



The Friends of  
Hill Hook LNR



**Birmingham &  
Black Country**  
Wildlife Trust

# Hill Hook Local Nature Reserve Conservation Management Plan 2022 – 2027

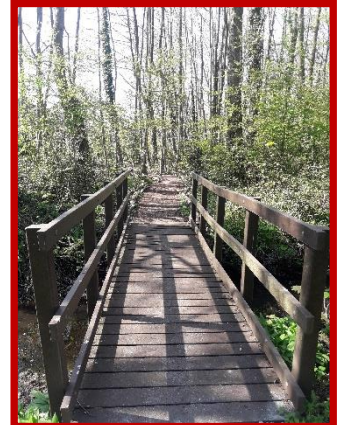


# Hill Hook Local Nature Reserve

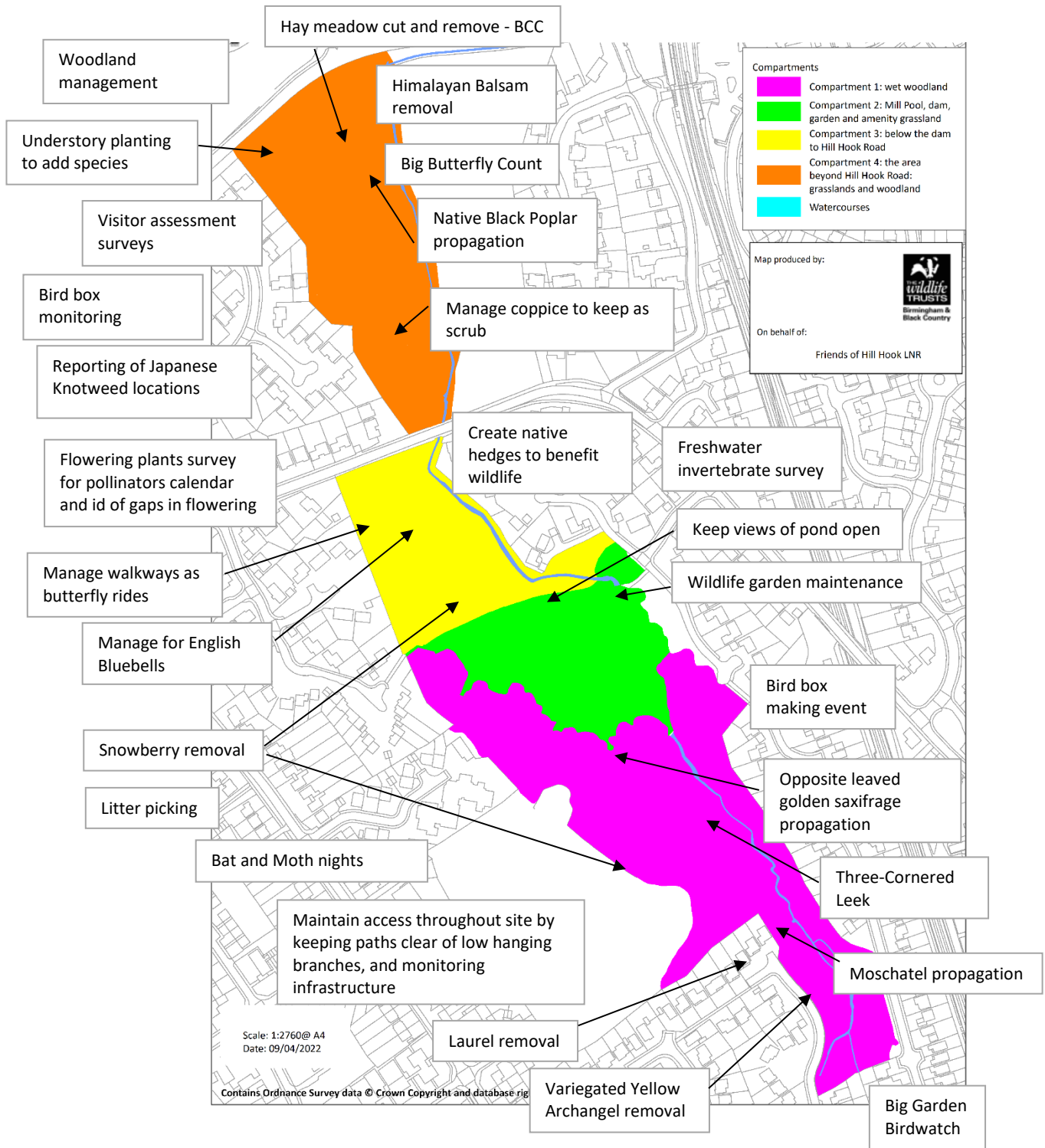
## Conservation Management Plan

2022 – 2027

Produced by the Birmingham & Black Country Wildlife Trust



# Executive Summary




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## Introduction

- Hill Hook comprises approximately 8.4 hectares (20.8 acres) located in the northern suburbs of Sutton Coldfield and within the city boundary of Birmingham.
- The site is public open space and is a designated Local Nature Reserve, parts of the site are also designated as either SLINC or SINC<sup>[1]</sup>. The site is owned and managed by Birmingham City Council (BCC), under the umbrella of the Sutton Park rangers and also the Parks Department.
- The Friends of Hill Hook LNR run volunteer work parties on the site, with the agreement of BCC and have commissioned this management plan.
- This Conservation Management Plan has been produced by The Birmingham & Black Country Wildlife Trust with the support of EcoRecord<sup>[2]</sup>.
- The management plan describes the current state of the reserve, highlights and evaluates its most important features and prescribes a series of actions that have been designed to maximise these assets.
- The role of the management plan is to ensure the future protection and enhancement of the ecological, social and educational value of the reserve and the aim is that Hill Hook Local Nature Reserve will be recognised as an example of good management, combining best nature conservation practice with high standards of access, interpretation and educational use.
- Known previous surveys and management plans are as follows:
  - 1989 SINC Citation
  - 1990 Local Site Survey
  - 1990 Management Plan (referenced in the 2002 Management Plan, but not seen by the author of this current document)
  - 2002 Management Plan
  - 2014 Management Plan, updated in 2019
- The funding for the production of this management plan is part of a wider ‘Awards for All’ project, which aimed to update the site’s Habitat surveys as well as to help people enjoy the site by updating the site leaflet and installing a new interpretation panel.
- This Conservation Management Plan does not cover the responsibilities and ongoing work carried out by the landowner, Birmingham City Council. This is implicit in the remainder of this document.

[1] Sites of Importance for Nature Conservation (SINCs) and Sites of Local Importance for Nature Conservation (SLINCs) are locally designated non statutory Local Wildlife Sites. SINCs are defined as Sites of substantive nature conservation value in the context of Birmingham & The Black Country. SLINCs are defined as Sites of substantive nature conservation value in the context of a metropolitan borough. Local Nature Reserves (LNRs) are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment. They makes an important contribution to England's biodiversity (Natural England 2022).

[2]  is the ecological records centre for Birmingham & the Black Country.

## Vision Statement

### Conserve and Enhance Biodiversity

Hill Hook is an outstanding site with a wide variety of habitats and this makes it a very special place. The aim of the partners involved in the site's protection, monitoring and management is to conserve and enhance the biodiversity of the reserve.

### Access, Education and Recreation

Hill Hook has is a valuable resource for the local community and has the potential to be for schools and other groups. Management of this aspect of the site will be targeted on maintaining access and ensuring that it is well-kept. The Friends group have done a lot of recent work on enabling access and installing high quality infrastructure such as recycled plastic boardwalks through the wet woodland.

There is the opportunity for schools and other groups to be helped to learn about the site, including historical aspects and to recognise its educational value.

### Forge Partnerships

Partnerships between the landowner, local organisations, groups and individuals are important to maximise the benefits that Hill Hook LNR may bring to wildlife, local residents and the wider community.

### Spread the Word

Awareness and understanding of the value of Hill Hook Local Nature Reserve are vital for the protection and maintenance of the reserve for wildlife and for people. The value of the reserve for wildlife and for people should be promoted to a wide audience.

## General Information

**Grid Reference:** SK105003

**Planning authority:** Birmingham City Council

**Wards:** Sutton Mere Green

**Constituency:** Sutton Coldfield

**EcoRecord Reference:** BM001

## Nature Conservation and other Designations

1. The site is a public open space and is designated a Local Nature Reserve (2022 Natural England LNR records).
2. Proposals for the site to become a Local Nature Reserve began in 1987 and Hill Hook became a Local Nature Reserve (LNR) in 1992 with the LNR designation later extended to include the area north of Hill Hook Road to Blake Street. The 2002 Management Plan states that the site's LNR 'status has not been made public many people are not aware of the designated status of the site'. Part of the site (south of Hill Hook Road) was also declared a Site of Importance for Nature Conservation (SINC) in 1990. Another part of the site (a section of the LNR north of Hill Hook Road) was also designated a Site of Local Importance for Nature Conservation (SLINC) in 1990.

### **Site of Importance for Nature Conservation (SINC) and Site of Local Importance for Nature Conservation (SLINC)**

3. Local Sites systems operate throughout England for the purpose of conferring a level of protection to those sites of substantive nature conservation value that are not otherwise covered by national or international designations (such as Site of Special Scientific Importance or Local Nature Reserve). The first Local Sites schedule for Birmingham and the Black Country was introduced in 1977, and sites have been protected ever since by a succession of local planning policy and nature conservation strategies. This non-statutory system is intended to be comprehensive (i.e. all sites should be selected which meet the criteria), whereas statutory designation systems such as Special Protection Areas, Special Areas of Conservation, Ramsar sites and Sites of Special Scientific Interest are intended to provide a representative suite of sites.
4. In Birmingham and the Black Country, Local Sites encompass what are termed Sites of Importance for Nature Conservation (SINCs) and Sites of Local Importance for Nature Conservation (SLINCs). This two-tier system aims to ensure that all sites of substantive local nature conservation value are selected by assessing sites in both a sub-regional (i.e. Birmingham and the Black Country) and metropolitan borough context (either Birmingham, Dudley, Sandwell, Walsall or Wolverhampton):

**Sites of Importance for Nature Conservation (SINCs)** - Sites of substantive nature conservation value in the context of Birmingham and the Black Country

**Sites of Local Importance for Nature Conservation (SLINCs)** - Sites of substantive nature conservation value in the context of a metropolitan borough.

5. Importantly Local Sites are *not* assessed in a regional or national context.

### **Local Nature Reserve (LNR)**

6. A LNR is a site which is for both people and wildlife – they offer special opportunities to enjoy, study or learn about nature. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment and the main aim must be to care for the natural features which make the site special (Natural England, 2013).



## Management & Responsibilities

7. The land is owned by Department of Leisure and Culture, Birmingham City Council. They also own the land, which is leased to the Sutton Four Oaks Cricket Club and the land between Hill Hook Road and Blake Street to the west of the Bourne Brook.
8. The rangers of Sutton Park regulate the reserve, carry out risk assessments and tree safety visits and investigate any problems that are brought to their attention such as vandalism and fires. Birmingham Council, Parks and Nature Conservation division are responsible for maintenance/mowing regime of the main footpath from Netherstone Grove to Bradgate Drive, amenity grassland and grass embankment along the dam.

