28%) of the fungi recorded were mushrooms or toadstools, with at least 15 species from 11 genera having been identified. These included brown rollrim (*Paxillus involutus*), collared fibrecap (*Inocybe cincinnata*), yellowing knights (*Tricholoma scalpturatum*), willow shield (*Pluteus salicinus*), goldleaf shield (*Pluteus romellii*), frosty funnels (*Clitocybe phyllophila*), trooping crumblecap (*Coprinellus disseminatus*), peeling oysterling (*Crepidotus mollis* and *C. cesatii*), sulphur tuft (*Hypholoma fasciculare*), and bonnet species (*Mycena* sp.) – the latter two of which were noted as unusually scarce on this site, perhaps due to the unpredictable nature of fungal fruiting.

Another high percentage (26%) of the fungi recorded were carbon fungi - Ascomycetes. Findings included sycamore tarspot (*Rhytisma acerinum*), candlesnuff fungus (*Xylaria hypoxylon*), beech barkspot (*Diatrype disciformis*), and King Alfred's cakes (*Daldinia concentrica*).

Jelly fungi and crust fungi each constituted 12% of the species recorded. Species of jelly fungi recorded included jelly ear (*Auricularia auricula-judae*) and crystal brain (*Exidia nucleata*). It is noted that there was an unusual absence of common jellyspot (*Dacrymyces stillatus*) and stagshorn species (*Calocera* sp.), which are generally ubiquitous on dead wood. Species of crust fungi recorded included elder whitewash (*Hyphodontia sambuci*), resupinate species, hairy curtain crust (*Stereum hirsutum*), and bleeding broadleaf crust (*Stereum rugosum*).

A good range of bracket fungi was recorded, with six species from four genera having been identified. These included artists's bracket (*Ganoderma applanatum*), southern bracket (*G. australe*) and blueing bracket (*Postia subcaesia*). Unfortunately a display of southern brackets noted by the pond in 2012 as being subject to vandalism have now completely disappeared from the site.

A small number of puffballs (stump puffball - *Lycoperdon pyriforme*) were recorded, however no earthballs were recorded at the site. Of the slime moulds only one species was recorded. This was an immature *Lycogala* species, which was one of two species that cannot be told apart at an immature stage.

The cumulative historical species total across fungi surveys at Crabtree is approaching 100 (mostly larger) fungi. Despite this, an apparent decline in the quality and diversity of fungi at Crabtree is noted, with particular attention being drawn to the loss of several mycorrhizal species since the 2001 survey. Mycorrhizal species develop important mutualistic relationships with a variety of plants and, as such, their loss is noted as worrying.

Key management recommendations for the benefit of fungal communities at Crabtree include a reduction in the ground cover of ivy and an increase in dead wood on site, providing more suitable habitat for the establishment of fungal colonies. However, as previously mentioned in section 5.2 Woodland and Scrub, it will be important to strike a balance in maintaining ivy cover at a level that provides a benefit to both fungal colonies and ground flora, but also to the animals for which it provides a food source and roosting habitat.

5.2.3 Dead Wood

Dead and decaying wood provides a valuable habitat for fungi and other saprophytic species. As dead wood also provides habitat for insects and other invertebrates, it helps to provide a food source for insectivorous birds and is also particularly important for local bat populations. Habitat piles will be created on site using the brush from tree and scrub clearance, increasing the dead wood on site.

Retaining piles of leaves and other decaying matter on site will also provide shelter for hedgehogs and amphibians.

The woodland area around the pond contains a fair amount of dead wood, both standing and on the ground. The standing dead wood provides a valuable resource for local bat and woodpecker populations. Near the River Crab, large moss-covered rotting logs provide good dead wood habitat for a variety of invertebrates and fungi. Further deadwood was provided through the felling of mature trees on the dam wall. In general, therefore, the deadwood resource for the nature reserve is good considering its size.

Standing dead wood should be concentrated in the woodland area to the north of the site where there is little chance of the dead wood falling onto footpaths or roads. Any standing dead wood in other areas of the site should be monitored for safety, and the removal of such trees should be considered.

5.3 Standing Water

Ponds and streams have been identified as local priority habitats in Sheffield's Biodiversity Action Plan for Wetlands. Therefore, the retention and maintenance of Crabtree Ponds is of prime importance. The site contains two ponds - a 1,200m² pond in the centre of the site and a smaller pond on the northern boundary (known as 'the sink').

5.3.1 The Main Pond

The central pond was dredged in the 1970s, and again in 2006 to maintain the pond's condition. It is vulnerable to casual vandalism, littering and tipping. This can adversely affect the water quality of the pond and the wildlife that depends on it, so the Trust undertakes regular litter patrols. The pond does, however, continue to support a variety of species that would otherwise be absent from this area of Sheffield. Among these species, several are contained in Sheffield's Local Biodiversity Action Plan as associated priority species, including large southern and brown hawker dragonflies, common frog, common toad, smooth newt and palmate newt.

Seventeen plant species were recorded during the 2004 whole pond survey. Emergent vegetation was limited in terms of species and abundance. Marginal vegetation was mostly present alongside the boardwalk, to the south-eastern corner and the south-western corner. This is where a build-up of sediment had resulted in a shallow area suitable for such vegetation. Species included reed sweet-grass (*Glyceria maxima*), water mint (*Mentha aquatica*), gypsywort (*Lycopus europaeus*), rush (*Juncus sp.*) and Canadian waterweed (*Elodea canadensis*).

Prior to the dredging, the vegetation in the main pond was dominated by rigid hornwort (*Ceratophyllum demersum*) and duckweed (*Lemna minor*), with ivy-leaved duckweed (*Lemna triscula*) playing a lesser role. This vegetation was controlled by hand removal each year.

The pond was dredged in March 2006. Water was removed from the pond and pumped into the sink. The majority of the silt was then excavated. A proportion was used to backfill revetment that had been constructed using nicospan and wooden stakes to create marginal areas around the pond. The remaining silt was taken to a redevelopment site in Parsons Cross to improve the soil for the growing of wildflowers (for the production of wildflower seed as opposed to a meadow). The site is situated between Murdock Road, Bartlett Road and Symons Crescent, on the southwest corner of this area.

