

# The Hook

## Local Nature Reserve

### Management Plan

2020 - 2024



Photo: J. Brown 2013



Nottinghamshire



Rushcliffe

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## INTRODUCTION

Local Nature Reserves (LNRs) are protected open green spaces for local people, which are designated by Local Authorities with guidance from Natural England.

Many of the Local Nature Reserves and proposed Local Nature Reserves within Rushcliffe have a town centre or urban fringe location and therefore have a potential for attracting large numbers of visitors. The sites already have high wildlife content but most can be improved with specific habitat management and creation targeted at enhancing biodiversity. Many of the sites also have significant archaeological interest, which are an important part of the area's rich history and this is certainly true of The Hook.

Local Nature Reserves provide excellent opportunities for recreational and educational uses for local communities, some of which have limited access to open green spaces. Part of the LNR designation process involves the preparation and implementation of a conservation management plans for each site. Each management plan initially explains the roles and responsibilities of the Local Authority and its partner organisations in managing a Local Nature Reserve. All partners have agreed to work to five key Management Objectives, which are to:-

- Maintain and enhance the habitat types and species present
- Combine habitat enhancement and management with education, recreation and access provision
- Encourage public understanding and awareness of issues relating to the site
- Conserve and interpret the archaeological and historical elements on the site
- Monitor effects of management on the wildlife on each site

The purpose of a management plan is to describe each site and to decide what prescriptions or actions are required, by whom and by what date, so that the site can be improved in line with the management objectives.

Public consultation and support for the designation of Local Nature Reserves is an important element of the designation process. We have tried to keep this management plan short and simple, so that it is easy to understand by everyone.

We recognise that the establishment and involvement of Friends Groups for each LNR offers a valuable resource in terms of future management. Where local volunteering, enthusiasm and ideas for improving our local environment are developed, we will adjust our management plan in response.

## **1.0 ROLES AND RESPONSIBILITIES OF PARTNER ORGANISATIONS**

### **1.1 Rushcliffe Borough Council**

Section 21 of the National Parks and Access to the Countryside Act 1949, gives principal local authorities the power to acquire, declare and manage nature reserves. When using these powers to declare Local Nature Reserves, local authorities must consult with Natural England.

The designation of a Local Nature Reserve means that the local authority accepts a commitment to manage the land as a nature reserve and to protect it from inappropriate uses or development.

Rushcliffe Borough Council will oversee management of the sites and will undertake a strategic role in bringing all interested partners together through a local steering group, which will lead on a review of current operational practices and make changes to support habitats, where this is practical and within the budget available.

As landowner of Local Nature Reserves, Rushcliffe Borough Council has a duty of reasonable care to ensure people's safety.

Rushcliffe Borough Council is keen to support partners who can commission and/or undertake site work to enhance and create wildlife and habitats, as detailed in each management plan.

Where Friends Groups, community, voluntary or business organisations wish to carry out independent events or work on Local Nature Reserves, the Council requires a signed indemnity form which provides proof of :-

- Public Liability Insurance to a value of at least £2 million
- A Risk Assessment for each activity held on the site

For more information on Rushcliffe Borough Council and their open green spaces go to [www.rushcliffe.gov.uk](http://www.rushcliffe.gov.uk).

### **1.2 Natural England**

Natural England is a governmental body whose overall objective is to maintain and enrich the characteristic wildlife and natural features that comprise England's natural heritage. Local Nature Reserves are important to help meet this objective.

Natural England believes that:

- everyday contact with nature is important for people's well-being and quality of life
- everyone should be able to enjoy this contact, in safety, without having to make any special effort or journey to do so
- natural greenspace in towns and cities can play an important part in helping safeguard our national treasure of wildlife and geological features
- accessible natural greenspaces can give everyone an excellent chance to learn about nature and to help protect it in practical ways

With this in mind Natural England have set recommended targets for accessible natural greenspace provision for people living in towns and cities of:

- accessible natural greenspace less than 300m (in a straight line) from home
- at least one accessible 20ha site within 2km of home
- one accessible 100ha site within 5km of home and
- one accessible 500ha site within 10km of home
- statutory Local Nature Reserves provided at a minimum level of 1 ha per thousand population.

For more information on LNRs and Natural England please go to [www.naturalengland.org.uk](http://www.naturalengland.org.uk).

### 1.3 Nottinghamshire Wildlife Trust

The Nottinghamshire Wildlife Trust is the leading environmental charity dedicated to nature conservation in the County. The Trust works to promote nature conservation through the work of its officers and volunteers and works closely with other organisations and communities throughout Nottinghamshire to maintain and enhance biodiversity. The Trust is committed to supporting projects that facilitate participation of local communities in improving their local environment and quality of life including:-

- Encouraging the participation of our membership through the local group, in the community participation and management of the Local Nature Reserves.
- Promoting the Local Nature Reserves as an important resource for the improvement of the quality of life for local communities to ensure social, health and environmental well being.
- Continuing the provision of high quality ecological advice via our Conservation Policy & Planning Staff to the local authority and friends of groups at the local nature reserves.
- Sharing our experience as the manager of over 70 nature reserves and over 2000ha of land for conservation, with Local Authorities and communities.
- Supporting efforts to identify funds and mechanisms to continue delivery of both environmental/conservation restoration and management works on LNRs and community engagement with LNRs

The Nottinghamshire Wildlife Trust's have been commissioned by Rushcliffe Borough Council to take a lead role in co-ordinating practical work, community participation and involvement to improve and increase Rushcliffe's Local Nature Reserves provision and community engagement.

For more information on Nottinghamshire Wildlife Trust, go to: [www.wildlifetrust.org.uk/nottinghamshire/](http://www.wildlifetrust.org.uk/nottinghamshire/)

### 1.4 Friends Groups

It is vital for the long term sustainability of each Local Nature Reserve to encourage and support the involvement of local communities. A 'Friends of' group was formed in 2008 – The Friends of the Hook (FroTH)

The role of The Friends of the Hook group includes:-

- Providing a group that allows Rushcliffe Borough Council and its partner organisations to consult directly with the community.
- Allowing group members an opportunity to raise issues and to discuss site improvements of importance to the community and to raise these points directly with the officers involved.
- Assisting in species and habitat monitoring
- Raising awareness and public support for Local Nature Reserve and the Friends Group
- Organising and undertaking practical management tasks on site
- Raising funding for the group's administration, equipment and, in consultation with Rushcliffe Borough Council, for any site specific project outlined in the LNR's management plan.

For more information on The Friends of the Hook, go to: <http://www.friendsofthehook.org.uk/wp/>

### 1.5 Environmental Organisations

**Rushcliffe Nature Conservation Strategy Implementation Group**, is a partnership of organisations and groups with an interest in Rushcliffe's wildlife, work together with the Local Authority to implement Rushcliffe's Nature Conservation Strategy. The strategy seeks to protect and enhance Rushcliffe's wildlife resources, thereby contributing towards local and national biodiversity targets, to help mitigate the effects of climate change on wildlife and provide ready access to wildlife rich green spaces.

See <https://www.facebook.com/RNCSIG/> for further details.

The Nottinghamshire Biodiversity Action Group has the responsibility for overseeing and monitoring the Nottinghamshire target habitats and species, of which a significant proportion are located in Rushcliffe.