## Current Access & Infrastructure

9. There are access points to the reserve off Hill Hook Road, Bradgate Drive and Netherstone Grove on to the dam, which is topped by a surfaced path, which runs approximately east to west across the site. There is access from Balmoral Road and Sandhurst Road into the wet woodland at the southern end of the site. There is also an access point off Hill Hook Road. The northern end of the reserve can be accessed from Hill Hook Road and from Blake Street and a circular, unsurfaced, natural path runs between these two points. Dropped kerbs would be useful to aid access across the road.
10. There is a network of mostly unsurfaced, natural paths across the remainder of the site and a number of bridges and boardwalks in the southern, wet woodland and on the western side of the pool, all of which have been installed through funding obtained by the Friends group and recently refurbished with recycled plastic structures.
11. There is a flight of steps from the top of the dam down into the woodland on the northern side of the dam. A second, decrepit flight of steps in this area has recently been removed. The site has a number of sections of timber post and rail fencing, trip rails and other structures including benches and litter bins (maintained by BCC). There are also currently 2 interpretation panels and a noticeboard, with a further interpretation panel due to be installed in the meadow area.
12. Within Hill Hook there are two storm drains situated within the amenity grassland. The occurrence of manhole covers and the outlet of a storm drain show evidence of this. As part of the 2002 management planning process all service providers were contacted for details of their service infrastructure, if any, located on the site.

## Community & Education

13. Hill Hook Local Nature Reserve is a valuable resource for the local community, but is currently underutilised by schools and other groups. This is likely to be due to a number of factors including: perception of the site and misuse, lack of awareness of the site's existence and a lack of understanding of how to use the site.

14. All aspects of the National Curriculum can be taught using the natural environment as a resource but schools are likely to need support and encouragement from outside agencies such as the Wildlife Trust. The site illustrates ecological concepts such as succession and stream processes, and can and should be used to educate local children. The site is also important in historical terms such as its archaeological features and the mill. Informal activities such as Out of Hours Learning and guided walks provide further opportunities. The lack of parking, toilets and indoor facilities should be taken into account by schools and groups when planning and advertising sessions and opportunities
15. The more the site is used for educational purposes the more valued it will be. It is important that local children be given the opportunity to interact with and explore the site. As well as enriching their learning experience this will hopefully lead to the site being more valued and less prone to misuse.
16. The Birmingham & Black Country Wildlife Trust staff currently support the Friends of Hill Hook LNR in running regular weekend volunteer sessions, funded by the various grants obtained by the Friends group. This is attended by a few dedicated and regular volunteers but would benefit from further recruitment, especially of younger people and those from a more diverse range of backgrounds to represent the whole of the local community.
17. The Friends group also work in partnership with other local organisations and groups including Sutton Town Council, Sutton in Bloom, BrumBats and have made links recently with local voluntary groups aiming to adopt railway stations and improve them for wildlife. Other opportunities include making links with natural history and history societies and to extend invitations to the site for surveys and guided walks.
18. In terms of public visitors, the majority of visitors are expected to be local visitors coming from within the immediate area and utilising Hill Hook LNR as a local amenity. A visitor numbers survey for 2021-22 gave a calculated figure of nearly 108,000 visitors per year (See Appendix 1). Some are people who will typically visit regularly and who will look on interpretation mainly as a reassurance of the site's status. Others will be first time or irregular visitors, interpretation will be a way of raising their awareness and encouraging them to continue to visit. The 2002 Management Plan references a visitor/ user survey undertaken at the site in April 2002, which 'identified that, as one would expect, the main use by local residents is for exercising dogs, walking, jogging and as a cut through to areas surrounding the reserve via its exits'.
19. In encouraging the local community to visit the site, the aim is to raise their general awareness of the multi-faceted value of sub-urban natural green spaces and to encourage them to value and look after their local area.
20. Overall, the aim is to involve more people, more frequently and in a way which is constructive and beneficial to the health of the wildlife of the site and the people that use it.

## **Funding**

21. Funding for work on the site is mainly through applications made by the Friends of Hill Hook LNR.

## Site Description and History

22. Information here has been taken from the Hill Hook Local Nature Reserve, Sutton Coldfield Management Plan 2002-2008 produced by The Birmingham & Black Country Wildlife Trust. Full site species lists are at the end of this plan. These were provided by EcoRecord (2022) and through site surveys undertaken for the production of this plan (The Birmingham & Black Country Wildlife Trust, 2021-22)

### Archaeology, Local History and Planning History

23. Hill Hook corn mill was the most northerly of Sutton's mills, lying close to the source of the Bourne Brook. The first record of the mill dates back to 1671 by a record of Oliver Cartwright, Miller at Hill Hook and is over 300 years old. The purpose of the mill was to grind corn for local farmers and nearby residents and was still in working order in the 1960's. The mill consisted of the actual mill and an adjoining cottage. The stream was dammed to form a mill pool of approximately 1.2 hectares to provide power, as the water supply was poor so near the source. It has been recorded that it was stocked with fish around 1700. The pool and its surrounding fields (now residential development) were popular for recreation. Hill Hook mill was already well known before the First World War and was a popular destination for Sunday school outings, arriving by train via Blake Street Station.
24. Fishing and boating (skating in winter) were enjoyed at the pool and in the early 1900's swings and roundabouts were installed by William Taylor located on the field overlooking the mill pool. Taylor was not concerned with milling or farming and relied heavily upon recreational use (taken from a report from Birmingham & Warwickshire Archaeological Society and K. Williams (1982) of the Sutton Coldfield Local History Research Group).
25. In 1968, the caretaker, Mr. Medlam was forced to leave the mill due to ill health. The mill was left vacant and fell victim to neglect, vandalism and arson. Eventually, in 1970, the mill was demolished.
26. In 1980, Birmingham City Council (BCC) purchased the land around the mill pool for use as an open space and Nature Reserve. The remains of the mill were discovered whilst undertaking engineering work, required to make the dam safe.
27. In late 1982, a mill wheel buried in-situ at Hill Hook, was found by Engineers from BCC. The Birmingham and Warwickshire Archaeological Society (BWAS) were informed, as the wheel was threatened by plans to strengthen the mill pool dam and to improve the outflow channel. However, exploratory work showed that recovery of the archaeological feature was beyond its means. In 1983, work began on the Manpower Services Commission (MSC) scheme, to excavate the water wheel pit and adjacent machinery cellar. During the spring and summer, the BWAS field group conducted a survey of the mill remains. It was during this time the water wheel and mill foundations that used to mark the site where the mill once stood were removed. However, although complete when buried, only three quarters of the wheel was found intact, vandalism had removed the exposed upper part. The site has now been back-filled and partly covered by a new outflow. The cellar walls have been capped with a small garden within. Four of the old mill stones used to form a small bridge near the outlet of the pool but were vandalized and no longer exist. Today, one of the old mill stones and a plaque marks the site in the brick built seating area just to the right of the entrance from Netherstone Grove.

28. Although the MSC scheme lacked full archaeological supervision, a significant amount of evidence was recovered. The full findings of the field group can be found within the Transactions of Birmingham & Warwickshire Archaeological Society article (1983-4, vol. 93). From these findings, a new interpretation of the history of the mill was constructed. The investigation excavated a number of important features and allowed reconstruction and more information to be produced of the axle, stair, rear and tail race walls, water wheel pit and outflow. The full length of the culvert of the outflow still survives, although choked with debris, running parallel to the face of the dam. A large marl pit was discovered on the hill to the west of the mill, thought to have been created in 1800, based on information collected in the 1861 census (BWAS).
29. The City Engineers scheme also included the desilting of the pool. However, before any work could take place, a causeway, running parallel to the dam at a distance of approximately 50m had been exposed from the time the pool had been drained in 1980. The 1811 plan of Hill Hook showed a row of trees across the pool following the causeway. From this information a presumption of the age of the causeway could be assumed. It is thought that the causeway was the former dam which was abandoned, when in 1767, permission was granted to enlarge the pool, creating the present dam structure. The siting of the new dam, below the confluence of two streams, increased the size of the pool to 1.2 hectares and also the flow to it. Desilting of the pool exposed the whole of the old dam and it was also found that the stumps of the trees marked on the 1811 map had survived. The dam stretched from the eastern bank to the headland, having a width of 6 to 9 m and average height of 1.5m.
30. There have been disputes surrounding the age and position of the mill. The normal position of a mill is beside it's pool, which is not the case at Hill Hook, suggesting that a previous mill existed before the pool was enlarged. Another suggestion is that before the enlarging of the pool, the mill had a mill leet, connecting the mill to the present dam site. This would have only been resorted to if the old dam site could not have provided a sufficient amount of fall of water. Therefore, if the disputes are to resolved, further investigations need to be carried out.
31. Another finding was a 17th Century clay tobacco pipe bowl, discovered in the upper layers of the wheel pit. Although the MSC team was largely inexperienced at the recovery of small artefacts, the impression gained during the excavation was that many had been removed by passers by.
32. From the archaeological evidence recovered during the excavation, it has been suggested that the Hill Hook settlement had been established between 1530 and 1580 on open land, eventually being surrounded by new farms and enclosures. Documentary evidence dates the mill back to the mid 17th Century and suggests farming was an important activity at the site as well as milling. The mill was of modest size which meant it was unlikely to attract a high volume of business. Farming would have provided an alternative income. Early in the 20th Century, the water wheel ceased to move the machinery and recreational potential of the site was exploited as a source of income (Hill Hook Corn Mill- Birmingham & Warwickshire Archaeological Society and K. Williams (1982) of the Sutton Coldfield Local History Research Group).
33. In 2002, an earth bank along the southern boundary of the pool was brought to the attention of the city archaeologist who stated that it is of local archaeological importance.
34. The area surrounding the Mill Pool has been subject to the threat of development. In 1983, a planning application for the development of residential housing adjacent to Balmoral Road (and creation of Netherstone Grove) was allowed to go ahead despite objections. This was followed by development

of the southern and western boundaries of the reserve by Barratt developments and Clark Homes Ltd. The land adjacent to Hill Hook Road has also been subject to the threat of development. In 1983, an application for housing was submitted for this area. However, the plan did not get approval, though the area adjacent to the western side of the land has been developed.

35. The dam, mill pool and mill site are all of high local archaeological importance, according to the 2002 Management Plan. The archaeological features on site can be used as an educational tool and bring an important cultural and historical element to the interpretation of the site.

### **Habitats**

36. The main habitats within this site are wet woodland, scrub, grassland, tall herb/scrub, hedgerows, stream and open water. Together these provide structural diversity within the site, which considerably enhances the range of species likely to occur there. The proximity of these habitats to one another is a significant feature particularly for those species that are dependent on the presence of more than one habitat for survival. The position of the reserve within the wider landscape and its connectivity to the wider landscape are also important to the site's value and to allow the movement of wildlife populations between sites. This is critically important to allow movement in response to climate change, loss of habitats and for gene flow between populations. Site management plans should take the connections between sites into account and plan for management to happen on a landscape scale (e.g. management to encourage particular species, management to ensure nectar availability across the wider area and management of watercourses to ensure management does not adversely affect habitats downstream).

