

Mowbray Fields Site Management Plan 2020-2025



Prepared by the Earth Trust on behalf of South Oxfordshire District Council



Listening Learning Leading

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Appendices

All appendices are available as separate documents that can be found by emailing the Earth Trust at admin@earthtrust.org.uk Documents are also available as hard copies on request.

1. Introduction

This is the fourth version of this management plan, now covering the period 2020-2025. This management plan follows three earlier plans, where the management of the site has evolved through the development of those plans. The aim of this management plan is to set out a framework for the management and use of Mowbray Fields Local Nature Reserve for the next five years. It takes into account all of the available information regarding the reserve and attempts to strike a balance between what is desirable and what is achievable within the various restrictions, such as natural e.g. it is a fill pond for the Hagbourne Brook to reduce likelihood of flooding downstream; and designation as a Local Nature Reserve, as well as available resources. It will be under continual yearly review during the period of the plan as a dynamic document and has been adapted over the past 20 years. Success will be measured against the management activities with site surveys, ecological monitoring and a review of the completion of the work plan.

The reserve is situated immediately south of Didcot and northwest of East Hagbourne. To the north it is surrounded by housing, to the east by the embankment of a disused railway and to the south and west by the Hagbourne Brook (also known as Hacca's Brook). The plan sets out how the Earth Trust will manage Mowbray Fields, on behalf of South Oxfordshire District Council, for the benefit of wildlife and people. Detailed annual work programmes have been drawn up based on the recommendations contained in this document. The plan will allow operational staff to understand and follow the management and monitoring activities for the site and for stakeholders to understand the management of the site and rationale behind it. It also seeks to highlight the importance of community involvement on the site and its contribution to future plans. The structure of the plan is such that the plan should be a working document that is easy to use and refer to.

1.1. Executive summary

Reserve Name:	Mowbray Fields Local Nature Reserve
OS Grid Reference:	SU 523 887
Total area:	1.88 hectares (c. 4.65 acres)
Current status:	Local Nature Reserve (designated January 2000)
District:	South Oxfordshire
County:	Oxfordshire
Local Planning Authority:	South Oxfordshire District Council (SODC)
Owner:	SODC
Overall responsibility:	Edward Church, Senior Countryside Officer; Planning, SODC, 135 Eastern Avenue, Milton Park, Milton, OX14 4SB Tel: 01235 422 422 Email: planning@southandvale.gov.uk

Map 1. Mowbray Fields Local Nature Reserve in its landscape context



Type of holding:

SODC owns site Freehold

Land Tenure:

This is not a legal document. Please refer to the original tenure documents before taking any decision or action that may have legal implications.

Works/vehicle access:

Through vehicle gate, off Mowbray Road SU 523 888

Site context

SODC bought the site in the 1980's and on 21st January 2000 'Mowbray Fields' was declared a Local Nature Reserve (LNR). The designation was sought primarily to secure the management of the area for its existing wildlife value, and in particular for its special nature conservation interest in the fill pond.

The fill pond was constructed in 1983 as a flood overflow for the adjacent Hagbourne Brook, and is designed to prevent the flooding of East Hagbourne during heavy rains. Water flows into the pond via two overspill culvert pipes on the western boundary of the reserve. In the years since its construction the fill pond has developed a varied and interesting ecosystem that includes a healthy population of common spotted (*Dactylorhiza fuchsia*) and southern marsh orchids (*Dactylorhiza praetermissa*).

Management constraints

Local Nature Reserve designation is a statutory declaration arising out of the 1949 National Parks and Access to the Countryside Act. Under this statutory designation the Council have the responsibility to manage Mowbray Fields Local Nature Reserve both for nature conservation and public access objectives. The purpose of the designation was to safeguard, maintain and enhance the ecological interest, and at the same time ensure continued public enjoyment and involvement in the reserve.

The Council is responsible for ensuring that the primary purpose of the fill pond as a flood alleviation scheme for East Hagbourne is maintained. No work undertaken as part of the management of the fill pond should adversely affect its functioning and safety.

Disused Railway Embankment

The top of the embankment has been a footpath since the 1960's and is regularly used by dog walkers and cyclists. In previous iterations of this management plan the section of disused railway embankment was part of the area that Earth Trust managed on behalf of SODC, however the Sustrans National Cycle Route now runs along this stretch of railway embankment. As a result, the management of this section is now the responsibility of Sustrans who lease the area from the District Council.

2. General description

2.1. Location & Site Boundaries

Mowbray Fields LNR is located 1 mile from the centre of Didcot, towards the South of the town (SU 523 887), nearest postcode is OX1 8SU.

2.2. Tenure

South Oxfordshire District Council acquired Mowbray Fields in the 1980s to provide a site that could be used as part of a flood alleviations scheme for the Hagbourne Brook during periods of high rainfall. The LNR designation covers an area of 1.88 hectares out of a total of 3.68 hectares that is owned and managed by the Council. The remit of this plan covers only the area of LNR. The reserve includes a small section of stream, a wildflower meadow and a fill pond. The area not designated as an LNR is an area of amenity grassland with scattered trees that is managed as a recreational area. A plan of the reserve and management compartments is shown in Map 2 & 3.

2.3. Management/Organisational Infrastructure

As the site owner, SODC (comprising Councillors and Officers) is the budget-holder and ultimate decision-maker for the site. Within SODC the Senior Countryside Officer has overall responsibility for the management of the reserve.

SODC employ the Earth Trust to manage Mowbray Fields as well as two other sites in its ownership (Wallingford Castle Meadows in Wallingford and Riverside Meadows in Crowmarsh). The current contract between SODC and Earth Trust runs from April 2016 to April 2021 and will be reviewed on or before April 2021 in accordance with the Councils Contract Procedure Rules.

The Earth Trust employ a Senior Warden (Community Reserves) within its Land Management Team who has responsibility for the management of Mowbray Fields including undertaking all aspects of site management contained in this plan.

The warden and the Council have six monthly review meetings to review progress against an agreed set of targets and there is regular communication over all aspects of site management between the Trust and Council. The warden's duties include regular site checks, organisation of voluntary work, employment of contractors and undertaking the majority of management tasks.

2.4. Resources

In order to effectively implement the objectives and actions identified in this plan sufficient resources are required. The massive contribution of the local community in the management of the site through various forms of volunteering cannot be overstated in its importance and the maintenance of good community relations is key to ensuring the effective long-term management of the site.

In addition to these staff and voluntary resources the Council has and continues to invest significantly in the development of the site since its purchase in the 1980s.

2.5. Associated Groups

Wallingford Green Gym

Wallingford Green Gym are a small community volunteer conservation set up in 2003, affiliated with, but run independently of TCV (The Conservation Volunteers) and work at sites around South Oxfordshire. They work at the SODC sites managed by Earth Trust once a month on average.

2.6. Environmental Information

Soils

There is no record of a systematic soil survey for this area. The 1:25,000 Soils of England and Wales (2019) records the area as within an area of freely draining, slightly acid loamy soils. Water protection issues within this soil area are listed as: Groundwater contamination with nitrates; siltation and nutrient enrichment of streams from soil erosion often.

Climate

Mowbray Fields LNR is located in the Thames Basin, which is characterised by a continental climate with high summer temperatures and little wind exposure. Frost occurs on an average of less than 80 days per year. Mean monthly minimum temperatures of around -1°C occur in February. Mean monthly maximum temperatures of around 24-26°C occur in July.

Ecology

The site has been surveyed by ecologists from the Earth Trust and by the SODC Countryside Officer over the period of the previous plans. A comprehensive species list collated from these surveys is included in Appendix 1. The ecological surveys undertaken on site have not been exhaustive but give a good understanding of the nature conservation status of the site, and allow informed decisions to be taken in the management plan. A key part of the monitoring over the coming years will be to undertake regular surveys to build up a comprehensive species list for the site, so that changes brought about by the actions in this plan can be assessed.

Flora

The fill pond area was surveyed in 1999, 2005 and again in 2012. The variety of habitats includes wet grassland, marsh, tall herb community, rough grassland, and wet woodland. Since this time a few surveys have been undertaken on the site combined with casual observations. The wildflower meadow has been surveyed in 2012 and again in 2019. The results of the surveys to date are listed in Appendix 1.