Following the dredging and restoration work, the amount and diversity of fringing emergent vegetation increased through natural regeneration. Species that colonised the newly created marginal areas were mainly reed sweet-grass, gypsywort, watercress (*Rorippa nasturtium-aquaticum*), and purple loosestrife (*Lythrum salicaria*). In addition to these, native aquatic marginal plants and floating aquatic plants were introduced in the summer and autumn of 2006 so as to improve plant diversity for wildlife as well as the general aesthetics of the pond. Each area was planted with different types of vegetation, depending on what was most appropriate to the conditions. These were; lesser bulrush (*Typha angustifolia*), common clubrush (*Scirpus lacustris*), common reed (*Phragmites australis*), yellow flag iris (*Iris pseudacorus*), branched bur-reed (*Sparganium erectum*), pendulous sedge (*Carex pendula*), meadowsweet (*Filipendula ulmaria*), figwort (*Schrophularia aquatica*), lesser spearwort (*Ranunculus flammula*), water mint, marsh marigold (*Caltha palustris*), water forget-me-not (*Myosotis*

scorpiodes) ragged robin (*Lychnis flos-cuculi*), brooklime (*Veronica beccabunga*), watercress, water plantain (*Alisma platago-aquatica*), brandy bottle or yellow water-lily (*Nuphar lutea*), fringed water lily (*Nymphoides peltata*), spiked water milfoil (*Myriophyllum spicatum*), water starwort (*Callitriche stagnalis*), curly pondweed (*Potamogeton crispus*), broad-leaved pondweed (*Potamogeton natans*), water crowfoot (*Ranunculus aquatilis*) and frogbit (*Hydrocharis morsus-ranae*).

The pond survey of 2008 (Andrew McCarthy Associates) recorded a similar level of plant macrophyte diversity as the 2004 pond survey. However, the number of uncommon plant species in the main pond had significantly increased. These were likely to have been introduced into the pond in 2006. Uncommon species include rigid hornwort (*Ceratophyllum demersum*), spiked water milfoil (*Myriophyllum spicatum*) and yellow water lily. Broad-leaved pondweed, which was a significant component of the floating-leaved community in the late 1980s and 1990s, was not recorded during the survey despite also being introduced during 2006.

The surveyors of the study suggested plants may have failed to establish due to unsuitable conditions, such as not enough light. Therefore management of the pond has involved improving conditions by reducing the level of shade caused by the surrounding vegetation. Vegetation overhanging the pond has been cut back, and will continue to be routinely cut to prevent overshadowing of the pond. Such work also increases access to the open water for bats, enabling them to make better use of the pond as a water source and feeding ground. The surveyors also highlighted the important habitat that the submerged vegetation provides for invertebrates. As a result, hand removal of this vegetation will focus on non-native species, such as Canadian waterweed, and only a proportion will be removed from the pond. However, given the rapid growth of pond weed and the importance of maintaining the open water habitat, it may be necessary throughout this management plan to remove the pond weed more frequently. For example, the removal routine may be to remove a proportion of the weed each year for three years running before having a break for a year, and continuing in this cycle of removal followed by a break throughout the management plan. This may help to better maintain the open water habitat, although attention should be paid to the findings of aquatic surveys conducted towards the end of the plan to ensure that this strategy is not negatively impacting aquatic invertebrate populations.

More information on the aquatic species present can be found in sections '5.4.1 Invertebrates' and '5.4.2 Fish'. Aquatic surveys, of freshwater invertebrates, plants and fish, are due to be conducted over the course of this management plan. The list of species in the pond will then be updated, enabling us to monitor the quality of the pond and ensure the management practices being employed are the most suitable and effective for the species present.

Vegetation will continue to be managed on the 'island' within the pond. This will include tree removal to keep the vegetation short and 'tussocky' to provide habitat for breeding birds. Additionally, both the land management and nature reserves teams will continue to perform regular pond litter picking. Food thrown into the pond and left around site is a particular issue as it is attracting rats which have been seen frequently when visiting the site. This situation should be monitored throughout the course of the management plan. If it continues or worsens, signage to advise people against leaving food should be considered.

5.3.2 The Sink

This lower pond, found to the north-east of the reserve, has variable water levels. The River Crab feeds into it, entering the site from the northwest and then sinking below ground in the northeast (hence being known as the Sink). The water course eventually leads into Bagley Dyke and then into the River Don. In winter it is essentially a permanent body of open water, but in summer it partially dries out and becomes a stagnant pool. The aquatic vegetation in the sink is dominated by water starwort.

Before the first management plan, the area around the sink was extremely dark and unattractive – a poor quality habitat for vegetation. Throughout the course of that management plan, the trees from the dam wall were removed which increased the light level significantly. The sink was also dredged (one section in 2004 and another in 2005), with revetment constructed to hold the dredgings. The rationale for this management was that the sink area was unattractive and there were concerns over the safety of the area – in the spring and autumn the sink appeared solid as a crust would form, yet underneath was extremely boggy. Additionally there were limited opportunities for wildlife.

The sink leads into a brick outlet, which then goes via a culvert to Bagley Dyke. However, it is thought that this culvert has collapsed and silted up. Attempts have been made to clear the brick outlet of sediment to create more of a running water habitat. However, despite flushing out the channel from a manhole cover on Barnsley Road, this has not been possible, supposedly due to a large accumulation of rubble, logs and sediment within the channel. Therefore the conclusion was to create and manage a wetland or fen habitat instead. Supplementary planting took place in autumn 2006; mainly with tall and medium species in the water body and low-growing plants along the streamside. Despite this planting, in a 2008 study (Andrew McCarthy Associates) the sink was found to be in a similar condition to that of the survey in 2004, again with water-starwort (*Callitriche* sp.) being the only submerged macrophyte recorded. The surveyors again proposed that this could be due to a lack of suitable conditions - the sink is particularly heavily shaded.

Efforts to create a fen habitat will not be continued in this management plan. Instead, with the increasing dilapidation of the wooden platform next to the sink, as well as the steps leading down to it, the closing off of this area should be considered. There are no plans to replace the wooden platform – once degraded it will be closed off and eventually removed. However, whilst the future of the sink area is under consideration, it may still be necessary to reduce branches overhanging the steps leading down to the sink. This would increase the light level of the sink, and visibility into it, which may help to discourage antisocial behaviour in this part of the reserve. Littering and fly-tipping are particularly common in the sink area. Patrols will continue to check for fly-tipping, and consideration is being given to the creation of signage to discourage fly-tipping.