See <http://www.nottsbag.org.uk/> for more details

### 1.6 Local Businesses

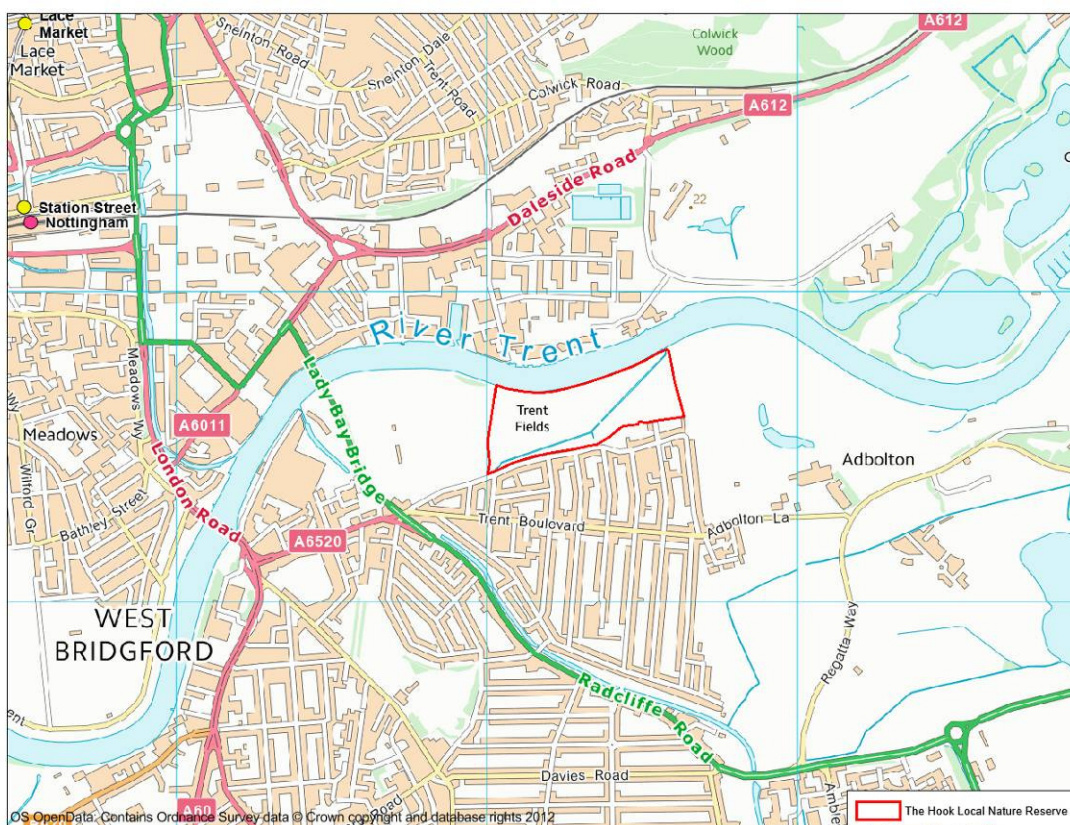
Local businesses will be invited to contribute to delivery of the Local Nature Reserve management plan, which could include supporting the Friends Group on volunteering days or providing technical or other assistance with enhancing the site for nature conservation.



## 2 DESCRIPTION

### 2.1 Location

The Hook Local Nature Reserve is located off Holme Road in Lady Bay, West Bridgford, Nottinghamshire. A map is provided below:



### 2.2 Map Coverage

The Hook can be found on the following Ordnance Survey Maps:

- Landranger (1:50,000) sheet 129
- Explorer (1:25,000) sheet 260

At Grid Reference SK 593 386

### 2.3 Size

The site covers approximately 15 hectares.

### 2.4 Ownership

The site is under the ownership of Rushcliffe Borough Council.

### 2.5 Geology and Soil

The underlying geology at The Hook consists of alluvium (clay and silt underlain by sand and gravel) representing the floodplain deposits of the River Trent. The rising ground along the southern margin of the meadow is a river terrace (a former floodplain of the Trent, now abandoned following down cutting by the main channel). The terrace deposits consist of sand and gravel and are between about 30 000 and 12 000 years old. (Carney, J. 2007 pers comm)



## **2.6 Aspect, Topography and Altitude**

The Hook lies 24 metres above sea level and is level throughout.

## **2.7 Access**

There are a number of access points into The Hook:

1. Vehicular entrance off Holme Road leading to The Hook car park
2. Pedestrian and cycle access from Holme Rd adjacent to Melbourne Road
3. Pedestrian access from Holme Rd adjacent to Mona Road
4. Pedestrian and cycle access off Holme Grove, with additional car park
5. Footpath and permissive cycle way along the River Trent – access point at the western and eastern boundaries of the site

The main entrance points to the park are currently well maintained, with knee rails, litter bins etc. These access points are located on relatively level ground and therefore facilitate access for all.

Once in the park, the ground is mainly level, the site is well used as a recreational resource for activities such as dog walking, horse riding and running, and there are a range of informal and formal footpaths on the site allowing disabled access.

The site has links to the surrounding landscape, with footpaths leading alongside the River Trent towards Nottingham to the NW and Holme Pierrepont to the East. There is a signed cycle route from Holme Grove using a ramp to access the recently refurbished metaled path down to the riverside

## **2.8 Surrounding Land Use**

The land surrounding The Hook is predominantly urban, particularly along its southern boundary which adjoins the Lady Bay residential area of West Bridgford, Nottingham. To the west is a formal play and recreation area which is owned and managed by Rushcliffe Borough Council whilst further westwards are Nottinghamshire Sports Club ground and Nottingham Forest training ground. The land to the north consists of the River Trent with post industrial habitat and recently developed land just beyond. To the east is an area of permanent grassland leading to Adbolton Lane, which along with The Hook is classified as floodplain. This area would, in recent history, have been lowland wet grassland flooding on a regular basis, mainly in winter. However, due to the canalisation of the River Trent in recent years, this area rarely floods now. Along Adbolton Lane towards Holme Pierrepont lies the Holme Pierrepont Country Park, home of The National Water Sports Centre and the Nottinghamshire Wildlife Trust's reserve, 'Skylarks', which consists of a series of wetlands with scrub habitat.

## **2.9 Site Description**

The Hook consists of a mixture of habitats including river and embankment, mature hedgerow, grassland, ditches and scrub.

For the purpose of this management plan the site has been split into 4 compartments, each one incorporating the section of the drainage ditch adjoining it to a mid point along the ditch (see compartment map in section 4, page 13).

## **2.10 Statutory Designations**

The Hook was declared as a Local Nature Reserve in December 2009 under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11 of the Natural Environment and Rural Communities Act 2006.

## **2.11 Non -Statutory Sites**

The site has no non-statutory designations.

### **3 EVALUATION OF RESOURCE**

#### **3.1 Size**

The Hook extends to 15 hectares and follows the course of the River Trent as it meanders out of the city of Nottingham in a north easterly direction towards more rural areas.

#### **3.2 Context**

The Hook is located close to the centre of Nottingham, in the Lady Bay area of West Bridgford and is situated alongside the River Trent, providing an extension to what is already a significant ecological resource and wildlife corridor.

To the east, the wildlife corridor continues into a rural environment, linking via Simkins Farm to Holme Pierrepont Water Sports Centre and to Nottinghamshire Wildlife Trust's Skylarks Reserve. Beyond this the Trent meanders north east to exit the borough at East Bridgford continuing in a northerly direction.

The combination of The Hook and sites to the east, along with the River Trent creates significant wildlife corridor enhanced by a mosaic of habitats and open green space. It is important not to view The Hook in isolation, but as part of a system of sites, which are enhanced through the positive management of The Hook for conservation.

#### **3.3 Diversity**

The habitats currently found at The Hook include meadow, scrub, amenity grassland, orchard, ditch, hedgerow and pond. Until 20 years ago the majority of the site was managed as amenity grassland and consequently was of low wildlife value. There is great potential to further improve the biodiversity of the site through continuation of conservation management and the creation of some additional habitats. However, there could be some archaeological constraints on habitat creation.