The fill pond is known to contain a good diversity of plant species, perhaps most notable amongst these are the large numbers of common spotted and southern marsh orchids. Counts of the number of flowering spikes of orchids over the years reached a peak in 1999 with over 3000 recorded. Since 2005, when 395 orchids were counted (although this is thought to be an underestimate), an annual survey has been undertaken in June to get an estimate of the number of orchids present. During the summer of 2019 the fill pond was surveyed by the warden and volunteers and a total of 1,248 flowering orchid spikes were counted. The majority of these were southern marsh and common spotted orchids but there were also a small number of bee (*Ophrys apifera*), pyramidal (*Anacamptis pyramidalis*) and common twayblade (*Neottia ovata*) orchids. From the annual counts it would appear that the numbers of orchids have fluctuated. The declines may have been due to changes in ecological conditions as habitats have gradually changed and matured over time. However it may also be due to natural fluctuations in the orchid population, and it is likely there are other contributing factors. In reality, it is likely that the declines and increases are as a result of a combination of factors and it will not be possible without continued monitoring and long-term research to decide which factors are the most influential.

Fauna

Reptiles and amphibians

Casual observations have been made including common frog (*Rana temporaria*) and common toad (*Bufo bufo*), which have been recorded in the fill pond. It is thought that it is likely grass snakes (*Natrix natrix*) are also present although they have not yet been positively recorded. In 2012 two hibernacula were created in Area 1 and a number of common lizards (*Zootoca vivipara*) were translocated from a development in Didcot, and in 2019 common lizards were recorded as still present on site.

Birds

Casual observations have shown that the reserve is home to a number of common and often generalist bird species including the eurasian jay (*Garrulus glandarius*), house sparrow (*Passer domesticus*) and song thrush (*Turdus philomelos*). Both house sparrow and song thrush are listed as UK birds of conservation concern (status - red).

Mammals

A number of mammalian species have been recorded on site including woodmouse (*Apodemus sylvaticus*), muntjac deer (*Muntiacus reevesi*), grey squirrel (*Sciurus carolinensis*) and fox (*Vulpes vulpes*). Badgers (*Meles meles*) are known to use the site; although there are no setts on site.

Four species of bat have been recorded using the site. These include the common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), serotine (*Eptesicus serotinus*) and the noctule (*Nyctalus noctula*). All species of bat are protected under both British and European legislation. It is likely that other species use the site.

Invertebrates

The invertebrate survey carried out during 2012 identified 320 species of invertebrate including:

- 28 species of slugs and snails
- 54 spiders and allies
- 8 grasshoppers and allies
- 18 true bugs

- 75 true flies
- 27 woodlice, millipedes and centipedes
- 39 beetles
- and 45 bees, wasps and ants.

Of these, three were noted as 'key' species (also recorded in the 1999 survey) in 2012: roesel's bush-cricket (*Metrioptera roeselii*), long-winged conehead (*Conocephalus discolor*) and red Bartsia bee (*Melitta tricincta*). Other species of note include the silver colonel soldier fly (*Odontomyia argentata*), which is listed as vulnerable (RDB2) in the British Red Data Book (Shirt, 1987); the black-headed mason wasp (*Odynerus melanocephalus*), is listed under the UK Biodiversity Action Plan (BAP). A further forty-nine locally rare species were recorded and twelve species are listed as Nationally Scarce. A full species list can found in Appendix 1.

2.7. Map Coverage

The reserve is covered by OS Landranger (1:50 000) no. 174 (Newbury & Wantage, Hungerford & Didcot) and OS Explorer (1:25 000) no. 170 (Vale of the White Horse).

2.8. Photographic Coverage

There are current and past aerial photos for Mowbray Fields on the Earth Trust's QGIS mapping system.

Map 3. Satellite view of site and management compartments

Compartments

-  Wet meadow
-  Willow coppice
-  Wet woodland
-  Wet woodland
-  Tall herb
-  Embankment/hedge
-  Wildflower meadow



3. People, Stakeholders and Local Community

3.1. Local Communities and Stakeholders

The reserve is well used by residents of Didcot as well as many visitors to the local town, people using the Sustrans cycle route and other footpaths. The reserve is also heavily used by dog walkers in particular, throughout the year.

3.2. Access

The site is open to the public and it is not possible to close the site to those on foot. There are currently three official access points to the site. These are at the entrance/exit of Mowbray Road, Millennium Wood footpath and the entrance/exit from Lake Road. In addition, it is possible to access the site at many points from the public footpath between the reserve and the field on the western edge of the site. Both the access points from Mowbray Road and the Millennium Wood footpath are suitable for users with restricted mobility.

Dogs are currently allowed on the reserve if kept under control/on a lead. The primary recreational uses of the reserve are for walking, dog walking, and running which do not generally conflict with the interests of the reserve management. Public rights of way exist around the exterior of the reserve. As the reserve is heavily used it is important that the public access routes and facilities are properly maintained. Since the site was designated as a local nature reserve a considerable amount of work has been undertaken to increase the access provision. SODC have installed two wooden bridges across the Hagbourne Brook (one within the area managed by Earth Trust), a raised causeway and viewing platform built in the fill pond and three benches installed, one overlooking the fill pond, one in the amenity grassland and the other looking over the wildflower meadow.

3.3. Interpretation Provision

Interpretation on the reserve is a very important means of communication to keep the local community informed about interest on the reserve and to keep them updated on any work being carried out. There is an interpretation panel/notice board which has been placed at the entrance into the fill pond. This gives information on the site, about its current management, history and ecology, as well as upcoming events on the reserve or at other Earth Trust sites. The interpretation panel (graphics and text) was recently updated during the summer of 2019. For more information relating to interpretation please see section 4.5 Visitor enjoyment and public access.

3.4. Educational Use

Since its acquisition the site has been used on an irregular basis for education purposes. There have been occasions when school groups have undertaken field visits to the site as part of wider projects. Other groups have also used the reserve including the local guides, scouts and beavers, which have carried out bug hunting and bat walks.

Earth Trust has just launched its new Strategy covering 2018-2023 and as part of this process we are currently reviewing and rewriting our Engagement Strategy, which includes outdoor education on the Community Reserves, including Mowbray Fields. When this is available it will be available as an appendix.

4. Conservation Features of Interest

In defining the overall features of interest and their management objectives for the site it is important to look at a number of factors:

- Engineering function of the fill pond
- Nature conservation interest
- Public interest in and use of the reserve
- Constraints on management
- Available resources

With these factors are taken into account, six broad areas for the future management of the site have been defined. These are not presented in order of importance.

1. Fill Pond
2. Wildflower Meadow
3. Stream
4. Trees and Hedges
5. Visitor Enjoyment & Public Access
6. Community Engagement

For full summary table of management and monitoring activities please see Section 8.

4.1. Fill Pond

4.1.1. Evaluation

Fill ponds (flood water storage areas (FSA) or runoff attenuation features) are defined as a man-made landscape interventions that intercept and regulate water before it flows downstream of them. They are designed to store/attenuate rapid runoff in small rural catchments. They perform a wide range of functions including flood management, improving water quality and providing ecological habitats. Simply, they are features that 'slow, store and filter' water in the rural landscape. The Mowbray Fields fill pond fits into the Environment Agencies' (EA) classification of a non-impounding or off-line FSA. These are not constructed across a watercourse but are located next to them. Typically non-impounding FSAs comprise an inlet structure, a dam or retaining structure and an outlet structure, which is the case at Mowbray Fields. Peak water flows are removed from the watercourse, are stored temporarily, and then are returned once the peak flows have passed (EA 2009).

A fill pond, initially containing areas of open water, will undergo natural succession through various stages, through colonisation by aquatic plants and plants from the banks, resulting in an area that can support dense, species-rich plant communities. It can take several years for a fill pond to reach its maximum plant diversity (longer for maximum animal diversity, with a number of rare species being found only in late-succession). Invertebrate communities undergo succession, organisms coming in and moving away as the system develops into marsh, wet-grassland and wet carr.

Flood water storage areas like fill ponds are important habitats already supporting national or international habitat types. They also make important contributions to national BAP targets for wetland habitats, which should not be overlooked (EA 2009).