There are trees growing on and around the retaining wall of the bank to the east of the sink. These will be removed to prevent damage to the wall.

The bank on the north side of the sink has small stands of invasive non-native Japanese knotweed (*Fallopia japonica*), which need to be eradicated. Treatment throughout the previous management plan (2011- 2016) has brought the problem under control. With continued treatment throughout this management plan it should be possible to eradicate Japanese knotweed from this site.

5.4 Zoological Interest

There were very few surveys conducted at Crabtree ponds in the latter years of the previous management plan (2011- 2016). Surveys should be undertaken early on in this management plan, and the species lists updated accordingly. Towards the end of this plan, surveying should be repeated to update the species list for the commencement of the next management plan, and also to inform us about the impact of management practices on various taxa.

5.4.1 Invertebrates

The invertebrate community of the pond is noteworthy because the water is peculiar for the Sheffield area, due to its alkaline character. There have been several studies of the invertebrates at Crabtree Ponds, the most recent one conducted in 2008.

Aquatic macro-invertebrates

The pond was surveyed in 2001 (Emerald Ecology) and 2004 (Andrew McCarthy Associates), prior to the dredging and restoration work. The pond was surveyed again in 2008 (Andrew McCarthy Associates), after the major rehabilitation works.

The pond survey of 2004 found the pond had no molluscs present - great pond snail (*Lymnaea truncatula*), flat ramshorn snail (*Planorbis complanatus*), pea mussel (*Pisidium* sp.), and swan mussel (*Andonta cygnea*) - although they had been recorded in the past. However, molluscs were found to be present again during the 2008 survey. Wandering snails (*Lymnaea peregra*) and some small specimens of great pond snails (*L. stagnalis*) were recorded. The 2008 study also recorded a water

scorpion (*Nepa cinerea*) nymph, which was a re-discovery of this species after an absence from records for several years.

The results of previous surveys showed that the main pond supported a host of species including five species of dragonfly - the common hawker (*Aeschna juncea*) and the brown hawker (*Aeschna grandis*) to name a couple. The 2004 survey did not find evidence of larvae in the pond, but the survey in 2008 revealed the return of some species with the discovery of southern hawker (*Aeshna cyanea*) and azure damselfly (*Coenagrion puella*) larvae.

The study of 2001 found that the pond contained water measurer (*Hydrometra stagnorum*), although this was reduced to a single juvenile example by 2004 and a single adult by 2008. It also recorded the presence of a crane fly (*Ptychoptera contaminata*) of locally notable status, found in the marginal vegetation of the pond, which was not recorded in 2004 or 2008.

Among the large range of ground invertebrates recorded in the 2001 study, one locally common but globally rare species of millipede was recorded (*Nanogona polydesmoides*). The 2008 survey recorded an entirely new species for the pond, the saucer bug (*Ilyocoris cimicoides*). This species has been spreading north in recent years and this is probably in response to climate change.

In accordance with previous records for the sink, the study of 2008 found freshwater hoglice (*Asellidae*) and freshwater shrimp (*Gammaridae*) present in high abundances. Relatively high numbers of water crickets (*Velia caprai*) were recorded in the heavily shaded margins.

In contrast to the 2004 survey, in 2008 most macro-invertebrate taxa occurred in low numbers. There was also an absence of water beetles (only one species was recorded in the sink), leeches and oligochaete worms. The 2008 study recorded large numbers of juvenile three-spined stickleback (*Gasterosteus aculeatus*) in the main pond, which may be responsible for the low abundance of macro-invertebrates and the absence of newts (smooth newt larvae were found in the sink, where sticklebacks are absent). These factors, in combination with the rediscovery of certain species, might indicate that the pond is still recovering from the major rehabilitation works. Follow up monitoring is recommended (particularly after any management works) to gain evidence of longer-term pond recovery. This work should take into account invertebrates, which give a good indication of water quality; amphibians, which will take longer to colonise following the work; as well as plant and fish presence.

As previously mentioned, a study within the early years of this management plan will provide up-to-date information on the species present in the pond, showing how the pond is progressing since major management work in 2006.

Extending the area of the marginal shelves, thereby increasing the amount of shallow water and invertebrate habitat, is likely to improve the level of biodiversity. The existing marginal shelves have little structural variation and do not have a gradually sloping, progressively deeper margin that increases habitat diversity. Habitat management should seek to increase the amount of structural variation to both existing and future marginal shelves. In addition, the report of the 2008 survey suggested the nicospan, which was used to hold the shelves in place, might be preventing invertebrates from burrowing into the banks. Using stone or felled timber would allow burrowing, thus increasing the habitat available to invertebrates. Any margins that are created in the future (including the margins of the island) should have this design.

The most productive sampling areas of the 2008 survey were found to be un-shaded, with some vegetation. Therefore, the regular cutting back of vegetation that is shading the ponds will improve biodiversity. However some species, such as water cricket (*Velia caprai*), benefit from shaded areas. To maximise the diversity of habitats, a mixture of shaded and un-shaded areas should be maintained. Water crickets were also thriving in the open water of the Sink.

Butterflies

The butterflies present (and likely to be present) on the site were assessed in August 2001, with monitoring work undertaken between April and September 2003. The method used involved walking through the main habitats noting any butterflies seen as well as the presence of nectar or larval food plants. Only two butterflies were observed, one of which was unidentified (possibly a wall butterfly - *Lasioommata megera*), the other being a large white (*Pieris brassicae*). The woodland floor is heavily shaded with a sparse ground flora, resulting in the woodland at present having little to offer as a

butterfly habitat. Stands of creeping thistle and bramble along the edge of the reserve offer a good nectar source and it was here that the large white was seen. Earlier in the season this area may have attracted other butterfly species that were passing through the area. It is unlikely that great numbers of butterflies breed on the site. The follow-up monitoring recorded extra species, including: one sighting of a holly blue (*Everes alcetas*), one of a comma (*Polygonia c-album*), and several sightings of speckled wood butterflies (*Pararge aegeria*).

The butterfly potential of the site could be improved now that the open grassy areas have been created, and the trees coppiced on the dam wall. There is a greater variety of fine grasses and wildflowers since the trees were removed, and hence the food source for butterflies and caterpillars has increased. Grass species and turf height partially determines the variety of brown butterflies and skippers visiting or breeding in grasslands. Follow-up surveys should be conducted in order to assess whether the butterfly community has increased in response to these works. Such surveys should be conducted early in this management plan. Artificial refuges for butterflies, and other invertebrates, could be considered in order to enhance the value of the habitat for these groups.