### Woodland

37. The wet Alder carr habitat is very rare in the Birmingham region. Factors affecting this habitat type are the lowering of the water table, flood prevention measures, waterborne pollution and unsympathetic management. The woodland is low lying and tends to be wet all year with numerous pits, trenches and hollows filled with swamp vegetation. Woodland, dead wood and stream habitats are all noted as in need of protection and appropriate management within Birmingham and the Black Country (Birmingham and the Black Country Action Plans, 2000).
38. The canopy is varied in age and structure, dominated almost entirely by Alder. Crack Willow and Birch were also frequent while Sycamore, Beech, Ash, Pedunculate Oak and White Willow are also present. The 1990 survey identified a good shrub layer within the wood with an abundance of Guelder Rose and frequent Rowan, Holly, Crack Willow, Sallow, Elder, Dog Rose, Hawthorn and Sycamore. These were still present in 2022, though, unfortunately, some unsanctioned management work in this area of the woodland has adversely affected the shrub layer in parts.
39. The creation of a circular path through this area since the last management plan has opened this area up to public access, increasing the appreciation of the woodland by the public. To limit disturbance and also compaction of the ground to the detriment of the habitat, access work in this area should now focus on maintaining paths to limit any tendency to widen paths due to avoidance of muddy areas and discouraging any access off paths.
40. The field layer varies floristically depending upon the dampness of the wood, with the wetter areas containing the most diverse field layer including species only found in wetter habitats such as

Opposite-leaved Golden Saxifrage and Large Bittercress. There are also historical records for Marsh Valerian (very rare in the conurbation outside Sutton Park) but this was not recorded in the 1990 survey. The plant community, very typical of wet Alder carr, is a very rare habitat in the conurbation. In the 1990 survey, herbs were well represented in most parts, but the 2002 Management Plan reports a deterioration in the field layer. The tendency for further drying out through a variety of factors, can only detrimentally impact this habitat.

41. An area of dry woodland occurs at the eastern end of the boundary with the cricket club, containing a number of old hazel stools, which adds to the impression that some of the woodland to the south of the pool is of ancient origin.
42. Other areas of woodland include a long narrow woodland spit, north of the dam, which follows the brook course and to the south of this, stands of drier secondary woodland. The 2002 Management Plan reports that Aspen was locally common here. The rest of this area comprises immature secondary woodland including Pedunculate Oak, Common Alder and Ash, but to the north-west is dominated by mature Hawthorn. The 2002 Plan suggests that this has developed on old grassland probably very similar to the fields north of Hillhook Road. The 1990 surveys identified some herb rich grassland communities in the wetter parts of this area, which included ragged robin, horsetails, marsh marigold, and floating sweet grass. The 2002 Management Plan reports that 'the canopy had since developed and these communities were being lost through shading, drier conditions and, hence, invasion by Bramble'.
43. On the south-western edge of the pool is a further area of dry woodland. This transitions into an area of marsh along the west side of the pool, upon which has developed a narrow band of Willow carr, currently used by nesting Mute Swans.
44. There are also areas of relatively young, dry woodland in the area of the reserve to the north of Hill Hook Road, including a block of apparently planted woodland dominated by Ash.

#### Streams, pool and marginal vegetation

45. The main hydrological features are the old mill pond with adjacent areas of damp woodland and the Bourne Brook. The former pool, before it was enlarged in the late 18th century, was fed by just one stream. However, the present dam structure was sited below the confluence of two streams; thereby the flow into the pool was largely increased. The pool itself has two small islands at the centre, which were created from the remains of the original dam during desilting in the late 1980s, which left two small central sections, which were then converted into the islands, under the supervision of the BCC Ranger Service. These are currently heavily vegetated. At the north-eastern end of the dam the sluice has been rebuilt and gabions have been placed along the length of the dam. Since then the sluice has been rebuilt a layer of bricks has been knocked off its outer lip which will have lowered the level of the pool by approximately 75mm.
46. The mill pool has very rich emergent vegetation on its margins, but little or no floating and submerged aquatic plants. The pool itself is eutrophic as a result of nutrients entering the pool from the stream. Stands of emergent vegetation dominate the edges of the pool but in 2002 were fairly sparse along the dam. These communities are very rich in species particularly on the western edge, where a wide strip of marsh occurs. Species include Great Willowherb, Floating Sweet-grass, Brooklime, Water Mint, Marsh Marigold, sedges, Yellow Iris, Soft Rush, Meadowsweet and Greater Reedmace. Lesser Spearwort, Yellow Loosestrife, Bogbean, Monkey Flower, Pink Purslane and Marsh Cinquefoil were

been recorded in small quantities in previous surveys. Many of these species are scarce or local in Birmingham. Management work since 2014 has included the addition of coir rolls impregnated with marginal plug plants, which are now well established along the dam.

47. The 2002 Management Plan states that ‘the 1990 Management Plan records that the mill pool supported a wide variety of freshwater fish such as pike, bream, tench, roach and carp and that in 1996 a number of common carp and roach were netted by the Environment Agency and used to restock Blackroot Pool, Sutton Park. Staff from Sutton Park have been involved in enforcing a no-fishing ban on the pool from 1990 to 2002.’ The 2002 Management Plan also states that ‘in 1990, it was recorded that several large pike were in the pool and were responsible for limiting the breeding success of ducks, geese and particularly the swans. In 1996 Sutton Park rangers netted the pool with the Environment Agency to remove the fish, especially Pike. A considerable amount of carp and roach were removed and relocated to Blackroot Pool. However, whilst netting the fish, a large number of dumped exotic species were found including goldfish, sturget and coi carp. The Environment Agency released these species back into the Hill Hook pool’.
48. The brook emerges from a culvert beneath Balmoral Rd at the southernmost point of the Reserve. Its course follows the narrow spit of woodland northwards until it feeds into the millpool. There is a second brook, which also emerges from the culvert from the Sandhurst Road side of the site, which joins the Balmoral arm. The brook continues northwards from the sluice along the eastern boundary of the Reserve until it is culverted under Hill Hook Rd and continues northwards to Blake Street marking the western boundary of Local Authority owned land.
49. The stream more or less follows its natural course. There has been some revetment works done to the banks along the section to the north of the dam. The brook is very shallow with a mixed substrate along its length. During high rainfall, the brook can carry much larger amounts of water, which is probably the reason for the above mentioned revetment works. The Bourne Brook continues its course north to Shenstone and then east to the River Tame at Tamworth.

#### Grassland and tall herb

50. There are areas of regularly mown amenity grassland between the pool and Netherstone Grove. These appear unchanged from the 1990 surveys and are composed mainly of Perennial Rye-grass, Yorkshire Fog, Soft Brome and Meadow Foxtail, with herbs including Ribwort Plantain, Red Clover, Creeping Buttercup and Common Cat’s-Ear.
51. The grasslands at the northern end of the site, beyond Hill Hook Road are managed as species-rich hay meadows, with one hay cut a year, normally in September, which is carried out by BCC or their contractors. In recent years, the management work has been much delayed due to problems with equipment.
52. There are also a number of areas of tall herb, including a range of species such as Common Nettle, Rosebay Willowherb and Cow Parsley. These include on the embankment from the dam, through the woodland north of this area and in the area north of Hill Hook Road, including along the brook.

## **Principles of the Management Plan**

### **Management for Wildlife**

The overall aim of conservation management of the site is to preserve and enhance existing habitats using an evidence based approach to create a landscape of sensitively-managed, watercourses, pools, woodlands, permanent grassland and edge habitats, whilst diversifying the range of niches present.

As previously mentioned, the habitats on the reserve, especially the wet woodland include those that are rare and under threat in the local area. The connectivity of the site and the management of the site and the wider landscape are also key to its value for wildlife, now and in the future.

EcoRecord hold species and survey data on Hill Hook LNR, which can be used to inform management actions and to measure their success. Future plans include continuing to add to this body of information, through incidental recording, events, recording and monitoring on volunteer days and involvement of local groups such as BrumBats.

### **Management for People**

Management for people includes ensuring paths are in good condition underfoot and also not overgrown, appropriate signage/interpretation, welcoming entrances, site structures being in good condition and the facilitation of educational use. This can be achieved through on site practical work by the volunteer group, but also through the provision of leaflets and other resources and the running of events and sessions for specific groups.

### **Nature Conservation Designation**

As mentioned, the site is currently a Local Nature Reserve and has areas designated as 'Site of Importance for Nature Conservation' (SINC) and 'Site of Local Importance for Nature Conservation' (SLINC). The management actions contained in this plan aim to protect and/or enhance the levels needed to reach these designations.



## Aims of the Management Plan

The overall aims of the management plan are:

- The wildlife using the site and the condition of the habitats is well known via surveying, monitoring and reporting
- The wet woodland remains as a high quality habitat, including marsh/swampy areas
- The effect of people on the habitat is minimal e.g. little foot fall off paths
- The watercourses and pool are in good condition, i.e. with minimal pollution and high naturalness
- Non-native invasive species are at a minimum
- Special species such as Moschatel are monitored and protected
- There is a good amount of dead wood habitat, both standing and on the floor, with fallen trees left whole where possible
- The younger, planted woodland is managed to improve the tree species diversity, incidence of natural regeneration, age structure of the trees, improved shrub layer/physical structure and field layer
- Grasslands are managed as neutral hay meadows and enhanced as necessary
- The creation and maintenance of rides, glades and scallops to ensure connectivity around the site for butterflies and other invertebrates
- The entrances are welcoming spaces
- Paths are well maintained
- People are engaged with the site, informed and knowledgeable about the value of the site and how to use it. They also contribute to its well-being, including by submitting wildlife records.
- Educational use of the site is encouraged and supported

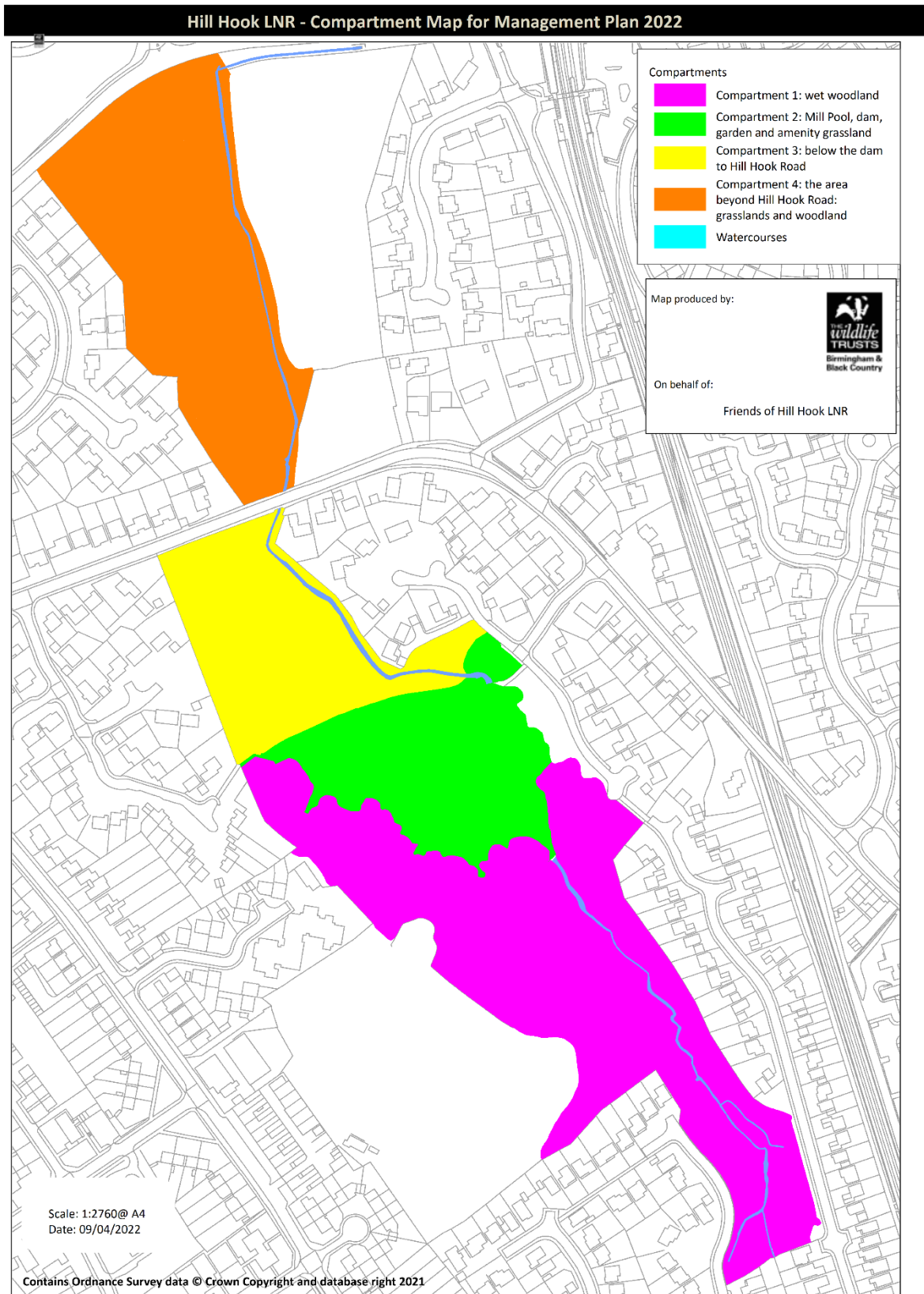
## Recording & Management Compartments

The reserve has been divided into the following recording and management compartments. Wherever possible these are based on clear physical features that are likely to remain identifiable for a significant number of years. All subsequent recording of habitats, species, management etc. should follow this system:

- The southern end – wet woodland
- The Mill Pool and surrounds
- The central area of woodland and watercourse – between the dam and Hill Hook Road
- The area between Hill Hook Road and Blake Street – meadows, woodland, stream

<b>Compartment/Sub-compartment</b>
<b>1: Semi-natural wet woodland – the southern area of the site</b>
There are no sub-compartments
<b>2: The Mill Pool and surrounds</b>
2a: the Mill Pool including the overflow
2b: the dam
2c: the garden, amenity grassland and adjacent woodland
<b>3: The central area of woodland and watercourse (between the dam and Hill Hook Road)</b>
3a: the woodland
3b: the watercourse
<b>4: The area beyond Hill Hook Road</b>
4a: the grasslands
4b: the woodlands, glades and rides
4c: the watercourse

# Compartment Map



## Compartment Descriptions, Maps and Management Actions

### Compartment Descriptions

For each compartment a form has been completed which describes its physical and ecological characteristics and highlights any features of value and/or note. The following information is given:

**Site Description** - a summary description of the compartment including features such as historic land use, habitats, current management, topography and infrastructure.

**Habitats** - habitats are listed according to Phase 1 Habitat<sup>[3]</sup> category

**Work plan** – including location, who can carry out the work (i.e. volunteers, staff or contractors) and timing

[3] The Phase 1 Habitat Classification (and associated field survey technique) is a widely used system for recording semi-natural vegetation in the UK. It presents a basic assessment of habitat type and potential importance for nature conservation. Each habitat type/feature is identified by way of a brief description of its defining features. It is then allocated a specific name, an alpha-numeric code, and unique mapping colour.

## Compartment 1: Semi-natural wet woodland – the southern area of the site

### Compartment 1: Semi-natural wet woodland – the southern area of the site

There are no sub-compartments

#### Habitats

Phase 1 Name	Phase 1 Code
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<b>Broad-leaved Semi-natural Woodland</b>	<b>A111</b>
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Woodland is defined as vegetation dominated by trees more than 5m high when mature, forming a distinct, although sometimes open, canopy. Semi-natural woodland comprises all stands, which do not obviously originate from planting. The distribution of species will generally reflect natural variations in the site and its soil (JNCC, 2010). Wet woodland occurs on poorly drained or seasonally wet soils and many alder woods are ancient (UKBAP, 2011).

The woodland at the southern end of the site is a wet woodland, dominated by Common Alder (*Alnus glutinosa*), with some areas of Willow (*Salix* sp.) and Hazel (*Corylus avellana*). The field layer includes native Bluebell (*Hyacinthoides non-scripta*), Wood Anemone (*Anemone nemorosa*), Opposite-leaved Golden Saxifrage (*Chrysosplenium oppositifolium*), Moschatel (*Adoxa moschatellina*) and Large Bitter-cress (*Cardamine amara*).

There are some areas of Variegated Yellow Archangel (*Lamium galeobdolon* subsp. *argentatum*), occasional Cherry Laurel (*Prunus laurocerasus*), Snowberry (*Symphoricarpos albus*), Cotoneaster (*Cotoneaster* sp.), garden Daffodils (*Narcissus* sp.), Spanish/hybrid Bluebell (*H. x massartiana*) and Buddleia (*Buddleia davidii*).

Phase 1 Name	Phase 1 Code
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<b>Swamp</b>	<b>F1</b>
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There are a number of areas within the woodland, with standing water or water just below the surface, containing swamp vegetation including Rushes, Sedges, Large Bitter-cress and species such as Meadowsweet (*Filipendula ulmaria*) and Marsh-marigold (*Caltha palustris*).

Phase 1 Name	Phase 1 Code
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<b>Standing Water</b>	<b>G1</b>
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There is a small seasonal pool, near the entrance from Sandhurst Road, which is edged with species such as Yellow Flag (*Iris pseudacorus*).

Phase 1 Name	Phase 1 Code
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<b>Running Water</b>	<b>G2</b>
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There are a number of watercourses that run through the area, eventually flowing into the Mill Pool. The water is shallow and the banks are mostly steep and bare of vegetation, although there is some cover of species of wetter habitats such as Opposite-leaved Golden Saxifrage. There are also areas of Ramsons (*Allium ursinum*) and Lesser Celandine (*Ficaria verna*). The watercourses enter the site via large culverts and the arm that is closest to Sandhurst Road has a pollution issue, often during rainy weather, which appears to be from a Combined Sewage Outflow (CSO). This is under investigation by the Severn Trent Project Officer assigned to Sutton Park.

<b>Notes</b>	Moschatel, Opposite-leaved Golden Saxifrage, Large Bitter-cress Snowberry, Cherry Laurel, Japanese Knotweed
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**Management objectives:**

1. The wet woodland remains as a high quality habitat, including marsh/swampy areas
2. Natural processes are in charge
3. The effect of people on the habitat is minimal
4. The watercourses are in good condition, i.e. with minimal pollution and high naturalness

**Management approach:**

The management approach in this area should be as minimal input as possible.

**Management activities:**

1. Remove/control non-native plant species
  - a. Variegated Yellow Archangel – known locations: between the path and Sandhurst Road (SK 10704 00117) and on the opposite side of the path and along the watercourse, downstream of where the ditch joins the natural watercourse (SK10708 00093, SK10671 00211, SK10619 00278, SK10622 00268, SK10628 00258)
  - b. Snowberry – known locations: near entrance from Sandhurst Road (SK10684 00136) and near the boundary with cricket club (SK10612 00176)
  - c. Laurel – scattered throughout, including along the two arms of watercourse from where they enter the site to the first bridge/their conjunction
  - d. Himalayan Honeysuckle – known location: along the watercourse, near the Variegated Yellow Archangel (SK10628 00258)
  - e. Horse-chestnut – control saplings, scattered throughout
  - f. Cotoneaster –scattered throughout
  - g. Sycamore and other non-native Maples – control saplings, scattered throughout
  - h. Fringecups *Tellima grandiflora* – e.g. in marsh/swampy area and along watercourse
  - i. Consider removal of Buddleia (and replace with mixed native hedgerow) – e.g. along boundary with Sandhurst Road
  - j. Other garden species
  - k. NB Japanese Knotweed – monitor and report ONLY – requires licenced person to treat with herbicide, do not work within legal distance of stems. Location: just off path on western side of pool, near Swan nesting area (SK10418 00349)
2. Monitor condition of whole habitat to ensure that it is not drying out
3. Monitor marsh/swampy areas for openness, wetness and vegetation community
4. Monitor area of Moschatel and monitor need for occasional control of ivy in this area. Aim to establish Moschatel in other areas of the site in case this area is affected by an incident
5. Remove timber (sleepers etc.) store
6. Monitor area adjoining Cricket Club where snowberry has been removed and trees/shrubs have been planted: remove any missed or re-growing snowberry and hand weed trees and replace trees that fail to establish, where necessary. Blackthorn has been planted in this area to provide habitat for the Brown Hairstreak butterfly and will need management that is sympathetic to the needs of this species.
7. Monitor area adjoining Cricket Club for development of desire lines in area and through to Cricket Club: block if necessary
8. Monitor for dumping of green waste etc. by Cricket Club. Ensure watercourses and marshy areas are not polluted by run-off from Cricket Club.

9. Monitor coverage of species such as Holly and Bramble – these are very valuable species for bird nesting and providing food but can become overly dominant. Coverage is currently less than desirable in some areas.
10. Consider coppicing of hazel in block at rear of gardens on Sandhurst Road. Not to take place in year one of plan. If decision is taken to coppice this area, then this block to be added into the coppice rotation for the whole site
11. Maintain paths in good condition to ensure people stick to these and do not widen them or take short cuts. This includes restricting access to the watercourse in this block of woodland as the wet soil conditions make access more damaging (i.e. compaction of soil and bank collapses)
12. Litter picks, removal of fly tipping. Monitor for dumping over garden fences or other hot spots (including from Sandhurst Road near SK10704 00117). Raise issues with site owners (currently BCC) as necessary.
13. Reporting of pollution incidents in watercourse and raising awareness of this with the site users and wider local community. The aim is that the source of the pollution will be identified and resolved.
14. Surveys:
  - a. FIN surveys April-September, as per established methodology for this site
  - b. Flowering plant calendar
  - c. Aim to set up a butterfly transect
  - d. Bird surveys
  - e. Aim to commission detailed invertebrate survey