4.1.2. Current Status

Water continually seeps into the fill pond from underground and from Hagbourne Brook. Over the last 30 years this has contributed to the fill pond developing into a very interesting wetland habitat providing home to some rare and threatened species. The fill pond contains a number of habitats including a large temporary pool, wet grassland, marsh, a tall herb community and wet woodland. The brook runs along an engineered course forming the southern and western boundary of the fill pond. Under normal conditions the brook flows continuously into the fill pond via a culvert pipe in a bund adjacent to the original spill weir, which was re-engineered in 2010. In times of heavy rain and flood a second larger pipe above the first pipe allows a greater volume of water to flow into the fill pond area. For the purpose of this plan the habitats within the fill pond have been split into four separate areas; 1) tall herb vegetation, 2) wet grassland, 3) wet woodland and 4) embankment, the location of these areas are shown on Maps 2 & 3. These areas however should not be thought of in isolation but as part of a functioning ecosystem. The purpose of splitting them up is to aid description of the management and to place the management activities into more defined units.

Surveys carried out highlight the importance of the more open areas of wet grassland which hosts the greatest diversity of species on site, including five species of orchid (listed above in section 2.6). But it is apparent that the wet woodland or willow carr areas do support some of the more uncommon species. Of particular interest is the suite of insect species associated with shallow pools that dry out in summer, typified by the silver colonel soldierfly, which colonises pools created under fallen/uprooted willows. Thus, a mosaic of habitats needs to be maintained within the fill pond to support these scarcer species, including some willow carr.

The composition of the habitats appears to be changing over time with natural succession and nutrient inputs from the Hagbourne Brook (e.g. nitrates). This has resulted in the encroachment of coarse species such as great willow herb (*Epilobium hirsutum*), reedmace (*Typha latifolia*), and bramble (*Rubus*) at the expense of the less competitive species such as the orchids.

Unlike the potentially isolated 'wetland' species in the fill pond, species associated with dry grassy habitats, such as black-headed mason wasp, may be able to utilise the adjacent disused railway, and possibly even the mown amenity grassland at Mowbray Fields. If this is the case, populations of these species will be less vulnerable to extinction due to the existence of scattered meta-populations in close proximity.

4.1.3. Factors and Constraints

- Positive factors
 - o Remedial action to increase the amount of wet meadow is relatively straight forward
 - o Species associated with 'dry' grassy habitats, such as black-headed mason wasp, may be able to utilise the adjacent disused railway, and the wildflower meadow.
- Constraints
 - o No ability to control water levels – leaving isolated 'wetland' species potentially vulnerable
 - o Heavily silted
 - o Nutrient rich

- Not in agricultural management therefore management (mechanical or manual) is needed to control succession in order to maintain the mosaic of habitats
- Introduction of grazing stock is not an option on this reserve
- Encroachment by willow scrub will need to be prevented to avoid shading and draining (through transpiration) of the more open species-diverse areas
- Invasive non-native species – although none are present currently, the fill pond is directly link with the main flow of the Hagbourne Brook and seeds (e.g. himalayan balsam) can be easily brought onto site especially during flooding events. Some species are also easily transferred on animals (e.g. australian swap stonecrop on wetland bird feet).
- Weed control is expensive and time consuming.
- Lying deadwood provides material for unauthorised fires on site

4.1.4. Fill Pond Objective

The functioning of the fill pond is maintained where:

- The mosaic of habitats within the fill pond is maintained so that a balance is kept between the four areas identified 1) tall herb vegetation, 2) wet grassland, 3) wet woodland/willow carr and 4) embankment; neither one overtaking the fill pond.

Without any management the willows will gradually take over the open areas. The willows do however provide important habitat for birds that regularly visit the area.

4.1.5. Management Rational

Mowbray Fields fill pond is managed by:

- Rotational
 - cut of the tall herb vegetation cpt. 1
 - cut of wet meadow cpt. 2
 - willow coppicing cpt. 3
 - clearance embankment vegetation cpt. 4
- Minimal intervention within established willow carr
- Creation of seasonal pools
- Clearing debris from flood alleviation culverts

Rotational willow coppicing

Willow coppicing on a 5-year rotation takes place in the north eastern area of the fill pond providing small scale structural diversity, and varying light levels within this section of the fill pond. As the willows have filled in this area, the coppicing is now supplemented with annual thinning of coppice stools – a handful in each coppice area/year. The cut material is used to create willow bundles for river bankside protection works at another SODC site (Riverside Meadows), or made into habitat piles providing dead wood habitats for invertebrates and/or burnt on burn platform (to reduce damage to soil under fire site) if habitat piles become too numerous/large.

Rotational cut of the tall herb vegetation

The tall herb vegetation is cut on a 3-year rotation creating a mosaic of different successional stages. All arisings are raked off to habitat piles to ensure the vegetation has the best chance to flourish in the absence of shade and thatch. Any willow growth in this area is also cut on the same rotation. If

willow encroachment into this area increase so that the willow is starting to dominate stumps will be treated to prevent re-growth.

Rotation cut of the wet meadow

This area is predominantly rough grassland and is also the driest area within the fill pond. Half of the meadow is cut each year, arisings raked off and any willow or scrub in the area is coppiced at the same time. The regular cutting of this area should benefit orchids and other wildflowers by ensuring they have the best chance to flourish in the absence of shade and thatch.

Rotational clearance of embankment vegetation

The embankments on the northern and southern edges of the fill pond should be cleared of bramble and scrub every 2-3 years to keep the view of the fill pond open, particularly from the bench situated on the top in the grassland area. This also reduces encroachment of bramble and scrub into the fill pond.

Minimal intervention within established willow carr & creating seasonal pools

The two areas of established (large willows) wet woodland/willow carr are managed through minimal intervention providing cover for the many species of birds that regularly visit the reserve. Investigate creating small shallow seasonal pools either by winching out willow stumps or through natural willow decline pulling up root plates. This will increase suitable habitat for the silver colonel soldierfly. Currently willows that have fallen over naturally are creating these pools without human intervention.

4.1.6. Management Activities

- 3-year cut of the tall herb vegetation (cpt. 1)
- Every other year cut of ½ the wet meadow (cpt. 2)
- 5-year rotational willow coppicing (cpt. 3)
- 2-3 year clearance embankment vegetation (cpt. 4)
- Minimal intervention within established willow carr. Allowing willow to naturally decline creating seasonal pools under their exposed root plates (cpt. 3)
- Clearing debris from flood alleviation culverts

4.1.7. Monitoring Activities

- Casual recording of wildlife sightings (birds, reptiles etc.)
- Annual Butterfly Conservation BMS butterfly survey (weekly April – September).
- Annual Orchid survey
- Annual Freshwater Habitat's Trust National Frogspawn Survey
- Functioning of culverts – monitor for blockages

4.2. Wildflower Meadow

4.2.1. Evaluation

Lowland meadow (also known as wildflower meadows) with high floral diversity and low intensity management are ecologically valuable and tend to support a high diversity of associated fauna including rare or uncommon species (particularly invertebrates). In turn, the high diversity of insect life increases the value for larger foraging species, such as birds, bats, reptiles, small mammals and hunting owls. Species-rich meadow is a nationally threatened habitat. Where it exists, without some

form of management (grazing or cutting) the floral value is quickly lost as invasive scrub such as blackthorn and bramble encroaches, and eventually it turns to woodland.

Species-rich lowland meadows have undergone a remarkable decline in the 20th century, almost entirely due to changing agricultural practice and fragmentation. It is estimated that by 1984 in lowland England and Wales, semi-natural lowland meadow had declined by 97% over the previous 50 years to approximately 0.2 million hectares. Losses have continued during the 1980s and 1990s (Maddock 2008).

A UK Biodiversity Action Plan (BAP) was formulated in 1995 as a framework for action across the country to protect and maintain important habitats and their associated wildlife. Restoration and creation of new lowland meadows has been the focus of activity as a result of Biodiversity Action planning and agri-environment schemes over the last 20 years in Oxfordshire (Jefferson et al., 2017).

4.2.2. Current Status

The wildflower meadow at Mowbray Fields was created in 2001 to diversify the range of habitats found on the reserve. The meadow has been created on former amenity grassland (previously arable field) that has relatively nutrient rich soil, and as a result it has suffered from a number of problems. Despite this it is developing into a relatively species rich meadow providing a haven for a wide variety of insects, butterflies, mammals and birds. Orchids from the fill pond began colonising the meadow in 2010. A list of the species that were sown is shown in Appendix 2.