The planned creation of wildflower habitat at both the Crabtree Close and southern Barnsley Road entrances will also provide better habitat for lepidopterans, potentially increasing their numbers on site. Additionally, privet clearance and the selective removal of some larger trees will enable the development of a more diverse ground flora, which will be of further benefit to this group. Surveys should be conducted in both the early stages of this management plan and in later years. This would enable a comparison of the lepidoptera on site before and after the creation of more favourable habitat, informing future management practices for these populations.

5.4.2 Fish

Several species of fish have been recorded on site including rudd (*Scardinius erythrophthalmus*), roach (*Rutilus rutilus*), perch (*Perca fluviatilis*), Crucian carp (*Carassius carassius*) and stickleback (*Gasterocelus aculeatus*). Eels have also been recorded in 2004, 2006 and 2010 in the main pond and the sink. The 2008 pond survey recorded high numbers of juvenile three-spined stickleback (*Gasterosteus aculeatus*) in the main pond.

5.4.3 Amphibians and Reptiles

The pond contains locally valuable populations of common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newt (*Triturus vulgaris*) and palmate newt (*Triturus helveticus*), all of which are Sheffield biodiversity priority species. The macro-invertebrate survey of 2008 found smooth newt larvae in the Sink. Targeted amphibian surveys should be conducted to determine the impact on this group, following the dredging and restoration work of 2006. This work should have improved the habitat for amphibians and reptiles. The habitat could be further enhanced by increasing the amount of vegetation cover and vegetation height in some areas adjacent to the pond. As previously mentioned, variation in shading around the pond would also be of benefit to certain invertebrate populations. This could be achieved through pruning and felling of trees surrounding the pond and leaving some areas un-trimmed in summer.

5.4.4 Birds

During the bird survey of 2005, twenty bird species were recorded at the site, an increase on previous results (2001). The number of bird species nesting on the site had also increased from eight to fifteen. The use of bird boxes is an apparent reason for the increase in birds nesting at the site. The number of associated LBAP species nesting at the site stood at seven, also an increase on previous records. In a 2011 bird survey 19 species were identified on site. The installation and maintenance of bird boxes should continue throughout this management plan. This will also include the installation of an owl box. Further bird surveys are required to monitor changes. Any further installation of new bird/owl boxes will be dependent on funding available.

5.4.5 Bats

Although the woodland area of Crabtree is relatively small, it forms a link with other nearby street and garden trees, as well as Roe and Little Roe Woods. This provides an important green corridor link that is commonly used by a variety of birds as well as pipistrelle (*Pipistrellus pipistrellus*), brown long-eared (*Plecotus auritus*) and whiskered/Brandt's bats (*Myotis mystacinus*/*M. brandtii*) - all of which are Local Biodiversity Action Plan species. The bats are thought to roost at Little Roe Woods, frequently visiting Crabtree Ponds due to its value as a feeding ground. Over the course of this management plan, potential locations for installing further bat boxes will be considered. Any further installation of bat boxes will be dependent on funding available.

The site has proved to be a good feeding site for bats. The value of the reserve to foraging bats will be improved further with the removal of overhanging branches from around the pond to increase access to open water. The relatively high amount of dead wood on site (as mentioned in section '5.2.2 Dead Wood') also provides attractive habitat for insects, further improving the site's foraging value. Additionally, ivy, which provides valuable roosting habitat for bats, will be retained on trees wherever possible, with careful consideration being given to the felling of ivy-clad trees.

Further survey work should ideally take place before the installation of more bat boxes and any woodland management works, being repeated again later in the term of this management plan to assess any changes.

5.4.6 Small Mammals

A small mammal survey was carried out in April 2001 using Longworth Traps (although this is not the best time of year as numbers in spring will normally be low after a wet winter). Two wood mice (*Apodemus sylvaticus*) were found. Further mammal surveys are required to understand the paucity or otherwise of the populations.

Although their numbers fluctuate, rats continue to be a problem at Crabtree, and the need for control should continue to be monitored on an annual basis. Potential extermination methods are being considered, and discussions with the council's environmental health department are ongoing. One particular issue is food being thrown into the pond. This issue should be monitored throughout the duration of this management plan, and signage to discourage such behaviour should be considered. Whilst such small steps can be taken on the reserve, tackling the issue effectively to reduce the presence of rats in the long-term requires much wider community action.

6 INFRASTRUCTURE

6.1 Footpaths

Path surfaces at the reserve are generally in good condition, although the encroaching vegetation does require regular strimming during the growing season, as well as an application of herbicide to maintain path width. Habitat management for amphibians needs to be considered during strimming, with some areas of vegetation being left to provide cover.

The clearance of branches overhanging footpaths has already begun, and will continue across the reserve. Combined with the removal of privet and a few large trees blocking light to the ground storey, this will lighten-up the walkways and improve visibility into and around the reserve, ensuring that visitors feel safer around the site. As previously mentioned in section 5.2 Woodland and Scrub, the removal of larger trees along the path from the Crabtree Road entrance should be considered. There are about five large trees adjacent to a slight bend in the path, the removal of which would enable site users to see clearly along the entire stretch of the path.

Although the addition of staples has improved grip on the steps around the reserve, they remain slippery during the winter months. Additionally, some of the footpaths around the site, particularly along the dam wall to the north of the pond, become slippery when covered in fallen leaves throughout the winter months. The boardwalk also becomes particularly slippery in winter. The footpaths, steps and boardwalk should continue to be swept or scraped regularly in winter to improve their condition for site users.

The condition of steps across the reserve should be monitored throughout the course of this management plan. At some stage they may need additional top dressing to increase the step surface level to that of the risers. The steps near the Crabtree Close entrance may need replacing or removing in this management period. Monitoring should highlight if more significant maintenance is required for any other steps.

The future of the boardwalk needs to be considered throughout this management plan, the condition of which is gradually deteriorating. Although bids to secure funding for repairs have been as yet unsuccessful, boardwalk repair should continue to be included in funding bids. If bids continue to be unsuccessful, following deterioration beyond a safe condition for use, closing-off and eventual removal of the boardwalk should be considered.