Water voles have been recorded within the drainage ditch. The water vole is a Nottinghamshire Biodiversity Action Plan priority species and their habitat is protected by The Wildlife & Countryside Act 1981, this means that the management and expansion of their habitat will be a priority on this site. see Appendix 2. Botanical diversity on the site is illustrated via the indicative species lists provided at Appendix 1. A range of bird species have been recorded on this site including mallard, moorhen, magpie, blackbird, wood pigeon, chaffinch, robin, chiffchaff, reed bunting, grey wagtail and bullfinch, see appendix 3.

Further ecological surveys are required to determine the presence and breeding status of amphibians, reptiles and invertebrates (See Appendix 4 for moth records). Ongoing bird, botanical and water vole surveys are required.

#### **3.4 Naturalness**

No habitat on this site can be described as natural as it has all been heavily managed. Originally The Hook would have been an area of lowland wet grassland or water meadow at the side of a meandering River Trent which would have flooded during high rainfall, mainly during the winter. The Hook floods much less frequently since the straightening and canalisation of the River Trent. This allows the site to be more easily managed for recreation but this lead to a decline in the diversity of the sward and other habitats. The grassland areas are now classed as improved and semi-improved habitats, and in addition to the amenity grassland areas there is some scattered tree planting which gives the area a 'park' feel, however the current mowing regimes implemented on the site allow grassland to have a more natural appearance.

#### **3.5 Rarity**

The habitats present at The Hook could not be considered to be rare. However, the presence of a population of water voles is a rarity. Once common and widespread, this species has suffered a dramatic decline in both numbers and distribution. Numbers have fallen by an estimated 89% since 1939. This decline continues and is the most significant for any British mammal, with a projected possible extinction early this century (Strachan, 2001). The water vole is listed as both a Nottinghamshire Biodiversity Action Plan priority species and a Species of Conservation Concern in England. Their burrows and the animals

themselves receive full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to:

- Intentionally kill, injure or take (capture) a water vole;
- Possess or control a live or dead water vole, or any part of a water vole;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place; and
- Sell, offer for sale or advertise for live or dead water voles.

The provision of a significant natural open green-space such as this in close proximity to an urban area is rare and as such should be protected.

### **3.6 Fragility**

The majority of the site could not be considered fragile due to historic engineering works, such as the canalisation of the Trent. This has removed opportunities for seasonal inundation. The grassland sward appears to have been agriculturally 'improved', with the introduction of seed mixes containing ryegrass (*Lolium perennis*) and white clover (*Trifolium repens*).

The ditch is very fragile and susceptible to pollution incidents, mismanagement when dredging, scrub growth resulting in dense shading and the subsequent loss of water vole habitat. The ditch is also susceptible to invasion by non-native species such as Himalayan Balsam (*Impatiens glandulifera*). One of the main objectives of this management plan is to maintain and enhance the water vole habitat to allow the population to increase.

### **3.7 Typicalness**

The site is typical of floodplain in that it is flat, predominantly grassland and would traditionally have been in agricultural use, for hay and / or grazing. Such sites on the edge of towns and cities are often used for informal recreation.

### **3.8 Recorded History**

Sanderson's map of 1835 shows the area of the Hook to be split by a curving watercourse, an earlier course of the River Trent. This is still visible as a sinuous feature on the site today, reminding us that the Trent has not always been the single channel we see today (i.e. contained for most of the time within flood banks and other defences). It is probably from this earlier curving channel that the Hook gets its name. Earlier river channels like this contain a wealth of archaeological information. Such naturally filled channels can contain Prehistoric log boats, human remains and ritual deposits of Bronze Age metalwork. Waterlogged conditions exclude air; helping to preserve organic remains which might otherwise rot, so wood, plant, bone and pollen can survive well. These can tell us about human behaviour in the past, and provide information about past climate and environmental changes. The Hook would have been part of an agricultural holding. It would have been floodplain grassland, used for a hay crop during the summer and grazed in the autumn until it became too wet for livestock. Surveys could be carried out in the future to explore the potential for any hidden archaeology.

### **3.9 Ecological Position**

The Hook LNR is an important link in a chain of natural sites, which together provide a network of open space that allows the movement of wildlife through Nottingham city and into the wider countryside.

Since the Industrial Revolution, much of the land adjoining the River Trent within the City and beyond has been encroached by development; this means that a once continuous habitat resource has become fragmented. The bringing in to sympathetic management such a large area of natural green space is of benefit to wildlife. It will be protected from further encroachment in the future and encourage a greater variety of species into the site or along the corridor.

### **3.10 Potential**

As water vole populations have declined significantly in the UK, if the ditch continues to be managed sympathetically, The Hook has the potential to become a local stronghold for this species.

As The Hook is located close to Lady Bay and West Bridgford it has the potential to attract large numbers of recreational users. Several schools are also located nearby, which will allow use as an educational resource. The creation of an orchard and new pond, together with on-going interpretation, provides an educational resource. The friends and Nottinghamshire Wildlife Trust's Education Officers are continuing to develop the educational potential of the site.

The Friends group aim to further enhance the area for nature conservation through carrying out regular conservation action afternoons to implement management plan objectives. It is hoped that ongoing interpretation and education initiatives will potentially encourage additional local residents to look after the site and to keep anti-social behaviour (which is not high) in check.

### **3.11 Intrinsic Appeal**

The Hook's appeal lies in its open natural feel, which is unusual in this urban environment. It provides the ability to be able to walk alongside the river Trent or through grass and scrub areas along a network of formal and informal paths. This reserve is on the local community's doorstep. Tree and shrub planting and habitat creation has allowed site users to experience a sense of seclusion in some areas, whilst the variety of pathways makes exploring the site interesting. Interpretation and signage installed on The Hook enables visitors to better understand the aims for the site and how it benefits wildlife.

#### 4. MANAGEMENT OBJECTIVES AND PRESCRIPTIONS

The site comprises river bank and grassland on level ground with some areas of trees, scrub and other habitats including ditch, pond, reedbed and orchard. Management should therefore aim to maintain this overall balance whilst adding diversity to the grass sward and other habitat types.



Figure 1 – Management Compartment Map of The Hook LNR

The management objectives are as follows:

1. Maintain and enhance the habitat types and species present;
2. Combine habitat enhancement and management with education, recreation and access provision;
3. Encourage public understanding and awareness of issues relating to the site;
4. Monitor effects of management on the wildlife on the site;

The objectives are considered in more detail in sections 4.1 to 4.4 below and on a compartment basis (where relevant).

##### 4.1 Objective 1: Maintain and enhance the habitat types and species present.

###### Compartment 1 - 'The wild area'

This compartment lies to the south of the drainage ditch and consists of sloping ground previously disturbed with dredgings from the ditch. Some enhancement work on the ditch was undertaken in 2018, including scrub control, de-silting and creation of an online pond in Compartment 3.

Habitats in this compartment consist of tall herb and grass vegetation with occasional scrub, which appears to be quite valuable and well used by small passerine birds for foraging and possibly nesting.

The area to the south of the ditch is largely inaccessible and benefits from a minimal/no intervention management approach, allowing natural habitat development, although small amounts of tree planting could be considered.