The meadow has developed gradually, initially having many problems with unwanted weeds and a patchy germination of the seed. Over time, with appropriate management, many of these problems are being resolved. However, due to the sites recent past land uses, the nutrient levels remain high in the soil and as such the vegetation is tall, with a mean sward height of 63cm. Scrub remains absent from the sward, but there are a few semi-mature planted maple trees which shade much of the southern parts of the meadow. Hogweed (*Heracleum sphondylium*) is quite prominent over much of the southern half of the site. The hope is that by reintroducing the spring cut this should help reduce the cover of Hogweed in the future. Knapweed (*Centaurea nigra*) is the prominent forb over much of the northern part of the site, with oxeye daisy (*Leucanthemum vulgare*), bird's-foot trefoil (*Lotus corniculatus*) and yarrow (*Achillea millefolium*) are frequent throughout the sward. There are also crested dog's-tail (*Cynosurus cristatus*), lady's bedstraw (*Galium verum*), cowslip (*Primula veris*), ribwort plantain (*Plantago lanceolata*) and yellow rattle (*Rhinanthus minor*) present but not as frequent in the sward.

Between 2006 and 2008 the meadow was cut in May and September. Between 2008 and 2010 it was cut only in September. Between 2010 and 2016 only the southern half of the meadow received a cut in May. Since 2017 the meadow has been cut in April and August. On each occasion all arisings are removed. A large amount of volunteer effort has also gone into weed control to try to prevent unwanted weeds from taking over.

4.2.3. Factors and Constraints

- Positive factors
 - Seeding in many parts of the meadow has taken and many wildflower species are now established within the meadow area. This can act as a source of colonisation for those patches with poorer seed germination.

- Invertebrate species associated with 'dry' grassy habitats, such as black-headed mason wasp, may be able to utilise the meadow.
- Constraints
 - Introduction of grazing stock is not an option on this reserve at this time
 - Without a regular cutting regime (time and volunteer heavy) the meadow will go through succession (scrub to woodland)
 - Excessive disturbance by the public (and their dogs) is likely to inhibit some species

4.2.4. Meadows Objectives

To maintain and improve the diversity of species on the wildflower meadow where:

- At least two high-value indicator species for BAP lowland meadow habitat should be frequent in the sward e.g. knapweed, birdsfoot trefoil, lady's bedstraw
- Cover of wild flowers in the sward (excluding undesirable species but including rushes and sedges), should be between 30% and 90%.
- At least 40% wildflowers should be flowering during May-July.
- Butterflies such as Meadow Brown (*Maniola jurtina*) and Marbled White (*Melanargia galathea*) feed across the whole site
- Control of undesirable species:
 - Creeping thistle (*Cirsium arvense*) and spear thistle (*Cirsium vulgare*) together account for less than 5% cover
 - Common ragwort (*Senecio jacobaea*) accounts for less than 1% cover

Some species e.g. creeping thistle, ragwort and common dock, can completely dominate the grassland so reducing herb abundance and diversity by effectively out-competing the important flora. These species also indicate nutrient enrichment, however, many of these species provide a nectar source for invertebrates, so it is not our wish to eradicate them from the site.

- Sward height between 5cm and 15cm in November
- Scattered clumps and tussocks between 15-30 cm tall on up to 30% of the meadow.

The key to providing valuable habitat for many small birds, mammals, insects and other invertebrates, and for wild flowers is to get the sward structure right at key times of the year.

- There are few if any shrub seedlings or saplings within the field areas.
- Small areas of bare ground on up to 5% of each of the fields, distributed throughout the field in small patches.

Bare ground is an important element of grasslands/meadows as it provides germination niches for plants and sunning spots for invertebrates. However too much bare ground is undesirable, as this leads to a loss of key flora. Bare ground can also be caused by increased visitor pressure.

4.2.5. Management Rational

Mowbray Fields wildflower meadow is managed by:

- Twice annual cut
- Hand control of 'weeds'

Twice annual cut

The area is managed as a summer meadow allowing the plants to flower over the summer providing a rich colourful habitat. The meadow will be cut in April to knock back any of the tall grasses and weeds such as dock and thistle which would dominate otherwise. The whole meadow will be cut in

end of August/early September after the flowers have seeded. This timing can be varied from year to year so later flowering plants can seed. When possible the arisings will be left for a few day before being raked off so that they do not smother the plants or increase the fertility, as meadows thrive in areas with low nutrient levels. Leaving the cuttings for a few days will allow the seeds to drop out.

During the summer it may be necessary to hand pull the taller coarse plants that out compete the meadow plants, in particular thistles, broad-leaved-dock (*Rumex obtusifolius*), rough hawksbeard (*Crepis biennis*), ragwort and common nettle (*Urtica dioica*).

4.2.6. Management Activities

- Cut meadow in April and the end of August/September depending on the weather and rake all arisings (habitat pile on site).
- Erect signs warning public of hay cutting operations (when appropriate).
- Introduce competition tolerant wildflower species as funding allows.
- Control weeds by hand pulling when necessary.

4.2.7. Monitoring Activities

- Vegetation survey of the meadow in June/July on a 5-yearly basis.
 - o The most recent survey occurred in 2019 (results in Appendix 3).
 - o Meadow species composition
 - Presence of desirable forb species
 - Presence of undesirable weeds
 - o Meadow structure
- Casual recording of wildlife sightings (birds, reptiles etc.)
- Annual Butterfly Conservation BMS butterfly survey (weekly April – September).
- Annual Orchid survey

4.3. Stream

4.3.1. Evaluation

The Hagbourne Brook also known as Hacca's Brook deriving its name from Hacca, a chief of one of the West Saxon tribes. The stream is mentioned in a 9th Century charters as Hacceburna, which later became Hagburne/Hagbourne.

Small brook's (streams) and ponds play essential roles within a catchment including providing natural flood control and maintaining biological diversity. However, many of these small water bodies are particularly vulnerable to growing land-use pressures (e.g. housing, agriculture) and environmental change (e.g. flash flooding of increased short high rainfall events). The greatest pressure on the physical processes in these waters has been their extension and modification for agricultural drainage and urban development resulting in highly modified discharge and temperature regimes that have implications for flood and drought control further downstream. The linear nature of a small stream or brook exposes them to a wide range of inputs, including nutrients, pesticides, heavy metals, sediment and emerging contaminants. Small water bodies are also very vulnerable to invasions of non-native species, which along with the physical and chemical pressures, will be affected

many groups of organisms with consequent implications for the wider biodiversity within the catchment (Riley et al., 2018).

4.3.2. Current Status

The Hagbourne Brook is situated on the boundary of the reserve; with the bund and pipe in operation most of the lower section of the stream is dried out and the water flows directly into the fill pond. An additional overflow allows some of the flood water to run along the original course of the brook to the south and west of the reserve. The brook, for much of this length along the reserve, is overgrown with bramble and scrub and is often dry.

Streams and their associated habitats are a priority habitat in the Oxfordshire BAP, due to their potential importance for a number of priority species, one such being the water vole. There is potential for suitable habitat available for water voles along the Hagbourne Brook although the drying of the brook in some summers and the over shading from scrub make this a sub-optimum habitat for the species. A water vole survey along the Brook was carried out by the Water Vole Recovery Project (run by the Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust (BBOWT)) in 2017 and no signs of water voles were recorded. As the Brook did not have a positive for voles it is not part of their regular monitoring programme. The water vole recovery project will only re-survey the site if they suspected water voles had colonised, e.g. if there was a population very nearby or new reported sightings.

4.3.3. Factors and Constraints

- Positive factors
 - o Remedial action to increase the amount of marginal vegetation is relatively straight forward if this was a course of action deemed appropriate for the site.
- Constraints
 - o No ability to control water levels
 - o Scrub shading ditches reduces the amount of aquatic and marginal vegetation
 - o Invasive non-native species – although none are present in the ditches currently, seeds (e.g. Himalayan balsam) can be easily brought onto site especially during flooding events. Some species are also easily transferred on animals (e.g. Australian swap stonecrop on wetland bird feet).
 - o Weed control is expensive and time consuming.

4.3.4. Stream Objective

To maintain the flow of the stream and clear vegetation from the overflow section next to the inflow pipes now that vegetation is established. As the stream is on the boundary of the reserve there is no need for any further management, unless vegetation growth interferes with public access along the paths.