As previously mentioned in section 5.3.2 The Sink, the increasing dilapidation of the wooden platform next to the sink, as well as the steps leading down to it, necessitate the consideration of closing-off this area. There are no plans to replace the wooden platform – once degraded it will be closed-off and eventually removed. However, whilst the future of the sink area is under consideration, it may still be necessary to reduce branches overhanging the steps leading down to the sink. This would increase the light level of the sink, and visibility into it, which may help to discourage antisocial behaviour in this part of the reserve.

The number of paths is sufficient and no additional routes are required.

6.2 Boundaries

The boundaries of Crabtree Ponds vary in design and condition. Along the eastern, southern and western boundaries (adjacent to Crabtree Close, Barnsley Road and Crabtree Road respectively), wetstone walls form the main boundaries. A structural report by Sheffield City Council (2001) noted several defects with these walls including missing and weathered masonry, weathered mortar, bulging, missing copings and dense vegetation growing on the walls. Whilst some of this work has been completed, these factors still require substantial amounts of time and funding to repair, and have therefore been omitted from the lease agreements. However, numerous gaps have appeared on the walls bordering Crabtree Road and Barnsley Road, and these should be repaired.

The wetstone wall that borders Crabtree Road is also prone to ivy growth, which could damage the wall. This ivy cover obscures the bollards along this section, increasing the risk of cars hitting the wall.

Ivy should continue to be selectively removed from this area, and funding for repointing work, for this wall and others around the reserve, should continue to be sought throughout this management plan. Removal of vegetation growing on Barnsley Road wall should also take place early on in this management plan. Of particular importance is the removal of a tree growing from the top of the wall near the southern Barnsley Road entrance. It is worth noting that there are several blocks of old concrete by the Barnsley Road wall at the southern entrance to the site. These should be removed and disposed of to improve the aesthetics of this entrance.

The northern most section of the Crabtree Close boundary consists of metal railings. This area was previously prone to fly-tipping as the boundary height was low. These metal railings have recently been replaced with higher black metal railings. This has reduced the ease of fly-tipping and improved the aesthetics of the boundary. The wetstone wall along the rest of the Crabtree Close boundary will also be raised by the addition of railings to the top of the wall. These railings will feature interpretive wildlife designs by local schools and youth groups, helping to give the reserve a local distinctiveness and encouraging its protection. New knee rails will also replace the old knee rails from the Crabtree Close entrance to where the wetstone wall begins along Barnsley Road. These too will be interpretively designed. The condition of the new rails and railings should be monitored throughout the course of the management plan. Towards the end of the work programme they may require re-painting to maintain their condition.

As previously mentioned in section 3.8.2 Boundaries, there are small sections missing from the post fencing along the Norbury site boundary to the west of the reserve. It will become particularly important to repair these sections of fencing as development begins on the Norbury site. It may be necessary to check the boundary location stated on the lease agreement. The condition of the rest of the fencing bordering the Norbury site should be monitored throughout this management plan.

The post and rail fence along the boardwalk is currently in suitable condition. However, the condition of this fence should also be monitored throughout the plan, particularly as this area is prone to vandalism. Any damage should be repaired as soon as possible.

6.3 Other Structures

There are currently five benches located around the pond – two along the dam wall to the north, one next to the litter bin at the north-eastern corner, and two on the path along the western edge. One of the benches to the west of the pond is interpretively designed. The others are standard timber benches. The condition of all benches is to be continuously monitored throughout this management plan, with maintenance and repairs performed as required. They are currently in acceptable condition, although frequently subject to vandalism. Replacement may be necessary throughout the course of this work programme.

The two benches along the western edge of the pond are the least visible from Barnsley road, encouraging anti-social behaviour such as vandalism and the throwing of litter into the pond from these benches. As a result, these may not be replaced once their condition deteriorates. If funding becomes available once the other benches have deteriorated, it may be possible to replace them with interpretively designed benches. Vandalism is noticeably less common on the existing interpretively designed bench, and such uniquely designed benches add a local distinctiveness to the reserve that is appreciated by site users. The value of a series of artistically designed/ community-generated benches in an urban site cannot be underestimated, and the involvement of local schools or groups in the design would be beneficial.

The SRWT entrance signs are currently in good condition. During the last management plan (2011-2016), an entrance sign was installed at the Crabtree Road entrance. These signs need to be maintained on a regular basis to ensure they are legible and fit for purpose. The quality of the interpretation board near the Crabtree Close entrance is beginning to deteriorate, and replacement may become necessary over the course of this management plan. Similarly, the five 'rubbings posts' around the pond are also deteriorating. These are made of stainless steel discs on wooden posts, each of which features simple information about a creature found on the reserve. They are designed so that children can take rubbings of the discs, but also to simply provide information to those who read them. They are a way of providing an educational experience for site visitors without the need for SRWT staff supervision. These will need replacing throughout this management plan, with the replacements continuing to feature the lifecycle and facts about animals found at Crabtree Ponds,

such as the lifecycle of frogs and dragonflies. With the potential addition of more bat and bird boxes to the site, a rubbings post and/or an information board about the bats/ birds could be installed, ideally positioned such that a box could be observed whilst standing at the post/ board. An information board could also feature a map of bat and/or bird box locations around site, enabling visitors to follow a trail to see the boxes.

The installation of a dog waste bin has been previously suggested in RAG meetings and visitor surveys. As a result of the need for regular emptying, and the associated funding required, a specific dog waste bin will not be installed on site.

A brick inlet at the Sink exists and has been blocked for a number of years. Attempts were made to clear the brick inlet of sediment to create more of a running water habitat. However, despite flushing out of the channel from a manhole cover on Barnsley Road, this was not possible. It is thought that the culvert has collapsed, and the accumulation of rubble, logs and sediment has blocked the channel. Further clearance is not required.

7 CULTURAL CONTEXT

7.1 Recreational Usage

The visitor survey of 2005 produced somewhat contradictory evidence. Over 70% of site users felt that Crabtree ponds had improved over the last two years, although almost 60% felt that the site wasn't safe. This could be attributed to various factors - the obvious presence of rats, issues around personal safety, and the quality of the pond. However, around 62% of people said they would be happy to bring children onto the site.

Whilst litter was still the primary concern for most site visitors (48%), dog mess scored second highest with 17%. These issues continued to be addressed throughout the following management plan with, for example, the continuation of regular site patrols to remove litter and fly-tipped rubbish.