A surface water culvert enters the site under Holme Road; the water discharged from this culvert in to the drainage ditch is of a very variable quality often carrying contaminants such as oil etc. Because of this a small phragmites reedbed was created within the drainage ditch near to the discharge point in 2009. The water flow in to the ditch is designed to be slowed by the reed bed allowing contaminants and particles to come out of suspension; however the channel will need to be maintained to ensure continued flow through, and not around the reedbed. The phragmites root system will trap any minute particles still left in the water body and remove excess nutrients that can have a detrimental effect on the less robust water side vegetation. These measures will help raise the water quality along the length of the ditch while preventing or at least slowing larger pollution events from entering the main river channel. The area surrounding the reedbed appears to attract an accumulation of litter which will need to be removed on a regular basis.

The drainage ditch to the north-west of this compartment is dense with Reedmace (*Typha latifolia*) and some reed sweetgrass (*Glyceria fluitans*). Both plants will need controlling along the course of the drain to maintain the flow of water and provide favourable habitat for water voles. This work should be carried out between November and February and, where possible, by hand to minimise the disturbance to water vole.

### **Compartment 2 - 'The hay meadow'**

Ridge and furrow topography is evident within this compartment (observed by Pre-construct Archeological Ltd). An area of undulating grassland exists to the west of the compartment which often remains damp throughout most years. Nottinghamshire County Councils' archaeologist believes that these depressions are the signs of medieval fish traps, settlement and meanders of the River Trent. Any management work needs to be sensitive to this archaeology.

The River Trent forms the northern boundary of this compartment, acting as a corridor for migrating birds and mammals such as water vole and potentially otter. It is also a great visual asset for local people when walking and cycling, and an amenity resource for water uses such as anglers and canoeists. The banks of the Trent have been canalised, and are therefore steeper and straighter than would naturally occur. Bankside vegetation is currently left un-cut and there are occasional willows with some hawthorn scrub immediately adjacent to the banks.

The compartment, apart from the river bank habitat, is managed with an annual cut in Autumn. The mown grass is removed from site. The grassland management regime currently employed is producing a good mix of meadow habitats comprising longer sward for cover and nectar sources alongside shorter grass serving as wide informal footpaths. These meandering paths and open areas are created annually through regular cutting and are aesthetically pleasing to look at as well as providing informal areas for recreational activities including picnicking. The diversity of grass height encourages a variety of native plants to flower and set seed, so increasing the wildlife potential of this area by providing food plants, nectar and seeds for invertebrates such as butterflies, as well as increased foraging and nesting opportunities for small mammals and birds.

The meadow may also be sown with seeds of yellow rattle (*Rhinanthus minor*), which takes much of its nutrients from grass roots and weakens the grass, allowing wildflowers more space and light to grow

In summary, this system of management is enhancing the wildlife value of the site and should be encouraged; it is also creating an interesting and varied landscape, which is aesthetically pleasing.

### **Compartment 3 - 'The main conservation area'**

Compartment 3 consists of areas of tussocky grassland interspersed with some large areas of mature hawthorn and willow scrub. A number of formal and informal paths intersect the compartment but the area remains well populated with birds. Off the paths the land is undulating and therefore difficult to access or use conventional grass cutting equipment. This does however mean that the area provides good habitat for nesting birds, small mammals and invertebrates and is a seed source throughout the year, but most significantly throughout the winter. Some areas in Compartment 3 are dominated by tall herb vegetation such as nettle, creeping thistle, willowherb and tansy and these should not be allowed to encroach into the neighbouring meadow. They do however provide shelter, nectar and seed for insect

and birds and therefore any intervention should only seek to prevent them spreading. Topping some of the flowers before they set seed or creating open bays with a hand-held strimmer could help to achieve the required control. Bramble are encroaching on the pathways through this area and will need annual cutting back using a brush cutter.

An unmanaged mature hedgerow forms the eastern boundary of this compartment and the reserve. It would be beneficial to resume management of this hedgerow as a boundary while increasing its wildlife value; however it has not been possible to establish current ownership. Gapping up of this hedgerow has been carried out by the Environment Agency as part of mitigation for disturbance to habitats during the construction of the flood alleviation wall and future removal of tree guards will be necessary.

A community orchard was created in the southwest of this compartment in 2010 as an asset for the whole community to relax in, share and enjoy. As well as contributing to efforts to halt the UK-wide decline in traditional orchard habitat, its aim is to help protect the national heritage of fruit tree varieties and also provide additional wildlife habitat. 29 varieties of fruit tree have been planted, 5 more recently in 2019, including apple, pear, plum and damson (see Appendix 3.2 for details) and an interpretation panel erected to allow site users to understand the area (Appendix 3.1). The trees will require winter pruning to encourage fruiting and regular clearance of surrounding vegetation to reduce competition (See guidelines in Appendix 3.3).

A wildlife pond has been created in this compartment to encourage invertebrates such as water beetles, dragonflies, damselflies etc and amphibians. It has been planted with native marginal vegetation to enhance its wildlife value. The pond is also a valuable resource for local schools and youth groups to use as an educational resource. Following pond creation, it is likely that ongoing management will be required to maximise its nature conservation value and maintain structural safety. Photographs of the pond are provided in Appendix 4.

The ditch embankment in this compartment has also undergone some scrub removal works to reduce shading and improve the habitat for water voles. It is advised that the amount of scrub is monitored and further scrub is removed from the ditch embankment as required.

Work has been carried out to remove Himalayan balsam along the ditch in this compartment and compartment 4, this should continue.

### Trees

Attempts to underplant the hybrid poplars along the river embankment in compartments 2 and 4 with native Black Poplar which would once have been characteristic of this area have proved unsuccessful. Instead, an avenue of native Black Poplar is being established either side of the path which bisects compartment 3. This planting should be completed with subsequent management of stakes and tree guards required.

Some non-native trees may need to be removed as they can be invasive and are uncharacteristic of this landscape. The planting and ongoing management of native species of tree characteristic to this location is proposed to continue within compartment 3; this will create small copses consisting of trees, shrubs and log piles to encourage fungi, beetles and a range of wildlife.

Due to public access any potentially dangerous trees should be made safe.

### **Compartment 4 - 'The wild flower meadow'**

Compartment 4 is an area of grassland bordered by the River Trent in the north and the drainage ditch to the south east. It is an area which has been seeded as a wildflower meadow creation in 2012. A formal footpath runs alongside the river and because of its close proximity to the drainage ditch, some scrub cover will be maintained along the ditch embankment to reduce disturbance in the ditch. The scrub will be reduced in height to reduce the amount of shading, whilst preventing clear sight to the ditch from the path, which is often used by cyclists and runners. Areas of nettle and thistle should not be allowed to spread onto the meadow and could be controlled through topping some of the flowers before they set seed or creating open bays with a hand-held strimmer.



Management of the wildflower meadows consists of an annual cut in the Autumn with removal of arisings. The removal of the grass cuttings reduces the fertility of the soil which weakens the strong growing amenity grass and benefits wildflowers. Where funding is available, a second cut of the meadow could be carried out in November each year to simulate aftermath grazing and further reduce soil fertility. The meadow has also been sown with seeds of the plant known as yellow rattle (*Rhinanthus minor*). The meadow has been further enhanced by planting plugs of wildflower species and sowing wildflower seed. This work has been undertaken mainly by the Friends Group with the help of contractors on occasion. Signage identifying the meadow's inclusion within the Blue Butterfly scheme and explaining its management aims has been installed at the eastern end of the compartment.

Subject to review of how the meadow is establishing, the introduction of more wildflowers through seeding and planting of plug plants could continue when time and funding permits. Local schools could get involved with growing plants from seed and planting them in the meadow. This will help pupils to understand the lifecycle of plants and help to engender a feeling of local ownership over the meadow.