4.3.5. Management & Monitoring Activities

- Blockages to the inflow and outflow pipes from the fill pond cleared periodically when necessary (especially after local children build dams and bridges over the stream).
- Clear encroaching vegetation next to inflow and outflow pipes every 3 years
- Monitoring the inflow and outflow pipes from the fill pond for blockages

4.4. Trees and Hedges

4.4.1. Evaluation

Both parkland trees and hedges are great for linking open spaces, allowing wildlife to move more freely across the countryside. Often providing the only link between other isolated patches of wildlife habitat scattered across the landscape. Once established standalone trees and thick hedges can provide valuable nesting and foraging opportunities for a huge range of wildlife.

Parklands are designed landscapes which often form elements of town parks and amenity green spaces in urban areas. They can be dynamic landscape features but ones that are also prone to periodic losses. This is in part due to a number of stress factors such as climate change, local hydrology, air pollution and soil compaction.

Hedges are strips of woodland edge habitat. Coming in many shapes and sizes, hedges range from narrow strings of closely trimmed scraggy hawthorn (*Crataegus monogyna*) sparse in wildlife, to thick bushes, tangled with dog rose (*Rosa canina*), bramble (*Rubus spp.*) and honeysuckle (*Lonicera periclymenum*) and overtopped with mature trees. Hedgerows are often associated with BAP priority species, such as house sparrow (*Passer domesticus*), bullfinch (*Pyrrhula pyrrhula*), and song thrush (*Turdus philomelos*) all of which occur at Mowbray Fields. Hedgerows provide food sources and nest sites for a huge variety of insects, birds and mammals such as the woodmouse. Hedges can also help prevent soil erosion and capture pollutants. Since the mid-20th century onwards tens of thousands of hedgerows were removed as a result of grants aimed at increasing agricultural efficiency. Many remaining hedges have been savagely trimmed, neglected or affected by drifting agricultural chemicals ('spray drift'). The best way to manage hedges for wildlife is to lay them – left unmanaged they turn into lines of trees, while hard annual trimming results in thin, gappy hedges that support little.

4.4.2. Current Status

There are a number of parkland specimen trees, some more mature than others, widely scattered across Mowbray Fields, most present within the amenity mown areas (so outside of the area of the Local Nature Reserve), but a few are within the wildflower meadow area (within the LNR). Most are in the maple family such as sycamore (*Acer pseudoplatanus*), there is also silver birch (*Betula pendula*) and rowan (*Sorbus aucuparia*). Along the eastern 'embankment' of the fill pond and the southern footpath the scrubby vegetation has grown into a hedge (of sorts), with hawthorn, crab apple (*Malus sylvestris*) and dog rose the most common amongst other species in the hedge, however it is becoming gappy, and thin at the bottom. The tree works at Mowbray Fields are designed to ensure the safety of the site for all users and to help ensure the longer term survival of the remaining trees.

4.4.3. Factors and Constraints

- Positive factors
 - Some of the trees, have a considerable potential remaining life span

- Many of the trees provide valuable habitat for nesting birds, roosting bats, invertebrate fauna and fungal flora
- Public appreciation of the trees is very marked
- Hedgelaying is hugely beneficial for wildlife and aesthetically pleasing
- Constraints
 - Public perception may not favour necessary management of trees (i.e. tree surgery), which will have to be carried out in order to prolong the healthy life of some of the trees, and also on grounds of health and safety
 - Bat surveys of trees or limbs will need to be conducted before any works are commenced
 - Tree surgery required for health and safety reasons will reduce the amount of standing dead wood and may also destroy nesting sites for birds
 - Replanting should be considered to maintain character
 - Lying deadwood provides material for unauthorised fires on site

4.4.4. Trees and Hedges Objectives

To maintain the characteristics of the landscape planting by assisting the SODC Tree Officer with replacing trees in a planned way, over the long term. To retain as much dead wood (standing and lying) as possible and extend the life of mature trees. To maintain the parkland landscape planting and 'hedge' in favourable condition, where:

- Habitat suitable for nesting birds, roosting bats and dead wood invertebrates is maintained, as far as is compatible with public safety

Dead wood is a significant part of a woodland ecosystem. It is provided in a variety of ways from fallen trees and limbs to standing dead trees.

4.4.5. Management Rational

The trees and 'hedges' at Mowbray Fields are managed by:

- Maintaining parkland and hedge structure:
 - Tree safety surveys
 - Tree strategy/tree planting scheme
 - Retaining deadwood
 - Infilling the 'hedgerow' along the eastern embankment where suitable

Tree safety survey

An annual tree safety survey is undertaken by the SODC Tree Officer and any resulting remedial works are undertaken by the SODC arboriculture contractors.

Tree planting

A tree planting scheme for the site is under review as part of a wider SODC Tree Strategy. To date re-planting has been targeted towards reproducing the original planting scheme, in order to perpetuate the survival of the landscape planting, and to ensure a varied age structure. Where necessary young trees have been protected with tree guards/tree corrals.

Retaining deadwood

When trees have been felled for safety reasons the majority of timber has been left on site creating habitat piles provide deadwood habitat. Where possible dead branches have been left on trees as they unlikely to affect the health of the tree.

Infilling hedgerow where suitable

Infilling a hedgerow is a way of ensuring that they remain thick, flora-rich linear corridor for wildlife and do not end up with sizable gaps in-between. By encouraging and infilling along the eastern embankment 'hedge' it is hoped that a large amount of highly valuable habitat will be made available to wildlife on site.

4.4.6. Management Activities

- Maintain existing planting scheme and carry out necessary works to ensure public safety and health of trees.
- Carry out planting when required to retain pattern of landscape planting and species composition (where appropriate).
- Retain all standing and falling dead wood unless it presents a genuine safety hazard.
- Hedge growth monitored and possible in-fill planting to take place.

4.4.7. Monitoring Activities

- Carry out regular monitoring for unsafe limbs, especially after windy/stormy conditions and Liaise with SODC Tree Officer if action becomes necessary
- Monitor health of new plantings, particularly in dry conditions

4.5. Visitor Enjoyment and Public Access

4.5.1. Visitor Enjoyment Objectives

To allow informal public use and enjoyment of Mowbray Fields LNR, where:

- Interest from the local community in wildlife and the reserve is encouraged
- All visitors to the site have a positive experience.
- Interpretation of the site and its wildlife will be clear and concise in a language that is accessible to all, content will be kept up to date and the interpretation board maintained to a high standard, so that:
 - o The visiting public are aware of the site's main features and its significance for biological conservation.
- Directions to the site are clear.
- Reserve infrastructure is maintained in good condition

4.5.2. Current Status

Interpretation

There is one interpretation/notice board, installed in 2004, at the norther entrance into the fill pond, which has an A3 interpretation panel and then an A3 space below for information posters, e.g. on upcoming events. The interpretation/notice board is freestanding, upright, and metal, with a magnetic panel inside and a polycarbonate window that is replaceable. The panel provides

information on the sites history and ecology as well as the code of conduct for the site. Interpretation on the reserve is a very important means of communication to keep the local community informed about interest on the reserve and to keep them updated on any work being carried out and is updated regularly.

Visitor access

There are three official access points to the site (see section 3.2 for more detail), a circular walk around the fill pond and 'dead-end' path into the fill pond area. In addition there are several footpaths adjacent to the site, including the sustrans cycle route, which are used regularly by the public. The preferred paths are mown, and encroaching vegetation cut back (to maintain a 1.2m path width) during the summer months. The nearest appropriate car parking is on Mowbray Road, but this is a residential area.

Visitor surveys

The site is well used by residents of Didcot and visitors to the area. To date no visitor surveys have been carried out at Mowbray Fields, but we are hoping to carry out some surveys in the coming year along with those being carried out at the other SODC sites that Earth Trust manages. The visitor surveys that we have used on other sites have been used to find out more about people were using the site, where they travelled from and asking for their comments and suggestions on site management. The results of past surveys at other sites have helped us to make improvements to that site, plan interpretation and find out what the visitors really think about the site as a whole, including access and accessibility. They also help us to monitor and report on visitor numbers and visitor satisfaction, with our aim being that visitors are happy with the site management in at least 90% of interviews.