**Possible projects to consider:**

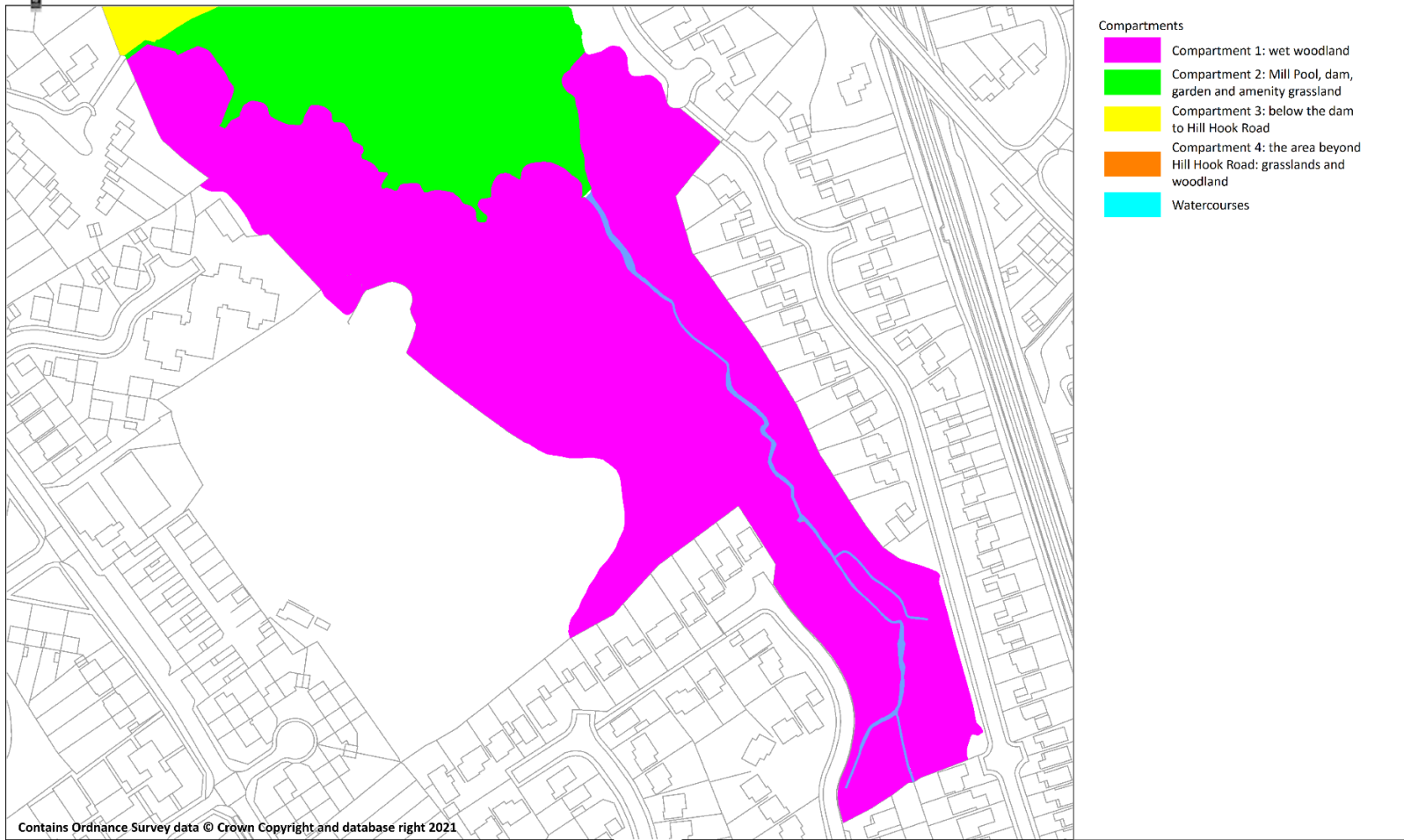
1. Planting of mixed native hedgerow along fence-line bordering Sandhurst Road, with a focus on species that are foodplants for species with specific requirements such as some butterfly and moth caterpillars e.g. Brimstone butterflies and Alder Buckthorn
2. Interpretation panel for this area of the site, highlighting its features as a wet woodland (including flooding), its value and vulnerability
3. Awareness raising of habitat for Sandhurst residents (e.g. grass cuttings/garden waste dumping over fence and cutting down trees next to houses)
4. Awareness raising regarding pollution of watercourse – asking public to report sightings
5. A more proactive approach to the pollution via contacting and working with Severn Trent Water Limited, the company responsible.
6. Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local authority or the Environment Agency as appropriate). Leaky dams are a form of natural flood management (known as NFM) and are valuable in slowing the flow of water, which has many benefits to the site itself and beyond. For example, NFM creates areas of deeper and slower moving water, which is a habitat for a number of species, it slows the flow on site meaning more opportunities for in-stream vegetation and also reduced erosion of stream banks, it helps to maintain the wet woodland habitat. It also slows the flow of water out of the site, reducing flooding downstream of the reserve. The reserve has recently lost a number of these valuable features and the replacement of these should be investigated as a priority.
7. Projects to enhance the habitat conditions for specialist species such as Willow Tit (linking in with other projects nearby i.e. that based around Middleton Lakes and Tame Valley

Wetlands) and Brown Hairstreak butterfly. Consider species that have previously been recorded on the site, however, also consider the effects of climate change and species that may move north.

8. View the site and its habitats on a landscape scale and look for opportunities for linking the site to the wider landscape through corridors, 'stepping stones' and managing (or encouraging the management) of all local sites with similar aims in mind, where appropriate.
9. Consider the approach to Spanish and Hybrid Bluebell across the whole site – is it appropriate and possible to remove these? If not, can they be removed from areas that are near to the native Bluebell?
10. A detailed invertebrate survey is lacking for the site. This is likely to need funding and therefore is likely to need a grant application to be made.



Hill Hook LNR - Compartment Map for Management Plan 2022 - Compartment 1



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Map produced by:



On behalf of:  
Friends of Hill Hook LNR

Scale: 1:2,038 @ A4  
Date: 09/04/2022

## Compartment 2: The Mill Pool and surrounds

Compartment 2: The Mill Pool and surrounds	
2a: the Mill Pool including the overflow	
2b: the dam	
2c: the garden, amenity grassland	

Habitats	
Phase 1 Name	Phase 1 Code
<b>Broad-leaved Woodland</b>	<b>A111</b>
<p>The Mill Pool is edged with a strip of Broad-leaved Woodland, which appears to be semi-natural, although there are some, presumably planted trees on the adjoining amenity grassland.</p> <p>On the western bank of the pool is an area of wet woodland, dominated by Willow, with a field layer including wetland species such as Yellow Flag. A pair of Mute Swans regularly nest in this area.</p>	
Phase 1 Name	Phase 1 Code
<b>Scrub – Bramble</b>	<b>A21Rf</b>
<p>There are occasional patches of Bramble (<i>Rubus fruticosus</i> agg.) around the edge of the Pool, which are very valuable for wildlife.</p>	
Phase 1 Name	Phase 1 Code
<b>Neutral grassland</b>	<b>B2</b>
<p>There are small areas of neutral grassland along the dam. These are currently generally unmanaged and species-poor.</p>	
Phase 1 Name	Phase 1 Code
<b>Tall herb and fern – tall ruderal</b>	<b>C31</b>
<p>There are some small areas of tall ruderal species such as Common Nettle and Great Willowherb. These are important areas of habitat, for example, as food-plants for moth and butterfly caterpillars.</p>	
Phase 1 Name	Phase 1 Code
<b>Marginal vegetation</b>	<b>F21</b>
<p>There is marginal vegetation around some edges of the pool, particularly the eastern (Netherstone Grove) and southern (dam) edges. This is partly due to the introduction of pre-planted coir rolls.</p>	
Phase 1 Name	Phase 1 Code
<b>Open Water</b>	<b>G1</b>
<p>The old Mill Pool is a prominent feature of the site. Work was carried out to de-silt the pool, when the surrounding housing estate was built. Silt has built-up, especially near the in-flow stream, where the silt is at the surface of the water. The pool is also probably affected by the pollution that affects the Sandhurst Road arm of the inflow.</p>	

The pool contains a wooded island, which is managed periodically to maintain clear areas for breeding waterfowl and is also to prevent the trees on the edge falling into the pool and collapsing the island.

Phase 1 Name	Phase 1 Code
Amenity grassland	J12
There is an area of amenity grassland that forms a buffer strip between the site and Netherstone Grove. It is currently managed by cutting on a frequent basis and contains little plant species diversity.	
Phase 1 Name	Phase 1 Code
Introduced Shrub	J14
There is a garden managed with wildlife in mind, in the corner of the smaller area of amenity grassland, next to the Mill Pool and the Mill Stone. The garden contains a mixture of garden shrubs and also some herbaceous perennials and bulbs.	
Notes	Snowberry

**Management objectives:**

*2a: the Mill Pool including the overflow*

1. The Mill Pool is a valuable area of open water, which is silting up and already appears to have lost some of its value to waterbirds such as Great Crested Grebe, which are no longer seen at the site. Ideally, a good depth and area of open water should be maintained on the site. This will involve de-silting at least part of the pool. Ideally silt would be removed from site but prohibitive costs may mean that the silt cannot be removed. One suggested solution that has been raised is the construction of a gabion wall within the pool to hold back the silt and create a reedbed, which would potentially also help to filter the water. The source of pollution into the Sandhurst arm of the watercourse and therefore into the pool needs to be identified and dealt with before work on the pool should be undertaken.
2. The outflow from the pool is the responsibility of the landowner (currently BCC) and any issues that are noted should be raised with them. The outflow is currently deteriorating and appears to need maintenance work.
3. The island should be managed to include some tree cover and some bare ground (for nesting waterbirds). The trees on the edge of the island should be felled in rotation (e.g. a third of the trees each time an area of trees is felled) to protect the island edge from collapse.
4. The area on the western edge of the pool, where the swans normally nest should be left unmanaged and protected from human access.
5. Feeding the ducks and other waterbirds is often seen, and more often than not bread is fed to the birds. This should be discouraged.

*2b: the dam*

1. This area is open and sunny, and due to the function of the dam as a structure holding back water, is likely to need to be kept relatively clear of trees. It is also an area where people sit to enjoy the view, the site and its wildlife. This gives the opportunity to maintain and enhance this

area as a diverse and floriferous area, both the bankside vegetation and also the vegetation of the dam itself.

2. There are various infrastructure items on the dam e.g. trip rails, dog and litter bins and benches, some of which are in need of repair, replacement or maintenance. These are the responsibility of the landowner, but the Friends group are also currently working on funding bids to help with these items.

#### *2c: the garden and amenity grassland*

1. The garden is the main gateway to the reserve and, as such, presents a huge opportunity to engage with site users and to educate regarding the benefits and methods of gardening for wildlife.
2. As the main entrance to the reserve, it is also important that this is a welcoming and attractive place.

#### **Management approach:**

##### 2a: the Mill Pool including the overflow

The management approach should include appropriate, frequent surveying and monitoring to assess the state of the habitats and the effect of management work. Any plant species introductions should ideally be species that are recorded locally and are of local provenance, although the effects of and the conservation approach to climate change may affect this. The priority is to eliminate or reduce the pollution of the inflow and then to deal with the silting up of the pool. Work on planning this could start immediately. Any issues with the infrastructure should be reported to the landowner when they are noticed.

##### 2b: the dam

The management approach should include appropriate, frequent surveying and monitoring to assess the state of the habitats and the effect of management work. Any plant species introductions should ideally be species that are recorded locally and are of local provenance, with the caveat as mentioned above. The dam should be maintained as an open, sunny ride, with a varied structure, for example including areas of bramble, nettle and tall herb as well as ruderal/bare ground species and species-rich grassland.

##### 2c: the garden and amenity grassland

Maintain the garden as an attractive, welcoming space that has the best possible value for wildlife. Minimise weeding, time pruning so that it is after berries have dropped and after insects have overwintered, no chemical use, use of peat containing products or plants that have been grown in peat containing compost. Plants should be species which are good for wildlife and do not pose a risk to the reserve either through spread or through cross-pollination/hybridisation. Leave at least some prunings/arising on the soil, to provide shelter for invertebrates.

Aim to encourage the landowner to minimise the number of cuts of the amenity grassland to maximise the number of flowers in this area as per Plantlife's No Mow May campaign and similar.