### River Embankment

Himalayan balsam growing along the banks of the River Trent and the small brook should be removed as it is a non-native species and whilst does have some wildlife benefit, it is highly competitive which is detrimental to native species. The plant is particularly invasive, shading out the more delicate marginal plants so the area will gradually lose its wildlife value. The control of this plant should continue to be undertaken by the Friends of the Hook through hand pulling at soil level on an annual basis until no new seedlings appear, rather than through chemical control, which is deemed undesirable by the local community. The main aim in controlling this annual weed in this manner is to prevent it seeding, so it is important that work is carried out before plants have flowered and set seed (flowers appear between June to October) as seed capsules react to the slightest disturbance opening explosively and shooting their seeds up to 7m (22ft) away.

Regarding management, the grass along the river embankment should remain uncut but with encroaching scrub and tall vegetation being controlled by brush-cutting. The uncut tussocky surface provides habitat for invertebrates and small mammals, which in turn attracts predators such as kestrels.

### Artificial Habitats

Mature willow trees along the riverbank should be retained which may, given sufficient time, develop a root system which would provide natural shelter for otters.

Bat boxes could be installed on the poplars along the river embankment to encourage bat roosting. Bird nesting boxes could be installed on trees mature enough to support them to provide additional nesting sites.

### **Outline Prescriptions:**

- Maintain flow of water through reedbed in compartment 1
- De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater
- Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles
- Manage all grassland meadow areas through annual September cut and removal of arisings from site
- Create meandering informal paths through regular cutting in compartment 2
- Maintain hedgerow in compartment 3
- Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps
- Carry out pruning of orchard fruit trees
- Control vegetation around orchard fruit trees to reduce competition and potential for damage from small mammals
- Carry out ongoing maintenance around the ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants.
- Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of Compartment 4 (wild flower meadow) and Compartment 2 (hay meadow)
- Carry out 2<sup>nd</sup> cut of the wildflower meadow annually in November, if required, where funding allows
- Maintain the Black Poplar avenue in compartment 3
- Remove non-native saplings, shrubs and trees where necessary
- Maintain and continue tree plantings in compartment 3 and potentially compartment 1
- Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed
- Control tall herb and scrub vegetation along river embankment on rotation as necessary
- Install bird nesting, bat roosting, hedgehog and invertebrate boxes
- Control some areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment

#### **4.2 Objective 2: Combine habitat enhancement and management with education, recreation and access provision.**

The Hook is a well-used recreational resource. Alterations in habitat management and restrictions to access will therefore need to be clearly defined and interpreted on site to avoid misunderstandings. Access around the site currently consists of a Public Right of Way along the embankment of the River Trent and a system of formal and informal pathways throughout the site leading from the nearby housing to the designated footpath. It would be advisable to identify and formalise footpaths and their uses, along with interpretation of those paths, to allow the creation of 'quiet' areas for wildlife for those species that are sensitive to disturbance.

Ensure that defined paths are in good order and useable at all times to ensure that visitors have no need to stray off paths.

Interpretation materials detailing footpaths, habitats, species and archaeological interest should be maintained.

Carry out regular health & safety checks around the reserve to ensure public safety.

Litter, fly tipping and graffiti removal should be undertaken regularly to maintain the habitats and the visual appearance of the site.

Continued involvement of Friends of the Hook group should be encouraged and supported to provide a vehicle for the local community to provide input into the future management and uses on the site. The Friends of the Hook group allows the local community to get involved with the site at a practical level, from the strategic decision making to habitat management and running events and walks.

### **Outline Prescriptions:**

- Define footpaths, bridleways and habitat areas on the reserve to inform users of the site
- Maintain paths and access points, keeping them clear of scrub encroachment
- Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available
- Carry out regular health & safety checks around the reserve to ensure public safety.
- Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting

### **4.3 Objective 3: Encourage public understanding and awareness of issues relating to the site.**

The urban fringe location of The Hook LNR encourages it to be heavily used for informal recreation such as dog walking. Introducing new forms of management, especially wetland management work and limiting access into some areas has the potential to alienate local residents or users.

During both the formal neighbourhood meetings and informal site meetings with the local people, together with the subsequent e-mail correspondence, it has become obvious that the local community care about and enjoy the site for a number of reasons. Some wish to see it improved for wildlife, others would like to see it 'tidied up' and others value the wide-open expanse in a primarily built up area. The decision to designate this area as a Local Nature Reserve means that management regimes have changed and the area has been enhanced for the benefit of biodiversity. It is important to encourage public understanding of the management of the site and its long-term objectives through engagement with the Friends of the Hook group, ongoing consultation on this plan and on-site interpretation. It is hoped that through public understanding there will be continued support for the implementation of the management plan to achieve long-term objectives.

To raise the profile of The Hook as a Local Nature Reserve, a programme of events run in partnership with the Friends of the Hook group should continue to be encouraged. Events could include guided walks on topics such as wildflowers, birds, fungi etc, volunteer work days focusing specific tasks such as coppicing. This would enable the opportunity to explain key theories relating to management activities. School groups should be encouraged to use the site as an outdoor classroom to raise awareness about environmental issues and promote a feeling of ownership amongst young people.

### **Outline Prescriptions:**

- Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology
- Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology
- Encourage school parties to visit the site;
- Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;
- Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife;
- Develop links with business community
- Work with local partners to encourage responsible use of the site

### **4.4 Objective 4: Monitor effects of management on the wildlife of the site.**

In order to evaluate the effects that management regimes are having on the habitats and species it is important to carry out long-term monitoring in the form of collating casual observations and formal surveys. For this to be effective, baseline data should be collated; this information demonstrates the ecological situation prior to implementing new management regimes.

Vegetation surveys have been carried out in 2010, 2011 and 2012 (see Appendix 1). Water vole surveys were carried out by students from Nottingham Trent University in 2010 and the results are appended (see Appendix 2), A bird survey carried out 2019 is appended (Appendix 3).

Future surveys would be useful for invertebrates (including moths), amphibians and fungi. Records from local recorders should be collected and added to species lists. All of this survey information will be used, along with ongoing survey results, to monitor the effects of management on site. Local naturalists, volunteer, school parties, students and the local community, supported by NWT, will be encouraged and in some instances trained to carry out ecological surveys on site.

A butterfly and botanical survey was carried out in 2011 as part of the Blue Butterfly scheme where 3 species of butterfly were noted in the wildflower meadow area, with a further 2 species noted on the wider site (see Appendix 1 for details).

Subject to monitoring results, this and future management plans will be reviewed and evolve accordingly.

#### **Outline Prescriptions:**

- Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds;
- Encourage and in some instances train local people to carry out ecological surveys to inform management and provide records to the Notts Biological & Geological Records Centre (NBGRC);
- Review, evaluate and update management strategies and prescriptions on a 5 yearly cycle (or more frequently if required).

#### **4.5 Factors Influencing Management**

- Safety - the entire site is accessible at all times, therefore in the interest of public safety, all possible measures should be taken to ensure public safety whilst work is being carried out, including closing paths
- Community involvement - local community and interest groups should be involved in and consulted upon the practical and strategic management of the site at every possible opportunity.
- Funding – monies for works cannot be guaranteed for the full term of the plan. It may therefore be necessary for some tasks to be rolled over into subsequent years, to be completed when funding becomes available or for grant funding to be raised for specific projects.
- Legal obligations - work likely to cause disturbance to breeding birds i.e. felling and scrub clearance cannot be undertaken during the bird breeding season (which may be March to September). Therefore all felling and scrub clearance must be undertaken during the autumn and winter as it is an offence to disturb any wild bird (with the exception of pest species) while it is tending a nest containing eggs or chicks, until the chicks have *successfully* fledged. To do so would be a criminal offence under The Wildlife & Countryside Act 1981.
- Protected species - mature trees could provide roosting opportunities for bats should be surveyed by a licensed bat worker prior to any works. All species of bats and their roosts are protected by The Wildlife & Countryside Act 1981, the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010.
- Management - annual or bi-annual meetings regarding the implementation of the management plan for the site are required to identify a work programme and schedule of works. Meetings should involve Rushcliffe Borough Council, Notts Wildlife Trust, contractors and anyone else likely to carry out work on site.
- Only native species characteristic of the area should be introduced to the reserve.