General attractiveness

Regular litter picks are carried out at Mowbray Fields. The interpretation panel is checked and cleaned regularly. Two dog bins are provided for people's convenience at the Mowbray Road entrance into the site and at the southern end of the wildflower meadow (these are emptied by SODC). Footpaths are mown between April and September.

4.5.3. Factors and Constraints

- Positive
 - General attractiveness of site
 - Potential for a good range of quality habitats on the site to engage visitors.
- Constraints
 - Some forms of interpretation could be visually intrusive and conflict with the landscape and setting.
 - Vandalism to expensive interpretation panels, benches etc.

4.5.4. Management Activities

- Dog owners using the site will be encouraged to exercise control over their dogs to prevent conflicts with other site users and to reduce dog-fouling problems by the provision of two dog bins.
- Maintenance of access points and access furniture (e.g. gates) as and when required

- Maintenance of visitor furniture e.g. benches as and when required
- The preferred paths across the site mown throughout the summer months to prevent trampling of the wildflower meadow.
- Maintenance of interpretation panel as and when required, including regular cleaning and replacement of clear viewing screen to keep it in good order.
- Maintain the network of Volunteer Community Wardens (see section 4.6.4 for more information)
- Site risk assessment carried out every 6 months, see section 5.2 for further information and Appendix 4.

4.6. Community Engagement

4.6.1. Current Status

The site is managed in a way that safeguards, maintains and enhances the ecological interest, and at the same time ensures continued public enjoyment and involvement in the reserve.

The main objectives of management are to:

- Promote nature conservation
- Provide informal public access and enjoyment

The management of Mowbray Fields directly contributes to two of the Council's Strategic Objectives:

- To maintain and enhance the environment
- To improve health and well-being

In addition, it indirectly contributes to the Council's strategic objective to maintain and improve the economy by helping to boost the local tourist industry.

The Earth Trust's mission statement is:

"To give people access to and experience of the environment through the natural green spaces we manage and together understand what we should do to care for the planet."

This will be achieved by:

- Engaging and inspiring the public
- Demonstrate and communicate sustainable management and the public benefits of land
- Care for, improve and communicate about the natural green spaces we manage
- Being financially sustainable

In order to ensure that the management of Mowbray Fields fits with SODC's and Earth Trust's strategic objectives it is crucial the site is used to engage with the visiting communities.

Mowbray Fields has an active community group, Wallingford Green Gym who understand the importance of the reserve for wildlife. They are committed to enabling other people to visit, enjoy the site and learn about the natural history of the site. Members of the community group keep an eye on the site and inform staff of any issues that arise. The group also undertakes general maintenance of the site with the site warden. The community Green Gym group is a mutually beneficial partnership between local residents and Earth Trust.

4.6.2. Factors and Constraints

The factors and constraints affecting community engagement are:

- Anti-Social Behaviour and Vandalism
- Barriers to Engagement

Vandalism and anti-social behaviour

Mowbray Fields has had problems with anti-social behaviour in the past. However, compared to many areas, the problems encountered were relatively trivial involving minor vandalism of the interpretation sign, fires associated with parties on summer evenings, littering and dog fouling.

Barriers to Engagement

There are a number of barriers which may stop people engaging with a green space, such as Mowbray Fields. These can be availability (proximity to), accessibility (such as walkability and connectivity to) and attractiveness (whether they would want to visit e.g. a place subject to antisocial behaviour or vandalism is not likely to be frequently visited by most members of the local community. For many people, safety fears (whether real or perceived) are a concern which may preclude people from going to a site.). There may also be cultural barriers or people may not perceive the place as being relevant to them.

Community work at Mowbray Fields aims to identify, understand and reduce such barriers. We will work to develop an inclusive culture providing opportunities for people to get involved.

Most of our Community Nature Reserves are surrounded by housing. At the very least there is a centre of population near to the site. Community Nature Reserves provide a focus for a variety of community engagement activities, through which we can communicate our messages about the importance of the natural world and encourage people to consider their actions, working together to benefit wildlife.

4.6.3. Community Engagement Objectives

Local residents have been involved in the reserve from early on by attending meetings around the initial creation of the fill pond, and then later on the Local Nature Reserve designation and contributing their views on key issues, and it is therefore important to keep the link going. It is our wish that the community near to and regular users of the site (e.g. families, walkers, dog walkers) will respect the site and understand and uphold any restrictions that may apply. They will know that there is an active community group (Green Gym, Earth Trust volunteers) and understand how to become involved if they wanted to. They will be engaged with the Earth Trust and the work that we do, in general terms.

People who attend events at Mowbray Fields will continue to have an enjoyable experience providing them with a better understanding of wildlife, the site and its management. They will leave the event with an understanding of the work of Earth Trust. Attendees are inspired to take action for green spaces. They will be able to participate further with the organisation and make changes to their lifestyle, such that it becomes more sustainable and lessens its impact on the natural world.

4.6.4. Management Activities

- Carry out at least one event on the reserve each year involving the local community
- Support community group and encourage local community members to get involved in the volunteer work parties on the reserve
- Continue to recruit, train and manage the team of volunteer wardens
- Keep the interpretation/notice board regularly updated with relevant information (see section 4.5.2 for more information)
- Establish/maintain good relationships with neighbours

Community event

The main format for events on Community Nature Reserves is likely to be a Wildlife Wednesday. They are small scale, fun family, drop-in events for local people encouraging them to discover the wonders of the site. It may or may not have a theme. It is likely to include a series of family friendly environmental education activities, relevant to the site and season, designed to help people to get closer to nature and find out about what makes the place special. The activities should be spread around the nature reserve, to encourage people to move around the site and feel confident doing so on a subsequent visit. By keeping the activities simple it reduces the resources required and the activities may be replicated at other sites where appropriate.

Other events appropriate for Mowbray Fields include guided walks (staff or volunteer led) showing people around the site, explaining certain aspects of the site in detail e.g. Bat Walk. Other recent community events have included:

- bug hunting and bug hotel building arranged for the cubs and brownies
- Night Safari's arranged for families (includes checking small mammal traps, using bat detectors, and checking moth traps)

Supporting community groups

Wallingford Green Gym has been in existence for several years. Their main interest has been and continues to be practical management of the reserve. They are also keen to encourage other members of the community to visit the site and get involved with its management. The main focus for staff is to continue to utilise the Green Gym (and Earth Trust) volunteers for reserve management and support the group in their current activities on the site.

Maintain the network of volunteer wardens

In 2008 a team of Volunteer Community Wardens was established. They act as site wardens during the week, weekends, evenings and holiday periods. The wardens talk to the visiting public, carry out litter clearance and report problems, incidents or health and safety issues directly to the site warden so they can be acted on immediately.

Establish/maintain good relationships with neighbours

For more details on this, see section 5. Legal Responsibilities and Obligations.

5. Legal Responsibilities and Obligations

5.1. Legal Responsibilities and Obligations at Mowbray Fields LNR

Local Nature Reserve Designation

Local Nature Reserve Designation was given to Mowbray Fields in 2000 and is a statutory declaration arising out of the 1949 National Parks and Access to the Countryside Act. Under this statutory designation the Council have the responsibility to manage Mowbray Fields Local Nature Reserve both for nature conservation and public access objectives. The purpose of the designation was to safeguard, maintain and enhance the ecological interest, and at the same time ensure the continual public enjoyment and involvement in the site.

SODC are responsible for ensuring that the primary purpose of the fill pond as a flood alleviation scheme for East Hagbourne is maintained. No work undertaken as part of the management of the fill pond should adversely affect its functioning and safety.

Wildlife and Countryside Act (1981)

The Wildlife and Countryside Act 1981 prohibits:

- the killing, injuring or taking by any method of those wild mammals listed on Schedule 5 of the Act.
- the damage, destruction, or obstruction of access to any structure or place which any wild mammal listed on Schedule 5 uses for shelter or protection and the disturbance of any such mammal while it is occupying a structure or place which it uses for that purpose.

The following Schedule 5 species have been found or are likely to be present at Mowbray Fields; list including

- common frog
- common toad
- bats

Trees

As set out in the 1975 regulations (amendments to the Town and Country Planning Act regarding Trees in Conservation Areas) the Council is exempt from the regulations "for work on trees on land occupied by the Local Planning Authority and carried out with the Local Planning Authority's consent". Clearly, the Council's Parks Officer for Trees would be closely involved in any works necessary.