Of those visiting the site, just over 60% reported they passed through Crabtree Ponds as "part of a walk", although it was unclear whether this was just passing through as part of a regular walk (from or to home from work or the shops, or walking the dog), or included linking into the nearby Roe Woods and other green spaces. 20% of respondents did visit the site to walk their dogs, whilst 54% visited Crabtree for its wildlife.

In general, the Trust staff have experienced very positive feedback from regular users of the site. There is also a high level of involvement and active interest in the site. The reserve advisory group has been influential in the management, and raised £25,000 for the restoration of the pond. The ongoing maintenance to ensure that all features look attractive and are safe and fit for purpose is essential to maintain and increase positive perceptions of the site.

The visitor survey of 2011 highlighted litter and safety as the main problems on the reserve – with 16% of 93 suggestions for improvement focussing on the need for more regular litter removal, and 19% of respondents stating that they don't feel safe on the reserve, partly as a result of other people using the reserve for unsuitable means. Requests for more bins also featured heavily in respondents' suggestions. In addition to the litter-related improvements, a significant proportion of people were interested in seeing more benches installed on site and better boundary controls. However, similar to findings from the previous visitor survey, many site visitors and local residents valued Crabtree Ponds for its peace and quiet (17% of respondents), as well as the trees, flowers and birds that the site provides for (30%). Despite the problems highlighted by the survey it is clear that Crabtree Ponds Nature Reserve is valued by local residents as a green space, for providing a home to a variety of wildlife in an urban area and for being an important link to other green spaces such as Roe Woods, Osgathorpe Park, and Parkwood Springs.

Visitor surveys should continue to be conducted regularly, and informal feedback should be encouraged. The continuation of regular RAG meetings also supports the local community in sharing their ideas for the reserve's management.

Two visitor surveys should be conducted throughout the course of this management plan – one in 2016 and the other in the plan's later years. This will enable us to continue effectively monitoring the impact of the Trust's work on visitors' perceptions of the site, helping us to manage the site for the benefit of both wildlife and the local community. Any significant feedback from the 2016 visitor survey will be incorporated into the management plan and work programme at that time.

7.2 Local Community

Crabtree Ponds Nature Reserve is situated in the Burngreave ward of Sheffield City. The following information is drawn from the 2011 National Census.

The total population of the Burngreave ward is 27,481. This ward had the largest population in the city in the 2001 census, however it has since been overtaken by Central ward. Burngreave ward still has a high proportion of young people compared to the Sheffield average (28.8% aged 5-24), with over 30% of the population aged 5-24 and only 11.6% aged 65+.

As in the 2001 census, Burngreave was found to be the most ethnically diverse ward in Sheffield, with 42.5% of people identifying themselves as white, 28.3% of residents identifying themselves as Asian or British Asian (Indian, Bangladeshi, Pakistani, Chinese and other origins), and 15.1% of residents identifying themselves as Black or Black British. Other groups bring the total non-white population to 57.5%. The relatively high proportion of minority ethnic populations in Burngreave may go some way to explaining the high proportion of young people in this ward, as these groups tend to have larger families – supported by a higher than average number of people per household in this ward (2.7).

This high proportion of children in Burngreave creates an ideal opportunity for Sheffield Wildlife Trust to engage and involve young people and families in the use and management of Crabtree Ponds, such as through the continuation of bat walks, pond dipping and perhaps other educational activities on site. This will give them the opportunity to increase their knowledge and skills, encourage positive use of the reserve, and develop a sense of ownership for the site whilst raising awareness about its importance. Similarly, the installation of railings featuring wildlife designs by local school and youth group children, as well the replacement of the rubbings posts, will help to further develop a sense of ownership of the site and provide activities for visiting families to engage in without the need for a supervising member of SRWT staff.

The percentage of residents who are unemployed and seeking work was higher in the 2011 census (9.1%) than in that of 2001 (7.6%), which corresponds to a decline in the number of residents in full time and part time employment since 2001 (44.8% in 2001 compared to 37.4% in 2011). As such, this put Burngreave below the Sheffield average for employment and above the average for unemployment. Of the residents who identify themselves as being economically inactive, 9.4% are retired and 10.2% are at home and/or looking after the family – the latter percentage being well above the Sheffield average (4.1%). This could reflect the different family structure of such an ethnically diverse population. Of the economically inactive, 7.8% identified themselves as permanently sick or disabled.

In terms of academic achievements, Burngreave scores below the City's average for all levels of qualifications except NVQ1. 35.4% of residents have no academic qualifications – significantly higher than the Sheffield average of 24.3%.

There is still great potential for increasing inclusion and social participation through the use of Crabtree Ponds. A key goal is to include all sections of the community in the management of, and activities within, the reserve. The Reserve Advisory Group should act as the focus for community participation in the management of Crabtree Ponds. However, economic and cultural barriers may mean that membership of the group may not be possible for certain sections of the community, regardless of any efforts by the Trust. In light of this, events and activities targeted at the wider community should be held on site, such as bat walks and pond dipping for which Crabtree Ponds is a prime location. Additionally, Wild at Heart groups of the Trust (providing wildlife-related activities for people aged 50 and over) plan to use Crabtree Ponds for regular health walks and wildlife watching.

During the course of this management plan, the results of the latest National Census (that is scheduled to be conducted in 2021) will be published. The data should be reviewed when it becomes available.

7.3 Education

There is great potential for environmental education on site, however due to some inherent aspects of the site, such as the open water without fencing all the way around and a lack of flat space to congregate in large groups, it is not highly suitable for school trips unaccompanied by a member of SRWT staff. Therefore, the focus for education on site has evolved towards providing small-scale events and activities that can be conducted by smaller groups without SRWT staff supervision. However, Crabtree Ponds will continue to be advertised in the WildPlay leaflets, and schools are more than welcome to approach the Trust about activities on the site.

As previously mentioned in section 6.3 Other Structures, rubbings posts were installed around the pond in the previous management plan. The aim of this was to encourage visitors to engage more with the site, whilst providing an activity that could be conducted without SRWT staff. This management plan will see the replacement of these rubbings posts with further rubbings posts of a similar design if funding can be secured to do so. Whilst they are primarily designed so that children can take rubbings

of the discs, they are also effective at providing a snippet of information to those of any age who read them.