**5. MANAGEMENT PROPOSALS:**

<b>Objective 1 Maintain and enhance the habitat types and species present</b>		
	<b>Outline Prescription</b>	<b>Who by? – Suitable Operatives</b>
<b>1</b>	Maintain flow of water through reedbed in compartment 1	RBC / Contractor
<b>2</b>	De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater	RBC / Contractor
<b>3</b>	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	FroTH / RBC // Contractor
<b>4</b>	Manage all grassland meadow areas through annual September cut and removal of arisings from site	RBC / Contractor
<b>5</b>	Create meandering informal paths through regular cutting in compartment 2	RBC / Contractor
<b>6</b>	Maintain hedgerow in compartment 3	FroTH
<b>7</b>	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	FroTH
<b>8</b>	Carry out pruning of orchard fruit trees	FroTH Trained volunteers
<b>9</b>	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	FroTH
<b>10</b>	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants	NWT / FroTH
<b>11</b>	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the hay meadow and the wildflower meadow	FroTH / RBC / Contractor
<b>12</b>	Carry out 2nd cut of the wildflower meadow annually in November where funding allows if required	RBC / Contractor
<b>13</b>	Maintain Black Poplar avenue in compartment 3	FroTH
<b>14</b>	Remove non-native saplings, shrubs and trees where necessary	FroTH / Contractor
<b>15</b>	Maintain and continue tree plantings compartment 3 and consider in compartment 1	FroTH
<b>16</b>	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	FroTH / RBC / Contractor
<b>17</b>	Control tall herb and scrub vegetation along river embankment on rotation as necessary	FroTH / RBC / Contractor
<b>18</b>	Install bird nesting and bat roosting, hedgehog and invertebrate boxes	FroTH / NWT
<b>19</b>	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment	FroTH / RBC / Contractor

<b>Objective 2 Combine habitat enhancement and management with education, recreation and access provision.</b>		
	<b>Outline Prescription</b>	<b>Who by? – Suitable Operatives</b>
20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	RBC / NWT / FroTH
21	Maintain paths and access points, keeping them clear of scrub encroachment	FroTH / RBC
22	Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available	FroTH / RBC / NWT
23	Carry out regular health & safety checks around the reserve to ensure public safety.	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	RBC / FroTH

<b>Objective 3 Encourage public understanding and awareness of issues relating to the site</b>		
	<b>Outline Prescription</b>	<b>Who by? – Suitable Operatives</b>
25	Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology	NWT / FroTH / RBC
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	NWT / FroTH
27	Encourage school parties to visit the site	NWT / FroTH
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	NWT / FroTH
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	NWT
30	Develop links with business community	NWT / RBC / FroTH
31	Work with local partners to encourage responsible use of the site	NWT / RBC / FroTH

<b>Objective 4 Monitor effects of management on the wildlife of the site</b>		
	<b>Outline Prescription</b>	<b>Who by? – Suitable Operatives</b>
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to information management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	NWT / local naturalists / volunteers
34	Review, evaluate and update management strategies and prescriptions on a 5 yearly cycle or more frequently if required	NWT / RBC

**6. FIVE YEAR WORK PROGRAMME 2020 – 2024**

Project		Years				
		2020	2021	2022	2023	2024
1	Maintain flow of water through reedbed in compartment 1	1		1		1
2	De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater		2		2	
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	1	1	1	1	1
4	Manage all grassland meadow areas through annual Autumn cut and removal of arisings from site	1	1	1	1	1
5	Create meandering informal paths through regular cutting in compartment 2	1	1	1	1	1
6	Maintain hedgerow in compartment 3	2	2	2	2	2
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	2	2	2	2
8	Carry out pruning of orchard fruit trees	1	1	1	1	1
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	1	1	1	1	1
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants		1	2	2	2
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the hay meadow and wild flower meadow	2	2	2	2	2
12	Carry out 2nd cut of the wild flower meadow annually in November where funding allows	2	2	2	2	2
13	Maintain Black Poplar avenue in compartment 3	2		2		2
14	Remove non-native saplings, shrubs and trees where necessary		3		3	
15	Maintain and continue tree plantings in compartment 3, consider planting in compartment 1	3		3		3
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1	1	1	1	1
17	Control tall herb and scrub vegetation along river embankment on rotation as necessary	2		2		2
18	Install bird nesting and bat roosting, hedgehog and invertebrate boxes		2			
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/ or to create open bays alongside paths to prevent encroachment	2	2	2	2	2
20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	2	2	2	2	2
21	Maintain paths and access points, keeping them clear of scrub encroachment	1	1	1	1	1
22	Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available	2		2		2
23	Carry out regular health & safety checks around the reserve to ensure public safety.	1	1	1	1	1
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	1	1	1	1



25	Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology		2		2	
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	2	2	2	2	2
27	Encourage school parties to visit the site	2	2	2	2	2
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	2	2	2	2	2
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	1	1	1	1	1
30	Develop links with business community		2		2	
31	Work with local partners to encourage responsible use of the site		2		2	
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2	2	2	2	2
33	Encourage and in some instances train local people to carry out ecological surveys to inform management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3	3	3	3	3
34	Review, evaluate and update management strategies and prescriptions on a 5 yearly cycle or more frequently if required					1

**Priority: 1 – high, 2 – medium, 3 – low**

**7. ANNUAL WORK PROGRAMMES:**

**7.1 ANNUAL WORK PROGRAMME 2020**

No.	Outline prescription	Priority	Timing												Who
			J	F	M	A	M	J	J	A	S	O	N	D	
1	Maintain flow of water through reedbed in compartment 1	1	✓	✓											RBC / Contractor
3	Cut ditch banks on a rotation basis to clear scrub and improve foraging for water voles	1		✓											FroTH / Contractor
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site	1									✓				RBC / Contractor
5	Create meandering informal paths through regular cutting in compartment 2	1					✓	✓	✓	✓					RBC / Contractor
6	Maintain hedgerow in compartment 3	2	✓	✓									✓	✓	FroTH
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	✓	✓									✓	✓	FroTH
8	Carry out pruning of orchard fruit trees	1	✓	✓	✓								✓	✓	FroTH Trained volunteers
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for disturbance from small mammals	1				✓	✓	✓	✓	✓					FroTH
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the wildflower meadow	2									✓	✓	✓		FroTH / RBC / Contractor
12	Carry out 2nd cut of the wildflower meadow annually in November where funding allows if required	2											✓		RBC / Contractor
13	Complete and maintain Black Poplar avenue in compartment 3	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
15	Maintain and continue tree plantings to the east of compartment 3 and consider compartment 1	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / Contractor
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1				✓	✓	✓							FroTH / RBC / Contractor
17	Control tall herb and scrub vegetation along river embankment by strimming on rotation as necessary	2	✓	✓								✓	✓	✓	FroTH / RBC / Contractor
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment	2			✓	✓									FroTH / RBC / Contractor