Occupier's Liability Act

This Act imposes an obligation on all occupiers of the land, to ensure that every reasonable care is taken to remove any risk both to visitors and trespassers.

Health and Safety at Work Act 1974

All operations carried out on site must be undertaken by trained personnel using methods and equipment approved by the Health and Safety Executive, and also in compliance with national and local safety procedures. This obligation is extended to ensuring compliance by contractors working on the site.

5.2. Health and Safety Responsibilities

Review site risk assessment

A site risk assessment is required to ensure compliance with statutory and organisational health and safety procedures. In the UK all organisations which employ staff on sites, or provide public access to sites, must complete a detailed risk assessment or audit of the site. All potential dangers or threats on the site must be identified. All the implications for the health and safety of visitors are considered, and then controls, if necessary, are established and applied. Access to any site may be restricted by the presence of hazards. In extreme circumstances, there may be an obligation to close parts of sites, or even entire sites. Of course, in most instances, it will be possible to take remedial action to remove or isolate the risk and ensure visitor safety.

A site risk assessment should be reviewed at least on a six month basis and also whenever a new hazard is known to be present. A date for review should be set and adhered to – these can be staggered to avoid the need to review lots of sites at the same time but should not be allowed to run on beyond the year for any individual site. An earlier visit and review will be prompted if a likely cause of new hazards is known to have occurred, e.g. exceptional winds or flooding. Site risk assessments are freely available for anyone who requests them. In addition, they should be sent out to visiting groups or contractors before activities and used by anyone planning a project on a nature reserve to inform their 'on the day' risk assessment.

The Mowbray Fields site risk assessments is the responsibility of the site manager (e.g. Senior Warden (Community Reserves)) but the task of reviewing can be delegated to any person with competence to carry out a risk assessment. A formal risk assessment process has been adopted following the Council's corporate procedure, a copy of the risk assessment form used can be found in Appendix 4. Formal risk assessments are conducted every six months but can be updated between times if issues are reported.

Site safety inspections are carried out regularly by the warden; any issues are noted and actions taken noted on the site risk assessment form. In addition, the volunteer wardens and members of the public are encouraged to report any issues to the site warden. The warden will deal with issues that pose a threat to public health and safety immediately or the area is cordoned off with appropriate warning signs and the council are then notified. If the problem does not require immediate action then it is scheduled into the quarterly work plan or the council informed and appropriate contractors appointed.

The warden or the council are contactable at all times in the event of an emergency.

Risk assessment process:

- Risk identified – assess level and severity of risk.
- Warden/volunteer removes/reduces risk immediately where possible.
- If immediate removal is not possible then reduce level of risk to an acceptable level and plan work to remedy situation as soon as reasonable.
- If this is not possible and there is a significant risk to site users then the site can be closed until level of risk is made acceptable.

Carry out tree safety work

The condition of trees on the reserve in relation to health and safety should be regularly reviewed and any safety work identified carried out. SODC has a Tree Officer who carries out an annual tree safety survey and any works with additional works being undertaken as and when necessary to maintain the safety of the site, undertaken by SODC arboriculture contractors.

Once the need for safety work has been identified there are decisions to be made about carrying out remedial work. Safety work tends to involve much higher potential for serious outcomes than tree work in a general nature reserve surrounding where the public can be kept at a safe distance. A risk assessment must be carried out, looking at the factors around each individual tree and the SODC Tree Officer organises an approved arborist contractor (e.g. Arboricultural Association registration).

5.3. Legal Responsibilities

Comply with Protected Species Legislation

A large number of different species are protected under law through various pieces of legislation. In general this does not pose a problem for conservation work, which is aimed at protecting habitats and species. However, it is essential that SODC and Earth Trust remains both legal and also demonstrates best practice. The majority of species are legally protected from standard activities including: being disturbed; injured; killed; sold; up-rooted; or having their 'shelter/home' disturbed or damaged.

The main pieces of legislation which protect species are:

- The Birds Directive 1979
- The Wildlife and Countryside Act 1981 (as amended)
- The Badger Act 1992
- Wild Mammals (Protection) Act 1996
- European Habitats Directive 1992 (The Conservation of Habitats and Species Regulations 2017 (as amended))

As otters are widespread across Oxfordshire the potential presence of otters should be considered as there ditches/stream connected to the Thames on site. Similarly, it is assumed that as there is woodland on site and trees are considered as potential bat roosts, appropriate bat best practice guidance should be adhered to.

5.4. Site Infrastructure and Administration

Maintain site boundaries

Site boundaries are important to maintain in their exact positions so that there is no chance of boundary disputes with neighbours. If fences or hedges are removed, the exact position of the boundary should be recorded.

Boundaries which border roads, footpaths or private properties should be checked for dangerous trees by the SODC Tree Officer.

Create/maintain access points

See section 4.6 Visitor Enjoyment and Public Access.

Establish/maintain good relationships with neighbours

Mowbray Fields is not an isolated patch of land but are bordered on all sides by neighbouring land owners, these may be organizations such as other charities or companies, local authorities, private estates, or individual farmers or home owners.

Periodic liaison or contact with our neighbours is important for several reasons. Work that we carry out may have impacts outside our boundaries, most often these will be visual, but there may also be practical implications such as noise, alteration to drainage, access, bonfire smoke, or increased traffic and public presence. Without warning or discussion with our neighbours, these could become negatives and lead to a poor opinion of SODC and Earth Trust being created. Good communication of our objectives may also help to protect green spaces, if our neighbours can be persuaded to adopt sympathetic land management on their boundaries, to buffer the habitats on our land. Good lines of communication with neighbours will also help in the speedy resolution of problems if they arise.

Liaison with neighbours should take place when we are planning works or events likely to have any of the impacts listed above, or when any work needs to happen on common boundaries such as fencing or tree safety work. It may also be appropriate if practices are observed or reported on neighbouring land likely to have an impact on a Trust reserve. More general regular contact could also be useful, even if there is no specific issue to discuss, just for the purposes of maintaining lines of communication.

Liaison with neighbours may take various forms, namely phone call, email, or letter; it could even be chatting over a fence. Records of communication should be noted on the Earth Trust database, and if appropriate, copies of letters or emails retained in the database. Contact details for key neighbours should also be retained by the Community Reserves Warden. SODC/Earth Trust signage should always be visible, so that it is clear to new neighbours (or members of the public) who we are as landowner or leaseholder, and so they can contact us.

6. Environmental Sustainability

SODC & the Earth Trust seek to manage Mowbray Fields in the most sustainable way. The key issues relevant to the sustainable management of the site are:

- Biodiversity protection and enhancement
- Sustainable procurement
- Carbon reduction
- Waste management Pollution reduction

6.1. Biodiversity Protection and Enhancement

One of the key aims of site management is the protection and enhancement of biodiversity. Section 4 of the management plan sets out how this, along with the other key objectives, will be achieved.

6.2. Sustainability Procurement

The management of the site does not require large scale or regular procurement of goods or services however; we will always seek to obtain goods and services from local, sustainable sources. Examples of this include the purchase of timber products from local suppliers, the use of wood chip from the council's tree works contracts for path surfacing and mulching of trees, the printing of posters for the interpretation/notice board on chlorine free paper and the purchase of log benches from local forestry contractors.

6.3. Carbon Reduction

The main factors contributing to carbon emissions are the use of contractors for regular maintenance such as the mowing of paths and travel to and from the site by site managers, volunteers and visitors. Contractors are used to mow the preferred paths. The contractors visit the site six times annually in the summer months and combine visits with other work on sites in Didcot. The level of carbon emissions from contractors is therefore relatively low. Site managers are based either in nearby Little Wittenham (warden). Travel to and from the site is therefore minimal in carbon terms. Regular volunteers are encouraged to car share where necessary and the Earth Trust provides transport for volunteers to the site from Little Wittenham. The majority of regular volunteers are local and either walk or cycle to the site.

In order to reduce the carbon footprint we seek to reduce emissions where this is possible. The District Council is currently developing its new strategy on this since declaring a Climate Emergency. Part of the work within this strategy is identifying suitable locations for tree planting of appropriate tree species. As Mowbray Fields is part of their land portfolio it is included within this new strategy, but currently we do not have the detail as the strategy hasn't yet been published. When it is available this management plan will be updated to reflect any changes, e.g. additional tree planting.