With the planned addition of more bat boxes to the site, an additional rubbing post and/or an information board about the bats could also be considered for installation, ideally positioned such that a bat box could be observed whilst standing at the post/ board. An information board could also feature a map of bat box locations around site, enabling visitors to follow a trail to see the boxes, providing another educational activity that can be conducted without the need for a SRWT staff presence.

As mentioned in section 7.2 Local Community, Crabtree Ponds has also received interest from Wild at Heart Project group organised through the Trust. The Wild at Heart project provides groups of people aged 50 years or over with a variety of nature based activities to engage in, from photography to gardening. Crabtree Ponds will provide a great location for walks and wildlife watching or photography for this group.

Although both of Sheffield's universities run environmentally related courses, the scope for studying a small urban site such as Crabtree Ponds is somewhat limited. Therefore, focusing students on studying the larger, more complex rural sites would be more beneficial for both the Trust and the students.

7.4 Employment and Training

The high unemployment rate and low academic achievements within the local area suggest that local capacity building, education and training should be a central requirement in the management of Crabtree Ponds. Therefore, increased environmental education and local participation in community workdays would increase understanding and management skills within the environmental sector. The management of the reserve should support local businesses wherever possible, for example by employing local contractors to undertake maintenance tasks beyond the resources of Sheffield and Rotherham Wildlife Trust.

We should aim to forge greater links with existing environmental groups around Burngreave, as this will increase cooperation with SRWT work and utilise local skills, knowledge and resources to the full.

7.5 Reserve Advisory Group

Sheffield and Rotherham Wildlife Trust hold Reserve Advisory Group (RAG) meetings twice a year, where members of the local community and interested parties can meet the team managing the site and discuss issues or ideas they have. These often bring up good ideas for site management and are a positive way to engage with the local community. Many members of the local community have an active interest in the management of Crabtree Ponds. The Reserve Advisory Group should act as the focus for community participation in the management of this reserve.

8 ECONOMIC

8.1 Grants and Funding

Funding should continue to be sought for various on-site projects such as boardwalk repairs or replacement, pond and woodland management, development of more interpretive features, and wet stone wall repairs around the site. Projects may be eligible for funding from both public and private sources, such as Landfill Tax or Lottery funds, or could be included in funding bids relevant to the larger Living Landscape Programme.

8.2 Membership Recruitment

Membership of Sheffield and Rotherham Wildlife Trust is steadily increasing as a more pro-active approach to membership recruitment has been taken in recent years. Recruitment campaigns targeted at neighbouring communities have been met with a high degree of success. High quality management and interpretation of sites will go some way towards generating members. Efforts to connect with the local community will help to boost membership recruitment in the area.

9 ORGANISATIONAL INFORMATION

9.1 Health and Safety

9.1.1 Policies and Procedures

Sheffield and Rotherham Wildlife Trust has many detailed policies, which are amended and updated at regular intervals or when key legislation changes. A series of procedures have also been produced, covering scenarios such as working on site, lone working, and use of machinery. A Health and Safety working group monitors accidents and incidents, and feeds these into further H&S policies and/or procedures. Risk assessments are carried out for each task and site, and reviewed regularly.

9.1.2 Site Safety and Security

Any known accidents or incidents that occur on Sheffield and Rotherham Wildlife Trust nature reserves are recorded on the relevant accident forms. An accident book is kept at the headquarters.

A first aid kit is brought to all Wildlife Trust events at the site and the majority of staff involved with the site have received first aid training. A site specific risk assessment has been written for Crabtree Ponds, and is reviewed on an annual basis. Further risk assessments are prepared for specific tasks and events at the site as necessary.

Crabtree Ponds is regularly patrolled by Sheffield and Rotherham Wildlife Trust staff and volunteers. Problems such as broken infrastructure or graffiti are logged on a patrol spreadsheet and addressed as soon as possible. Problems and incidents reported by members of the public are also logged and dealt with as necessary.

9.1.3 Litter, Cleanliness and Vandalism

A dedicated patrol team aims to visit the site at least once a month in order to undertake a litter pick, empty the litter bin and report any issues identified. As well as carrying out ongoing maintenance and habitat management, SRWT Land Management Team also carry out litter picks, report vandalism and deal with any other issues as required. It is important to note that the litter bin on site is the responsibility of Amey.

9.1.4 Maintenance Summary

Maintenance is normally carried out by the internal land management team where capacity allows. If this is not cost effective, contractors are hired to deliver these works. A full work schedule is created each year in line with the work programme.

Item	Frequency	Responsibility
Regular patrolling	At least once a month	SRWT
Selective grass strimming	May – September: Approx. every 6-7 weeks.	SRWT
Removal of vegetation overhanging and encroaching onto Public Rights of Way	Four days per year	SRWT

Fly tipping, glass and needle removal	As required	SRWT
Graffiti removal	As required	SRWT
Maintain surfaced paths	Monitored annually. Maintain edging as necessary	SRWT
Paint railings and gates	Once every five years	SRWT
Maintain infrastructure (steps, boardwalk, walls, fences)	As required (funding dependent)	SRWT
Litter picking	At least once a month	SRWT
Maintain interpretation features.	As required	SRWT
Empty and maintain litter bins.	Monthly	Amey / SRWT

9.1.5 Marketing

Crabtree Ponds features in various leaflets and pamphlets produced by the trust including WildPlay's Outdoor Learning pamphlet and the Living Landscape pamphlet detailing the organisations wider strategy.

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

Crabtree Ponds Nature Reserve has a page on the Sheffield and Rotherham Wildlife Trust website. This gives general information about the reserve, including directions and species of interest. The web page can be found at: <http://www.wildsheffield.com/nature-reserves/our-reserves/crabtree-ponds>

All community and outdoor learning activities are promoted on Sheffield and Rotherham Wildlife Trusts website as well as the Facebook and Twitter pages.

9.2 Sustainability

9.2.1 Environmental Policy

Sheffield and Rotherham Wildlife Trust is committed to minimising and reducing the negative environmental effects of its operations, to protect the habitats and ecosystems for which they are responsible, and to conduct its operations in a manner that reduces its negative impact on the environment as a whole. Sheffield and Rotherham Wildlife Trust has developed an Environmental Policy and several procedures from this, including "Environmental Procedures for Land Management".