20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / NWT / FroTH
21	Maintain paths and access points, keep clear of scrub encroachment	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
22	Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC / NWT
23	Carry out regular health & safety checks around the reserve to ensure public safety.	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / FroTH
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
27	Encourage school parties to visit the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2			✓	✓	✓	✓	✓	✓	✓				NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to information management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3			✓	✓	✓	✓	✓	✓	✓				NWT / local naturalists / volunteers

7.2 ANNUAL WORK PROGRAMME 2021

No.	Outline prescription	Priority	Timing												Who	
			J	F	M	A	M	J	J	A	S	O	N	D		
2	De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater	2	✓	✓										✓	✓	FroTH, RBC / Contractor
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	1		✓												FroTH / Contractor
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site	1										✓				RBC / Contractor
5	Create meandering informal paths through regular cutting in compartment 2	1					✓	✓	✓	✓						RBC / Contractor
6	Maintain hedgerow in compartment 3	2	✓	✓										✓	✓	FroTH
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	✓	✓										✓	✓	FroTH
8	Carry out pruning of orchard fruit trees		✓	✓	✓									✓	✓	FroTH Trained volunteers
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	1				✓	✓	✓	✓	✓						FroTH
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants	1					✓	✓	✓	✓	✓					FroTH
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the hay meadow and the wild flower meadow	2										✓	✓	✓		FroTH, RBC / Contractor
12	Carry out 2nd cut of the wildflower meadow annually in November where funding allows if required	2												✓		RBC / Contractor
14	Remove non-native saplings, shrubs and trees where necessary	3	✓	✓									✓	✓	✓	FroTH
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1				✓	✓	✓								FroTH, RBC / Contractor
18	Install bird nesting and bat roosting, hedgehog and invertebrate boxes	2	✓	✓										✓	✓	FroTH / NWT
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or	2			✓	✓										FroTH / RBC / Contractor

	to create open bays alongside paths to prevent encroachment														
20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / NWT / FroTH
21	Maintain paths and access points, keeping them clear of scrub encroachment	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
23	Carry out regular health & safety checks around the reserve to ensure public safety.	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / FroTH
25	Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / NWT
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
27	Encourage school parties to visit the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT
30	Develop links with business community	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
31	Work with local partners to encourage responsible use of the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2			✓	✓	✓	✓	✓	✓					NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to inform management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3			✓	✓	✓	✓	✓	✓					NWT / local naturalists / volunteers

**7.3 ANNUAL WORK PROGRAMME 2022**

No.	Outline prescription	Priority	Timing												Who
			J	F	M	A	M	J	J	A	S	O	N	D	
1	Maintain flow of water through reedbed in compartment 1	1	✓	✓											RBC / Contractor
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	1		✓											FroTH / RBC / Contractor
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site	1									✓				RBC / Contractor
5	Create meandering informal paths through regular cutting in compartment 2	1					✓	✓	✓	✓					RBC / Contractor
6	Maintain hedgerow in compartment 3	2	✓	✓									✓	✓	FroTH
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	✓	✓									✓	✓	FroTH
8	Carry out pruning of orchard fruit trees		✓	✓	✓								✓	✓	FroTH Trained volunteers
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	1				✓	✓	✓	✓	✓					FroTH
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants	1					✓	✓	✓	✓	✓				FroTH
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the wildflower meadow	2									✓	✓	✓		FroTH / RBC / Contractor
12	Carry out 2 <sup>nd</sup> cut of the wildflower meadow annually in November where funding allows if required	2											✓		RBC / Contractor
13	Maintain Black Poplar avenue in compartment 3	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
15	Maintain and continue tree plantings to the east of compartment 3 and consider compartment 1	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / Contractor
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1				✓	✓	✓							FroTH / RBC / Contractor
17	Control tall herb and scrub vegetation along river embankment on rotation as necessary	2	✓	✓								✓	✓	✓	FroTH / RBC / Contractor
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or	2			✓	✓									FroTH / RBC / Contractor

	to create open bays alongside paths to prevent encroachment														
20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / NWT / FroTH
21	Maintain paths and access points, keeping them clear of scrub encroachment	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
22	Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
23	Carry out regular health & safety checks around the reserve to ensure public safety.	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / FroTH
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
27	Encourage school parties to visit the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2			✓	✓	✓	✓	✓	✓					NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to information management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3			✓	✓	✓	✓	✓	✓					NWT / local naturalists / volunteers



7.4 ANNUAL WORK PROGRAMME 2023

No.	Outline prescription	Priority	Timing												Who	
			J	F	M	A	M	J	J	A	S	O	N	D		
2	De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater	2	✓	✓										✓	✓	FroTH, RBC / Contractor
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	1		✓												FroTH / Contractor
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site	1										✓				RBC / Contractor
5	Create meandering informal paths through regular cutting in compartment 2	1					✓	✓	✓	✓						RBC / Contractor
6	Maintain hedgerow in compartment 3	2	✓	✓										✓	✓	FroTH
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	✓	✓										✓	✓	FroTH
8	Carry out pruning of orchard fruit trees		✓	✓	✓									✓	✓	FroTH Trained volunteers
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	1				✓	✓	✓	✓	✓						FroTH
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants	1					✓	✓	✓	✓	✓					FroTH
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the wildflower meadow	2										✓	✓	✓		FroTH
12	Carry out 2nd cut of the wildflower meadow annually in November where funding allows if required	2												✓		RBC / Contractor
14	Remove non-native saplings, shrubs and trees where necessary	3	✓	✓									✓	✓	✓	FroTH
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1				✓	✓	✓								FroTH, RBC / Contractor
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment	2			✓	✓										FroTH, RBC / Contractor

20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / NWT / FroTH
21	Maintain paths and access points, keeping them clear of scrub encroachment	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
23	Carry out regular health & safety checks around the reserve to ensure public safety.	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / FroTH
25	Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / NWT
26	Develop a programme of interesting, varied public events to promote and inform about wildlife, education, habitat management and archaeology	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
27	Encourage school parties to visit the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management;	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT
30	Develop links with business community	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
31	Work with local partners to encourage responsible use of the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2			✓	✓	✓	✓	✓	✓					NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to inform management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3			✓	✓	✓	✓	✓	✓					NWT / local naturalists / volunteers

**7.5 ANNUAL WORK PROGRAMME 2024**

No.	Outline prescription	Priority	Timing												Who	
			J	F	M	A	M	J	J	A	S	O	N	D		
1	Maintain flow of water through reedbed in compartment 1	1	✓	✓												RBC / Contractor
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water voles	1		✓												FroTH / Contractor
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site	1										✓				RBC / Contractor
5	Create meandering informal paths through regular cutting in compartment 2	1					✓	✓	✓	✓						RBC / Contractor
6	Maintain hedgerow in compartment 3	2	✓	✓										✓	✓	FroTH
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps	2	✓	✓										✓	✓	FroTH
8	Carry out pruning of orchard fruit trees		✓	✓	✓									✓	✓	FroTH Trained volunteers
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals	1				✓	✓	✓	✓	✓						FroTH
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants	1					✓	✓	✓	✓	✓					FroTH
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the wildflower meadow	2										✓	✓	✓		FroTH
12	Carry out 2nd cut of the wildflower meadow annually in November where funding allows if required	2												✓		RBC / Contractor
13	Maintain Black Poplar avenue in compartment 3	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH
15	Maintain and continue tree plantings to the east of compartment 3 and consider compartment 1	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / Contractor
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed	1				✓	✓	✓								FroTH, RBC / Contractor
17	Control tall herb and scrub vegetation along river embankment on rotation as necessary	2	✓	✓									✓	✓	✓	FroTH, RBC / Contractor