#### **Management actions:**

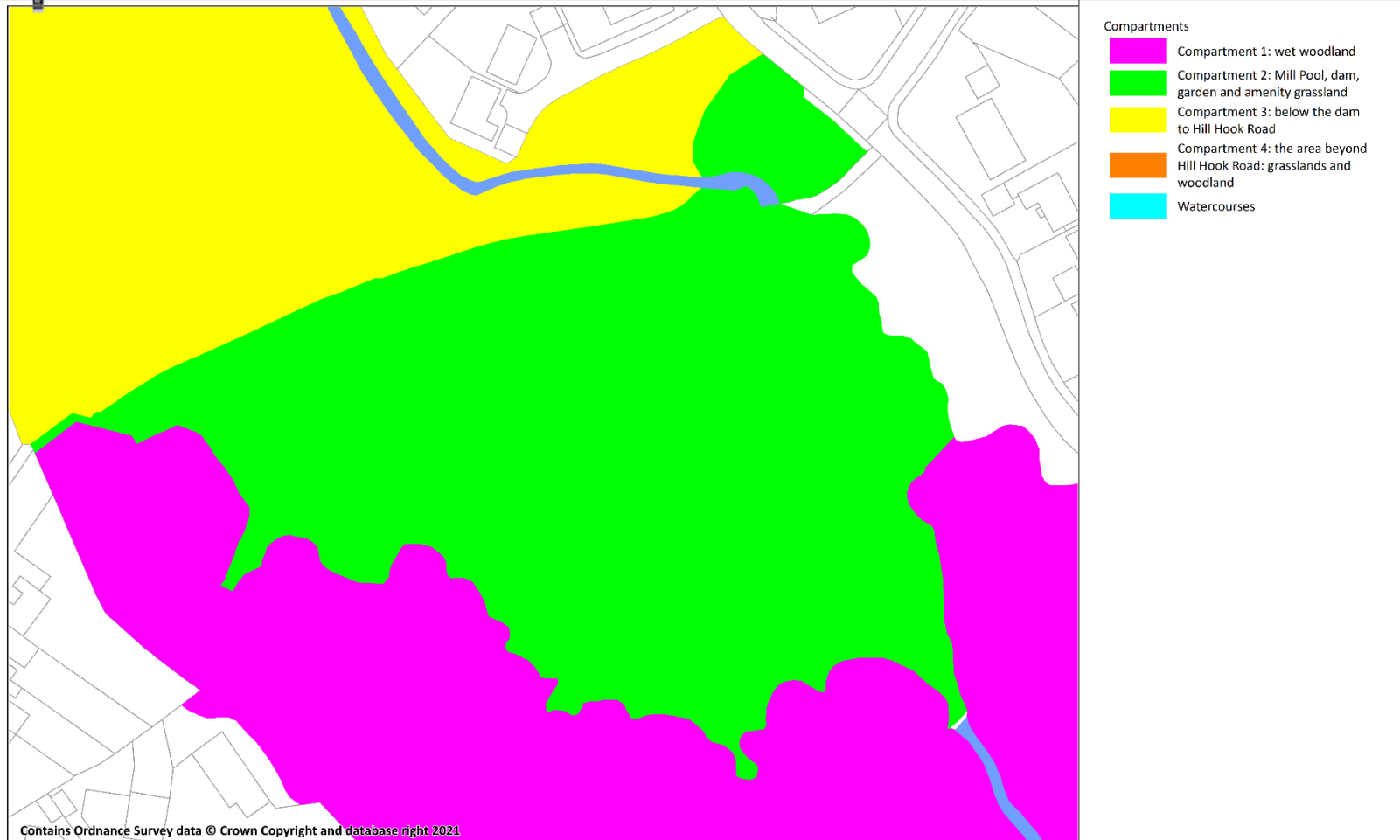
1. Maintain views from benches with a fringe of trees and marginal wetland vegetation to create marsh-like habitat fringe, especially along the eastern edge.

2. Monitor to ensure the area where the Mute Swans breed, on the western edge, is undisturbed by management work or public access.
3. Engage with and aim to educate the public regarding feeding the ducks, geese and swans etc.
4. Note and report any issues to BCC e.g. signs of pollution, animal welfare issues e.g. bird flu, issues with the condition of the dam or outflow.
5. Monitor areas of wetland flora introductions and manage to maintain conditions e.g. remove bramble or other invading species or reduce spread of wetland flora to ensure some areas of bare ground at pool edge.
6. Remove/control non-native plant species e.g.
  - a. Snowberry – locations: dam centre, near blocked off/removed steps (SK10511 00405) and near the entrance from Bradgate Drive (SK10420 00369)
7. Leave Bramble patches untouched, but monitor for spread.
8. Maintain the vegetation along the dam as an open floriferous habitat, in the style of a butterfly ride. Aim to manage as a hay meadow, with a cut and remove. Leave areas of 'bare ground' species such as White Deadnettle uncut to encourage flowers being present over as long a time as possible
9. Maintain the garden as an attractive wildlife garden. Weed as necessary but do not remove all wildflowers (e.g. Speedwells). Prune shrubs to maintain them to an appropriate size, especially the roses along the path edge. Prune after rose hips have disappeared.
10. Maintain paths in good condition to ensure people stick to these and do not widen them or take short cuts
11. Carry out litter picks and removal or reporting of fly tipping as necessary. Monitor for dumping over garden fences or other hot spots, raise issues with the Environment Agency as necessary.
12. Surveys:
  - a. Flowering plant calendar
  - b. Aim to set up a Butterfly transect
  - c. Bird surveys
  - d. Aim to commission a detailed invertebrate survey

**Possible projects to consider:**

1. Consider de-silting the Mill Pool
2. Consider additional improvements to the edge vegetation
3. Aim to have trees on island thinned to maintain habitat for nesting waterfowl, especially those trees on the edge of the island to avoid these falling over and collapsing the bank
4. Consider project to increase the floral diversity of the dam
5. Interpretation panel for the garden
6. Plant up garden area with wildlife friendly plants, to standards given in 'Management approach' section above.
7. Consider project to develop and enhance the garden and showcase wildlife gardening to the public (e.g. interpretation panels and events). This could include tall raised beds to remove the problems of trampling and also to increase accessibility e.g. for people with disabilities

Hill Hook LNR - Compartment Map for Management Plan 2022 - Compartment 2



Map produced by:



On behalf of:

Friends of Hill Hook LNR

Scale: 1:1,019 @ A4

Date: 09/04/2022

### Compartment 3: The central area of woodland and watercourse (between the dam and Hill Hook Road)

Compartment 3: The central area of woodland and watercourse	
3a: the woodland, including the hedgerow along the Hill Hook Road	
3b: the watercourse	

Habitats	
Phase 1 Name	Phase 1 Code
<b>Broadleaved Woodland – semi-natural</b>	<b>A111</b>
<p>The main habitat between the dam and Hill Hook Road is broad-leaved woodland, which appears to be semi-natural. The canopy is mainly Common Alder, and the mature trees are relatively even-aged. There are also some areas of planted trees, particularly shrub layer trees such as Hazel. There are occasional non-native species such as Cotoneaster in this area. In recent memory, the woodland used to be wetter, but the reason for the current drier nature of the woodland is not known.</p> <p>The field layer is varied, with areas of Bramble, areas of native Bluebell, areas of mixed flora including Hedge Woundwort (<i>Stachys sylvatica</i>), Colts-foot (<i>Tussilago farfara</i>), Wood Avens (<i>Geum urbanum</i>) and Lesser Celandine and also a large bare area, near the dam. There are also some planted species such as Primrose (<i>Primula vulgaris</i>). There is a small stand of Japanese Knotweed (<i>Fallopia japonica</i>) near the western boundary, which is being treated by the site owner.</p> <p>There is also a small area of woodland, next to the garden area, which is included in this compartment. The area is edged by a hedgerow that belongs to the adjoining householder, however, a length of mulch matting has been laid alongside the hedge, apparently on the Local Nature Reserve. The woodland includes a long-established Pear (<i>Pyrus communis</i>) tree and planted Wild Daffodil (<i>Narcissus pseudonarcissus</i>).</p>	
Phase 1 Name	Phase 1 Code
<b>Running Water</b>	<b>G2</b>
<p>The watercourse exits the Mill Pool on the eastern edge of the site, initially through a spill way, the condition of which is deteriorating. The watercourse then becomes more natural, although a section of the eastern bank was altered by an adjacent householder in 2021. There are a number of culverts which protrude from the stream bank, however it is not known if these are functional.</p> <p>The watercourse is similar in nature to the length in Compartment 1 in that the water is shallow and the banks are mostly steep and bare of vegetation. There is also little in-stream vegetation. In this section the bank tops and surrounding habitat is much drier than that in Compartment 1. This length is much more accessed by people and dogs compared to the watercourse in Compartment 1.</p>	
Phase 1 Name	Phase 1 Code
<b>Hedgerow – intact</b>	<b>J21</b>
<p>There is a length of hedgerow along the edge where the site borders Hill Hook Road, which is also edged by a wooden post and rail fence.</p>	
Notes	Japanese Knotweed

**Management objectives:**

1. Aim to understand more thoroughly, the habitat in this area of the site. It seems to be that this area of the site was much wetter in the past and even recently, had areas of standing water seasonally. Ideally, aim to understand the reasons behind the area becoming drier.
2. Aim to improve biodiversity, increase micro-habitats/niches, physical/structural diversity and age diversity, without impacting the natural vegetation community.
3. The recent survey of the watercourse suggests a lack of large lying and standing deadwood, aim to increase this, if the opportunity arises.

**Management approach:**

Maximise naturalness and biodiversity. Minimise impact of people, especially footfall – there are large areas of bare ground in this section, while also considering and facilitating the engagement of people with wildlife e.g. through access to the stream, controlled access to viewing of the bluebells, den building etc.

**Management activities:**

1. Remove/control non-native plant species e.g.
  - a. Sycamore and other non-native Maples – control saplings
  - b. Cotoneaster
  - c. NB Japanese Knotweed – monitor and report ONLY – requires licenced person to treat with herbicide, do not work within legal distance of stems. Location: behind house on Bradgate Drive (SK10405 00389)
2. Plan and carry out a coppice rotation for the hazel blocks consisting of this area and the area beyond Hill Hook Road (to Blake Street)
3. Maintain main path from dam to Hill Hook Road as a butterfly ride with an open route, with scalloped edges, delineated by dead hedges with a vegetation of varied structure and layers
4. Maintain dead hedges around areas of bluebells
5. Installation of bat and bird boxes from 2022 funding bid for The Urban Bat Project
6. Maintain paths in good condition to ensure people stick to these and do not widen them or take short cuts.
7. Carry out litter picks and removal or reporting of fly tipping as necessary. Monitor for dumping over garden fences or other hot spots, raise issues with site owners (currently BCC) as necessary.
8. Reporting of pollution incidents in watercourse to the Environment Agency and raising awareness of this with the site users and wider local community. The aim is that the source of the pollution will be identified and resolved.
9. Monitor watercourse for signs of damage and erosion by people and by the water flow.
10. Increase the amount of large dead wood on bank tops where possible and the opportunity arises (i.e. from felling on site).
11. Surveys:
  - a. FIN surveys April-September, as per established methodology for this site
  - b. Flowering plant calendar
  - c. Aim to set up a butterfly transect