9.2.2 Pesticide Use

Sheffield and Rotherham Wildlife Trust aims to keep use of pesticides to a minimum, and only use them when they are necessary, such as when treating invasive species for example. SRWT has a separate procedure to deal with the use of pesticides, and also includes pesticide use in its Environmental Policy. SRWT keeps a decision making log to record all pesticide use and complies with all Environment Agency procedures, including requesting permission to use pesticides in or around water. Only staff trained to adequate levels, i.e. NPTC certification, are allowed to use pesticides.

9.2.3 Horticultural Peat Use

Sheffield and Rotherham Wildlife Trust avoids the use of peat-based soil improvers, instead favouring the use of products made from recycled organic wastes, such as tree bark, wood-waste, and composted green waste. Products should preferably be of British origin, as local as possible to Sheffield.

9.2.4 Waste Material Recycling

Sheffield and Rotherham Wildlife Trust aims to reuse or recycle any waste material it creates from its sites, with the exception of materials that are regulated and must be disposed of in a suitable manner, e.g. chemical leftover. Habitat piles are created from wooden debris and felled timber at Crabtree Ponds. Any other wooden debris is removed from site to be used for wood carving or fire wood.

9.2.5 Energy Conservation

There is no building on site, so opportunities for reducing energy consumption are limited. The Sheffield and Rotherham Wildlife Trust Environmental Policy encourages staff to ensure that they are energy efficient whilst in the office.

9.2.6 Pollution Reduction

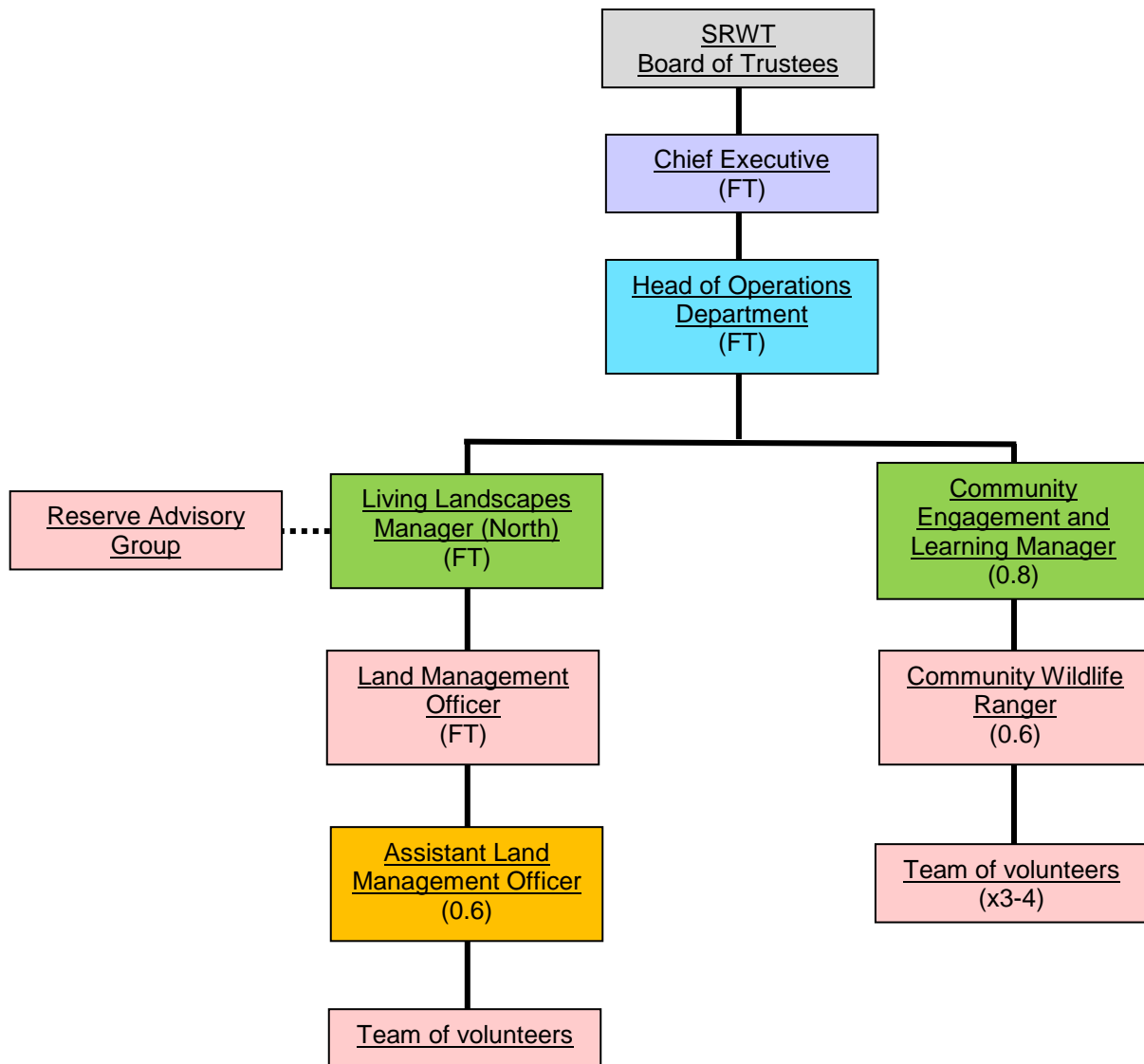
Sheffield and Rotherham Wildlife Trust aims to use products with a low environmental impact. When using pesticides or fuel, teams carry spill kits to minimise the impact of any spill on the environment. Use of pesticides and machinery is limited to trained staff who have the necessary NPTC certification, and are therefore aware of how to ensure that their work does not negatively impact the environment.

9.2.7 Resource Conservation Methods

Sheffield and Rotherham Wildlife Trust purchases the most durable tools and machinery and maintains these regularly in order to ensure their longevity.

Land management team staff create specifications for work being carried out on site which enables them to calculate an accurate amount of resources eliminating waste in terms of budget and the resource itself.

9.3 Management Structure



10 WORK PROGRAMME

The following table shows costings at the time of writing the management plan, which can be modified. The cost of the staff time is not included, though an indication of the number of days required for the work at different officer levels is indicated.

The electronic version of this table is also on the Sheffield Wildlife Trust system, so that the work can be recorded. Compliance is recorded (whether the work has been done) and explanations of the reasons why these elements of the work programme have not been undertaken. There is also a column for condition monitoring – which gives the opportunity to record the results of the work and whether any difficulties were experienced, or any useful information or observations that may help in future.