6.4. Waste Management

Rubbish dumping and dog fouling has been a problem on the reserve in the past. Two dog bins have been installed and the interpretation board asks people to use them. These measures have helped to reduce dog-fouling problems. Currently no litter bins are provided on site. This is a deliberate stance to encourage site users to act responsibly and take their litter home to recycle it. Experience over the management of the site suggests that this policy works very well as the level of littering is generally very low. Where problems have occurred this is as a result of unauthorised parties, in this case it is unlikely that the presence of bins would make any material difference. The litter situation is continually monitored and if there is any significant change then this policy will be reviewed. Any litter that is left on the site is collected either by the warden, volunteer wardens or volunteers. The Earth Trust offices have recycling facilities that deal with any recyclables. Non-recyclable waste is also disposed of at the Earth Trust offices. Relatively little waste is produced on the site from management operations.

6.5. Pollution Reduction

The only potential source of pollution which arises from the management of the site would be through the use of herbicides. The use of herbicides on the site is strictly controlled and avoided when possible, in favour of non-chemical control (manual removal/ hand pulling) unwanted/invasive

plant species. All herbicide applications are carefully controlled and undertaken by licensed members of Earth Trust staff/contractors so that the likelihood of pollution occurring is minimised.

7. References

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8. Table of Management and Monitoring Activities

NB. Tasks that are *greyed out in italics* are not included within the management contract between SODC and the Earth Trust but are tasks carried out by SODC or their sub-contractor.

Management tasks					Month/s to be carried out											
Cpt.	Location	Task	One off, Annual, Continuous, SODC task	Detail	January	February	March	April	May	June	July	August	September	October	November	December
1	Fill pond	3-year cut of the tall herb vegetation	3yr	To prevent the willowherb from dominating the drier areas. To prevent the build-up of decaying vegetation and add to a mosaic of grassland habitats.									✓	✓		
1	Fill pond	Coppicing of the invasive willow/scrub. One third of area to be done each year. (Same area as vegetation removal).	3yr	To prevent the willow from taking over and to improve the species diversity of the flora in these areas. This should particularly help the orchids. Arisings currently being made into willow bundles for use elsewhere. When this is no longer required, treat stumps to prevent re-growth. Creation of habitat/log piles with the cut vegetation away from the grassland areas. It will also improve the visual impact of the reserve by providing an open view of the Fill Pond.	✓	✓								✓	✓	✓
2	Fill pond	Every other year cut of ½ the wet meadow	2yr	To create and enhance a mosaic of grassland habitats and remove invasive willow and scrub in half of the meadow every year.									✓	✓	✓	
2	Fill pond	5-year rotational willow coppicing	5 yr	To prevent the willow from taking over and to improve the species diversity of the flora in these areas. This should particularly help the orchids. Arisings currently being made into willow bundles for use elsewhere. Creation of habitat/log piles with the cut vegetation away from the grassland areas.	✓	✓								✓	✓	✓

3	Fill pond	Create seasonal pools	C	Minimal intervention within established willow carr. Allowing willow to naturally decline creating seasonal pools under their exposed root plates.	As happens naturally														
4	Fill pond	2-3 year clearance embankment vegetation	2-3yr	To prevent bramble from dominating the area.															
5	Meadow	Twice annual meadow cut and rake		Cut meadow in April and the end of August/September depending on the weather and rake all arisings (habitat pile on site).				✓				✓	✓						
5	Meadow	Erect signs warning public of hay cutting operations		When appropriate e.g. if using tractor				✓				✓	✓						
5	Meadow	Control weeds		By hand pulling, when necessary					✓	✓	✓	✓							
5	Meadow	Introduce native wildflower species	O	Competition tolerant species ideally.	As funding allows														
	Fill pond	Clearing debris from flood alleviation culverts	C	To maintain the engineering function of the Fill Pond (especially after local children build dams and bridges over the stream)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stream	Clear encroaching vegetation next to inflow and outflow pipes	A	To keep clear	✓	✓											✓	✓	✓
	Footpaths	To cut back vegetation alongside the footpath	C	Around the fill pond, and the path to the platform, to maintain a 1.2m path width.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>All cpts.</i>	<i>Whole site</i>	<i>Retain and manage trees - Tree safety assessment</i>	<i>SODC</i>	<i>SODC tree safety officer carrying out safety surveys. Especially after windy/stormy conditions. Leave any fallen trees/limbs as dead wood if safe to do so.</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>All cpts.</i>	<i>Whole site</i>	<i>Monitor and maintain existing planting scheme</i>	<i>SODC</i>	<i>Although responsibility of SODC ET warden to liaise with SODC Tree Officer with any safety concerns.</i>	<i>As necessary</i>														

All cpts.	Whole site	Retain all standing and falling dead wood	C	Unless it presents a genuine safety hazard.															
		Hedge growth and health monitored		Possible in fill planting to take place and consider appropriateness of hedgelaying.	As necessary														
All cpts.	Whole site	Replace declining standards	SODC	Diversification of the range of habitats, provision of bird and insect habitats	As and when required														
All cpts.	Whole site	Mow preferred footpaths	SODC	Contractors - once a month				✓	✓	✓	✓	✓	✓	✓					
All cpts.	Whole site	Regular litter picks	C	Whilst wardening and Volunteer community wardens to carry out in addition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Maintain two dog bins and signage relating to dog control	C	To reduce dog-fouling problems and encourage dog owners using the site to be responsible and to exercise control over their dogs to prevent conflicts with other site users	As necessary														
All cpts.	Whole site	Replace as necessary interpretation/notice board	C	Regular cleaning and replacement of clear viewing screen to keep it in good order.	As necessary														
All cpts.	Whole site	Maintain and keep open (where possible) all access points and all permissive footpaths.	C	E.g. gates are adjusted if they drop, overhanging vegetation is cleared back etc.	As necessary														
All cpts.	Whole site	Maintain visitor furniture e.g. benches			As necessary														
		Keep the board regularly updated with relevant information.		To encourage the local community to take an active interest in the reserve.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Monitoring tasks					Month/s to be carried out											
Cpt.	Location	Task	One off, Annual, Continuous, SODC task	Detail	January	February	March	April	May	June	July	August	September	October	November	December
All cpts.	Whole site	Butterfly transect	A	Butterfly conservation (BMS) methodology and results uploaded onto Transect walker				✓	✓	✓	✓	✓	✓			
	Stream and fill pond	Frogspawn survey	A	Freshwater Habitats Trust methodology and result uploaded onto PondNet		✓	✓									
	Fill pond and meadow	Orchid survey	A	End of June/start of July – following methodology already established in previous management plans						✓	✓					
All cpts.	Whole site	Ad-hoc wildlife sightings	C	Recoding of species e.g. birds, reptiles etc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		<i>Monitor health of new plantings</i>	<i>SODC</i>	<i>Particularly in dry conditions with SODC Tree Officer</i>	<i>As necessary</i>											
	Stream	Water vole survey	BBOWT	As part of the Water Vole Project	Only if new sighting are recorded											
All cpts.	Whole site	Monitor anti-social behaviour		Liaise with SODC, PCSO's/Police as necessary	As necessary											
	Whole site	Carry out visitor survey	Every 5 yrs	With volunteers assistance, working with Earth Trust's Visitor Experience Manager	Start 2020/21											

Admin tasks					Month/s to be carried out											
Cpt.	Location	Task	One off, Annual, Continuous, HLS, SODC task	Detail	January	February	March	April	May	June	July	August	September	October	November	December
All cpts.	Whole site	Revise site management plan	5 years		Next revision 2025											
All cpts.	Whole site	Revise site risk assessment	6 months	Provide SODC with copy				✓						✓		
All cpts.	Whole site	Maintain the volunteer warden network and reporting system	C	Volunteer recruited and trained by Volunteer Officer and Warden at Earth Trust. Reporting via online survey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
All cpts.	Whole site	Monitor external events	C		As necessary											
All cpts.	Whole site	Site used for events/education (internal & external)		Internal education event including Wildlife Wednesday & Night Safari, Bat walk. Tend to be in school holidays		✓		✓			✓	✓		✓		
Ditch		Liaise with archaeologists and English Heritage over any excavations planned		Buried Archaeology												