19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment Define footpaths, bridleways and habitat areas on the	2			✓	✓									FroTH, RBC / Contractor
20	reserve to inform users of the site Maintain paths and access points, keeping them clear of	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / NWT / FroTH
21	scrub encroachment Maintain interpretation materials and consider possible	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
22	additions when appropriate and if funding becomes available Carry out regular health & safety checks around the reserve	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH, RBC / Contractor
23	to ensure public safety. Remove rubbish/litter and fly tipping at least once per month,	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FroTH / RBC
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting;	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	RBC / FroTH
26	ic events to promote and inform about wildlife, education, habitat management and archaeology Encourage school parties to visit the site	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
27	Use interesting management work as an opportunity to invite	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
28	local residents/schools and visitors to the site to participate in and learn about site management; Support the Friends of the Hook group to undertake small-	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT / FroTH
29	scale management work or projects to benefit wildlife	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NWT
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds	2			✓	✓	✓	✓	✓	✓					NWT / volunteers / students / specialist groups
33	Encourage and in some instances train local people to carry out ecological surveys to information management and provide records to the Notts Biological & Geological Records Centre (NBGRC);	3			✓	✓	✓	✓	✓	✓					NWT / local naturalists / volunteers
34	Review, evaluate and update management strategies and prescriptions on a 5 yearly cycle or more frequently if required	1						✓	✓	✓	✓	✓	✓	✓	NWT / FroTH / RBC

**SECTION 7.6: FUNDING IMPLICATIONS OF MANAGEMENT PROPOSALS**

MANAGEMENT PRESCRIPTION (& POSSIBLE LEAD)		POSSIBLE FUNDING SOURCE			
		Vol time (FroTH and other groups)	*Fundraise / grant application for project	Rushcliffe BC, if funds available	Additional funding requirements
1	Maintain flow of water through reedbed in compartment 1 (RBC / Contractor)		✓	✓	
2	De-vegetate ditch beds on a rotational basis, by hand where possible, or investigate funding to use contractor. Further to this, identify opportunities to create additional wetland habitats along the ditch, such as reedbed, pond or backwater (RBC / Contractor)		✓	✓	
3	Cut ditch banks on a rotational basis to clear scrub and improve foraging for water Voles (FroTH / RBC / Contractor)	✓		✓	Tools for conservation action group and training
4	Manage all grassland meadow areas through annual September cut and removal of arisings from site (RBC / Contractor)			✓	
5	Create meandering informal paths through regular cutting in compartment 2 (RBC / Contractor)			✓	
6	Maintain hedgerow in compartment 3 (FroTH)	✓			Tools for conservation action group
7	Manage scrub in compartment 3 with a coppice rotation system to create and maintain discrete clumps (FroTH)	✓			Tools for conservation action group
8	Carry out pruning of orchard fruit trees (FroTH Trained volunteers)	✓			Tools for conservation action group and training
9	Control vegetation in 1m radius around orchard fruit trees to reduce competition and potential for damage from small mammals (FroTH)	✓			Tools for conservation action group and training
10	Carry out ongoing maintenance around ponds in compartment 3. Aim to maintain a favourable balance of aquatic plants (NWT / FroTH)	✓			Tools for conservation action group and training
11	Utilise techniques including plug planting, turf removal and seeding, and introduction of yellow rattle to improve diversity of the wildflower meadow (FroTH / RBC / Contractor)	✓	✓	✓	Purchase of plants/ seed
12	Carry out 2 <sup>nd</sup> cut of the wildflower meadow annually in November where funding allows, if required (RBC / Contractor)			✓	

MANAGEMENT PRESCRIPTION (& POSSIBLE LEAD)		POSSIBLE FUNDING SOURCE			
		Vol time (FroTH and other groups)	*Fundraise / grant application for project	Rushcliffe BC, if funds available	Additional funding requirements
13	Maintain Black Poplar avenue in compartment 3 (FroTH)	✓	✓		Purchase of plants
14	Remove non-native saplings, shrubs and trees where necessary (FroTH / Contractor)	✓			Tools for conservaion action group
15	Maintain and continue tree plantings to the east of compartment 3 and consider Compartment 1 (FroTH)	✓	✓		Purchase of plants
16	Eradicate Himalayan Balsam from river embankment and ditches through hand pulling before plants set seed (FroTH / RBC / Contractor)	✓		✓	Tools for conservaion action group
17	Control tall herb and scrub vegetation along river embankment on rotation as necessary (FroTH / RBC / Contractor)	✓		✓	Tools for conservation action group and training
18	Install bird nesting and bat roosting, hedgehog and invertebrate boxes (FroTH / NWT)	✓	✓		Materials
19	Control small, localised areas of nettle and thistle to remove flower heads before they set seed and/or to create open bays alongside paths to prevent encroachment (FroTH / RBC / Contractor)	✓		✓	Tools for conservation action group and training
20	Define footpaths, bridleways and habitat areas on the reserve to inform users of the site (RBC / NWT / FroTH) Possible input required from Notts County Council Rights of Way officer	✓	✓		Signage/ interpretive material
21	Maintain paths and access points, keeping them clear of scrub encroachment (FroTH / RBC)	✓		✓	
22	Maintain interpretation materials and consider possible additions when appropriate and if funding becomes available (FroTH / RBC / NWT)	✓	✓	✓	Signage/ interpretive material
23	Carry out regular health & safety checks around the reserve to ensure public safety. (FroTH / RBC)	✓		✓	Training
24	Remove rubbish/litter, fly tipping and graffiti at least once per month, or as soon as possible after significant dumping / sighting; (RBC / FroTH)	✓		✓	
25	Develop interpretation (boards / leaflet / fact sheet / web page) to explain management and impacts on ecology (NWT / FroTH / RBC)	✓	✓	✓	Signage/ interpretive material
26	Develop a programme of interesting, varied public events to promote and inform about	✓			Venue required

MANAGEMENT PRESCRIPTION (& POSSIBLE LEAD)		POSSIBLE FUNDING SOURCE			
		Vol time (FroTH and other groups)	*Fundraise / grant application for project	Rushcliffe BC, if funds available	Additional funding requirements
	wildlife, education, habitat management and archaeology (NWT / FroTH)				Speaker expenses
27	Encourage school parties to visit the site (NWT / FroTH)	✓			
28	Use interesting management work as an opportunity to invite local residents/schools and visitors to the site to participate in and learn about site management; (NWT / FroTH)	✓			
29	Support the Friends of the Hook group to undertake small-scale management work or projects to benefit wildlife (NWT)				No specific funding requirements envisaged
30	Develop links with business community (NWT / RBC / FroTH)	✓			Businesses to be approached for possible funding
31	Work with local partners to encourage responsible use of the site (NWT / RBC / FroTH)	✓		✓	
32	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, fungi and birds (NWT / volunteers / students / specialist groups)	✓			Some specialist/ recorders may request travel expenses
33	Encourage and in some instances train local people to carry out ecological surveys to information management and provide records to the Notts Biological & Geological Records Centre (NBGRC); (NWT / local naturalists / volunteers)	✓			Some specialist/ recorders may request travel expenses
34	Review, evaluate and update management strategies and prescriptions on a 5 yearly cycle or more frequently if required (FroTH / NWT / RBC)	✓		✓	

\*Grant funding could be considered to help implement several prescriptions which are tied into a single bid. However, funders often prefer to support new projects and it can be difficult to secure funds for ongoing maintenance work.

## SECTION 8: REFERENCES

Carney, J. (2007). District Geologist (East Midlands), British Geological Survey. Personal Communication

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