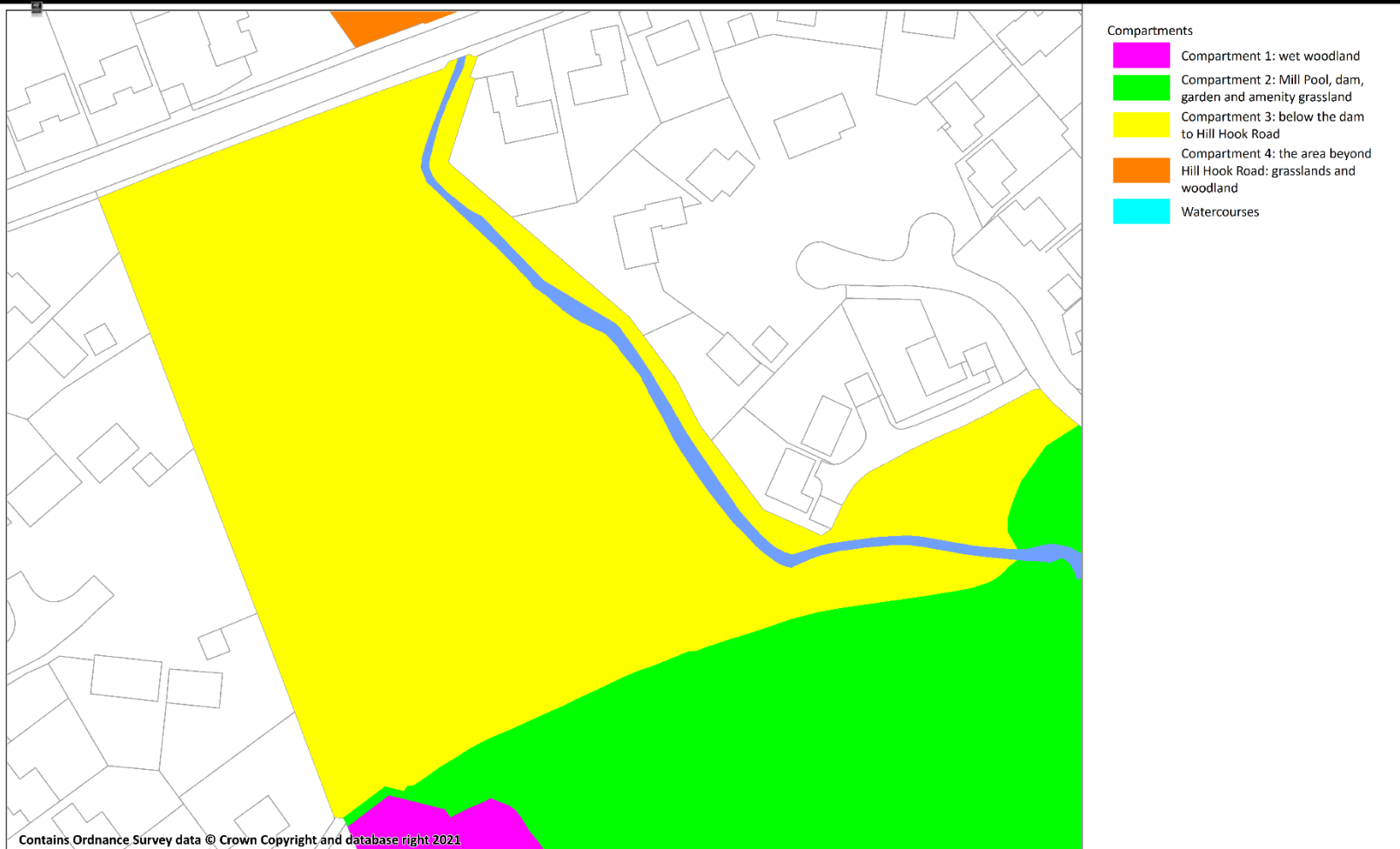


- d. Bird surveys
  - e. Aim to commission detailed invertebrate survey
12. Run a programme of events for the public such as bluebell/spring flower walks, stream dipping and other family events and events to coincide with citizen science projects such as Big Garden Birdwatch, Big Butterfly Count and City Nature Challenge, alongside the long running Bat and Moth events. Aim to engage the public with nature, with the site and to recruit more volunteers to the group, especially younger volunteers.

**Possible projects to consider:**

1. The Friends group have recently been approached by The Urban Bat Project regarding the site's inclusion in their bat box monitoring and surveying scheme, which is a PhD study investigating the movements of bats in the urban fringe. The group have secured funding for appropriate bat boxes and also some bird boxes and their installation. This project should begin over the upcoming months (Spring 2022), dependent on the delivery of the boxes.
2. As mentioned above, a programme of events for the site would help to engage the public with nature, help educate the public regarding the value of the site and its proper use and to recruit more volunteers to the group. A concerted approach is likely to need extra funds to deliver this programme, at least initially.
3. Consider if the age structure of the trees needs to be diversified, particularly the Common Alder.
4. Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local authority or the Environment Agency as appropriate). Leaky dams are a form of natural flood management (known as NFM) and are valuable in slowing the flow of water, which has many benefits to the site itself and beyond. For example, NFM creates areas of deeper and slower moving water, which is a habitat for a number of species, it slows the flow on site meaning more opportunities for in-stream vegetation and also reduced erosion of stream banks, it helps to maintain the wet woodland habitat. It also slows the flow of water out of the site, reducing flooding downstream of the reserve. The reserve has recently lost a number of these valuable features and the replacement of these should be investigated as a priority.

Hill Hook LNR - Compartment Map for Management Plan 2022 - Compartment 3



Map produced by:



On behalf of:  
Friends of Hill Hook LNR

Scale: 1:1,019 @ A4  
Date: 09/04/2022

## Compartment 4: The area between Hill Hook Road and Blake Street

Compartment 4: The area between Hill Hook Road and Blake Street	
4a: the grasslands:	<ul style="list-style-type: none"> <li>the grassland at the Hill Hook Road entrance</li> <li>the woodland glade</li> <li>the main grassland at the Blake Street end of the site</li> <li>the watercourse bank top at the Blake Street end of the site</li> </ul>
4b: the woodlands, glades and rides	<ul style="list-style-type: none"> <li>the main woodlands</li> <li>the planted Ash woodland block</li> <li>the triangle of land on the opposite bank of the watercourse, adjoining Hill Hook Road</li> <li>the hedgerows along the roadside and on the triangle of land</li> <li>the glades</li> <li>the rides, including the watercourse bank top</li> </ul>
4c: the watercourse	

Habitats	
Phase 1 Name	Phase 1 Code
<b>Broadleaved Woodland – plantation</b>	<b>A112</b>
<p>There is a block of apparently planted Ash woodland at the northern end of the site, bordering Blake Street. The trees are pre-dominantly Ash (<i>Fraxinus excelsior</i>) and are even-aged and evenly spaced. There is also little understorey and a relatively species-poor field layer, consisting mainly of species such as Bramble, Nettle (<i>Urtica dioica</i>) and Wood Avens. There is a small amount of Japanese Knotweed within this block, near the hedgerow along Blake Street, which is being treated by the site owner.</p>	
Phase 1 Name	Phase 1 Code
<b>Broadleaved Woodland</b>	<b>A11</b>
<p>The remainder of the woodland in this compartment appears more semi-natural, though the majority also appears to be relatively even-aged. The areas along the western edge are dominated by Pedunculate Oak (<i>Quercus robur</i>), though also include areas of Hawthorn (<i>Crataegus monogyna</i>), planted trees such as Walnut (<i>Juglans</i> sp.) and some planted areas of Hazel. There are some older trees along the watercourse, including large Willow and Cherry (<i>Prunus</i> sp.).</p> <p>Towards the southern end of the site, the trees become more scattered, with an area of grassland underneath. There are also some more open areas between the two main paths, with planted understorey species such as Alder Buckthorn (<i>Frangula alnus</i>).</p> <p>At the Hill Hook Road end of the site, there is a small triangle of woodland on the opposite, eastern side of the bank, which is also part of the reserve.</p> <p>A female native Black Poplar (<i>Populus nigra</i>), grown through The Birmingham &amp; Black Country Wildlife Trust's Growing Local Flora (GLF) project, has been planted on the stream bank in the grassland at the Blake Street end of the reserve. There is also an area of self-set Common Alder in this area.</p>	
Phase 1 Name	Phase 1 Code
<b>Scrub – Bramble</b>	<b>A21Rf</b>

<p>There is a large area of Bramble scrub in the grassland at the Hill Hook end of this compartment. The patch borders the western edge of the grassland and extends to the western boundary, to the adjoining householders' fences. Whitethroat have been recorded nesting in this area and the Bramble also provides a good source of nectar and pollen for butterflies, bees and other insects.</p>	
<b>Phase 1 Name</b>	<b>Phase 1 Code</b>
<b>Tall herb and fern – Tall ruderal</b>	<b>C31</b>
<p>There is a small area of Rosebay Willowherb (<i>Chamerion angustifolium</i>) bordering the area of Bramble at the entrance from Hill Hook Road. This is a valuable habitat, for example, providing late season pollen and nectar and as a foodplant for some moth caterpillars.</p>	
<b>Phase 1 Name</b>	<b>Phase 1 Code</b>
<b>Neutral Grassland</b>	<b>B2</b>
<p>There are two main areas of neutral grassland on the whole site, both of which are in this compartment. The first is at the entrance to the site from Hill Hook Road and is relatively short, perhaps due to trampling. It is relatively species-poor.</p> <p>The second area is at the Blake Street end of the site and has much more plant diversity, including Common Spotted Orchid (<i>Dactylorhiza fuchsii</i>), Southern Marsh Orchid (<i>Dactylorhiza pratermissa</i>) and Devil's-bit Scabious (<i>Succisa pratensis</i>). Some Fritillary (<i>Fritillaria meleagris</i>) have also been planted in this area, but the heavy use of the site during 2021 appears to have led to the loss of these plants.</p> <p>There are also some glades and scallops along the woodland paths, managed as butterfly habitat, which also contain areas of neutral grassland.</p>	
<b>Phase 1 Name</b>	<b>Phase 1 Code</b>
<b>Running Water</b>	<b>G2</b>
<p>The watercourse continues along the eastern edge of the site, after flowing underneath Hill Hook Road, through an altered section of stream. The water is generally shallow, though there are occasional deeper pools and small waterfalls/chutes. The substrate at the Hill Hook Road end is quite sandy, but this soon changes to silt. At the Blake Street end of the reserve, the watercourse turns sharply west and runs between Blake Street and the adjacent farmed field. There is a small amount of Himalayan Balsam (<i>Impatiens glandulifera</i>) where the watercourse exits the reserve. There is also a culvert, which discharges into the stream at this point. As with the other lengths of watercourse, survey work suggests a lack of large dead wood on the bank tops. There are a number of desire lines where, presumably, dogs access the watercourse, particularly at the Blake Street end.</p>	
<b>Phase 1 Name</b>	<b>Phase 1 Code</b>
<b>Hedgerow – intact</b>	<b>J21</b>
<p>The northern end of the site is marked by a planted hedgerow bordering Blake Street. This is dominated by Hawthorn and currently still has plastic spiral tree guards attached to many of the trees.</p>	
<b>Notes</b>	<p>Japanese Knotweed, Himalayan Balsam, Common Spotted Orchid, Southern Marsh Orchid, Devil's Bit Scabious. A Kingfisher (<i>Alcedo atthis</i>) has also been reported as being seen on this stretch of the watercourse.</p>

**Management objectives:**

1. The woodlands are as semi-natural as they can be, with a variety of species, ages, micro-habitats and appropriate field layer
2. The woodland rides and glades maximise butterfly (and other insect) habitat
3. The watercourse is in good condition
4. The meadows are managed consistently at an appropriate time, with a cut and remove, with the aim of maintaining and where possible, increasing species-diversity

**Management approach:**

The management approach should include appropriate, frequent surveying and monitoring to assess the state of the habitats and the effect of management work. Woodland and meadow management should follow traditional methods, informed by up to date knowledge and the results of surveys. Species introductions, e.g. to the field layer in the Ash woodland, should ideally be species that are already on the site and preferably from propagules collected on site. The results of the plants in flower calendar surveys should also be taken into account, if appropriate.

**Management activities:**

1. Manage grasslands as hay meadows with a cut and remove at a consistent time each year. Ideally this would be somewhere between mid-July and mid-August. Also ideally, if the cut takes place at this time, one area at the edge should be left, in rotation for a later cut (this could be carried out with hand tools), for a nectar source for invertebrates. Maintain ecotones between habitat types to maximise habitat for invertebrates.
2. Dig up bramble, nettles and dock as necessary.
3. Maintain bramble area in first meadow (adjacent to Hill Hook Road), for bird nesting habitat (Whitethroat have been recorded using this area) and as a barrier for the adjoining gardens, but do not allow to encroach onto meadow area.
4. While Yellow Rattle population remains low, once the seed has set, collect seed and store until after the hay cut and remove has taken place. Re-sow into most needed areas in grassland e.g. where grass is dominant or Yellow Rattle (*Rhinanthus minor*) populations are at their lowest.
5. Remove/control non-native plant species
  - a. NB Japanese Knotweed – monitor and report ONLY – requires licenced person to treat with herbicide, do not work within legal limit. Location: next to the hedgerow at Blake Street, within the planted Ash woodland block (SK10356 00771).
  - b. Himalayan Balsam – ensure this is checked and the plants pulled before they set seed (June/July). Location: small patch at the Blake Street end of the watercourse (SK10392 00757). The species is also present in the continuation of the watercourse, between the field edge and Blake Street.
6. Plan and carry out a coppice rotation for the Hazel blocks consisting of this area and the area beyond Hill Hook Road (to Blake Street)
7. Thin block of planted Ash woodland to diversify the species and age structure within the block. Survey field layer and then consider enhancing the field layer, ideally with propagules from species already present on site.
8. Manage paths as butterfly rides, keeping them open and as floriferous as possible, including plant species that are valuable to non-specialist pollinators such as Hogweed (*Heracleum sphondylium*) and Yarrow (*Achillea millefolium*). Continue to manage the pattern of alternate scalloped edges. Maintain as long a flowering period as possible. Include

foodplants for specific relevant species, where possible and appropriate. Ensure that existing vegetation community is not lost through species introductions, as appropriate.

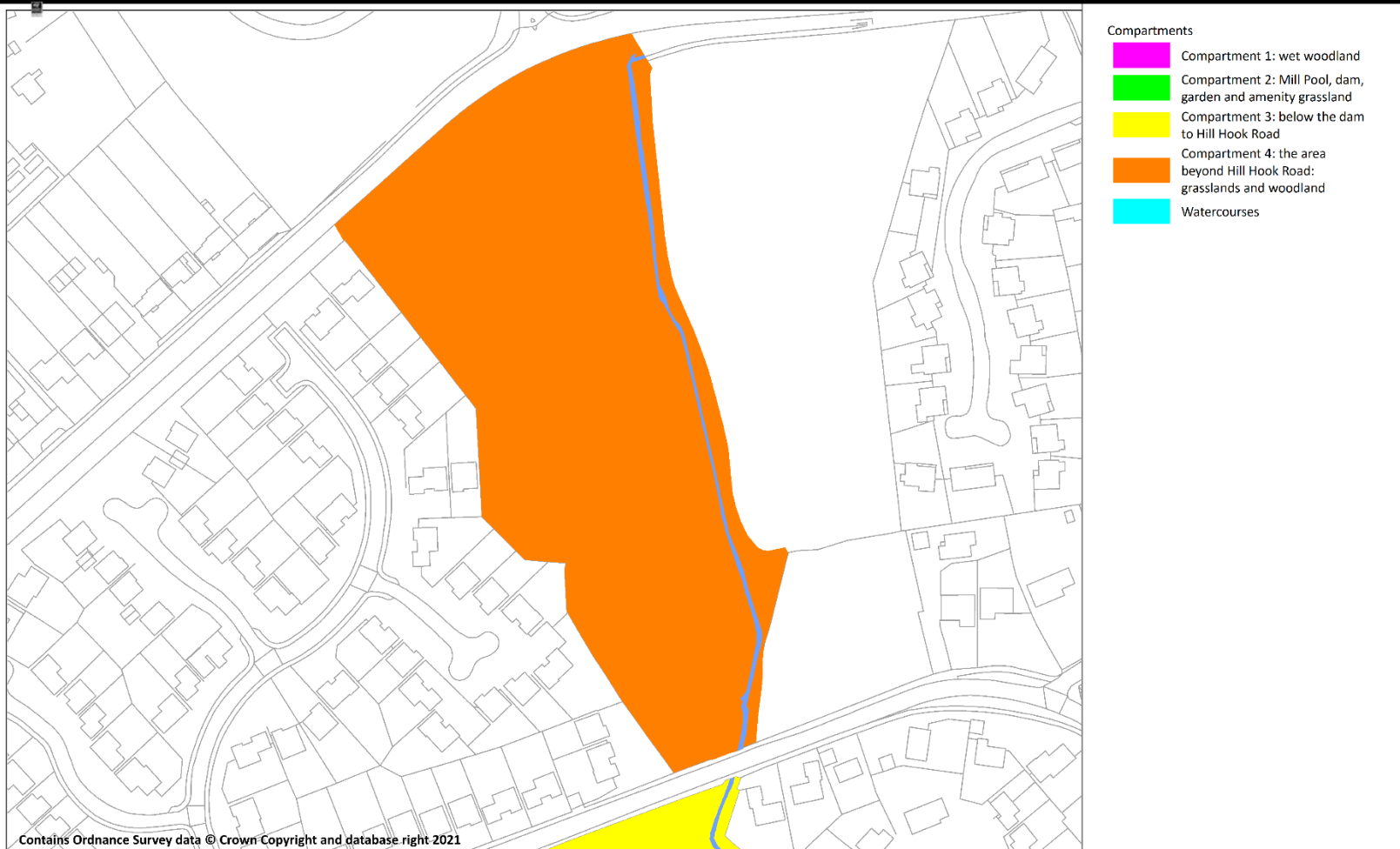
9. Monitor wooded area along watercourse bank to retain varied age Crack Willow, Common Alder and other existing species. Ensure varied age and physical structure along the whole length of the watercourse in this section. The self-set Common Alder at the Blake Street end of the site are included in this action. These should be left to establish as they are important habitat for a variety of species and also add structure to the watercourse bank habitat at this end of the site. They should also not be allowed to spread further i.e. open areas of bank and watercourse should also be maintained to allow sunlight to the water in places.
10. Take cuttings from female native Black Poplar (SK10402 00738) and distribute to appropriate sites via The Birmingham & Black Country Wildlife Trust
11. Monitor newly installed bird boxes for use and record. See list in appendix for locations. Do not disturb nesting birds.
12. Maintain dead hedge along edge of triangle of land, adjoining Hill Hook Road on the opposite side of the stream to discourage public access to this area (location: SK10440 00555).
13. Maintain paths in good condition to ensure people stick to these and do not widen them or take short cuts.
14. Carry out litter picks and removal or reporting of fly tipping as necessary. Monitor for dumping over garden fences or other hot spots, raise issues with site owners (currently BCC) as necessary.
15. Reporting of pollution incidents in watercourse and raising awareness of this with the site users and wider local community. The aim is that the source of the pollution will be identified and resolved.
16. Increase the amount of large dead wood on bank tops where possible and the opportunity arises (i.e. from felling on site).
17. Monitor for signs of damage and erosion by people and by the water flow.
18. Surveys:
  - a. FIN surveys April-September, as per established methodology for this site
  - b. Flowering plant calendar
  - c. Meadow plant survey – walkover recording Dominant, Abundant, Frequent, Occasional or Rare (DAFOR) as per standard methodology plus five 2m by 2m quadrats recording percentage cover of all species
  - d. Big Butterfly Count
  - e. Aim to set up a butterfly transect
  - f. Bird surveys
  - g. Bird box survey to assess if they are being used
  - h. Aim to commission detailed invertebrate survey

#### **Possible projects to consider:**

1. Consider creation of dragonfly scrape(s) at Blake Street end of the site, potentially in the existing dip in the meadow. NB due to the nearby watercourse, this may need to be done under permit from the relevant authority.
2. Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local authority or the Environment Agency as appropriate). Leaky dams are a form of natural flood management (known as NFM) and are

valuable in slowing the flow of water, which has many benefits to the site itself and beyond. For example, NFM creates areas of deeper and slower moving water, which is a habitat for a number of species, it slows the flow on site meaning more opportunities for in-stream vegetation and also reduced erosion of stream banks, it helps to maintain the wet woodland habitat. It also slows the flow of water out of the site, reducing flooding downstream of the reserve. The reserve has recently lost a number of these valuable features and the replacement of these should be investigated as a priority.

Hill Hook LNR - Compartment Map for Management Plan 2022 - Compartment 4



Map produced by:



On behalf of:  
Friends of Hill Hook LNR

Scale: 1:1,1853@ A4  
Date: 09/04/2022



## Management Actions – Work Plan

The site owners, currently Birmingham City Council have responsibility for the safety and maintenance of the site. The following work plan is for habitat management and day to day activities such as litter picking and keeping paths clear of vegetation. The Friends group, in consultation with the Council also occasionally fundraise for infrastructure projects, to help with the condition of the site. Any problems with the infrastructure to be reported to BCC. This is also the case with any other problems that arise on site, such as with adjacent householders or trees on site.

The site owners also have the responsibility regarding treating of Japanese Knotweed. This can only be done by qualified people.

### Mechanisms for work being carried out

The table below is split into two sections: the left hand section is written for the volunteer work parties or other supervised groups and the right hand side is for suitably trained individual volunteers, as sanctioned by the Committee, work by contractors and projects for the Committee.

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
1a.	<b>Whole site</b>	Litter pick	Regular, and as necessary	1b.	Litter pick	When available, after agreement from FoHHLNR Committee
2a.	<b>Whole site</b>	Cutting back of vegetation that is growing over paths. Ensure breeding birds and their habitats are not disturbed	May-September, i.e. during growing season	2b.	Vegetation clearance along paths (only) – with secateurs (but nothing larger)	When available, after agreement from FoHHLNR Committee during growing season.
3a.	<b>Whole site</b>	Surveys and recording: Vegetation/habitats Plants in flower – pollinators calendar Bird e.g. Spring and Winter and Big Garden Birdwatch Butterfly – Big Butterfly Count, plus transects if possible Bird box use Freshwater Invertebrates (FIN) Visitor surveys	Each year at the appropriate time(s) of year  Ongoing casual recording as part of volunteer days and events, all year  Prior to any new or large scale projects	3b.	Surveys and recording: Casual records, City Nature Challenge (CNC), formal schemes for visitors, butterflies, bird boxes, plants in flower, FIN	When available, after agreement from FoHHLNR Committee. CNC – April Visitors – April-October Bird boxes – April-August Butterflies – FIN – April-September Plants in flower – all year Casual – all year  As time allows

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
		Fungi, mammal and other invertebrates where possible Casual records		3c.	Committee: consider commissioning a detailed invertebrate survey of the site. This is likely to need funding and therefore a grant application	
4.	<b>Whole site</b>	Removal of hybrid and Spanish Bluebell – a decision needs to be taken to decide if this is desirable and feasible. An alternative approach would be to concentrate on the areas near the native Bluebells	May-June			
5a.	<b>Whole site</b>	Monitor condition of paths  Ensure paths are well-defined and do not become overgrown to ensure that visitors stay on the paths, do not take short cuts or widen the paths	All year	5b.	Committee: Consider a programme of events for the site would help to engage the public with nature, help educate the public regarding the value of the site and its proper use and to recruit more volunteers to the group	As time and funding allow
6a.	<b>Whole site: watercourses and Mill Pool</b>	Monitor visually and report pollution incidents to Environment Agency pollution line	All year	6b.	Committee: Publicise Environment Agency pollution line to the general public/ site users	All year
				6c.	Proactively contact and work with the relevant authorities	As soon as possible

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
				6d.	Individuals: as 6a.	All year
7a.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Remove/control non-native species: <ul style="list-style-type: none"> <li>• Variegated Yellow Archangel</li> <li>• Laurel</li> <li>• Cotoneaster</li> <li>• Snowberry</li> <li>• Crocus, Garden Daffodils</li> <li>• Sycamore, Norway Maple, Horse Chestnut – especially seedlings and saplings</li> <li>• Garden species growing through fence near entrance from Bradgate Drive</li> </ul>	Outside bird nesting season i.e. during October-February  Some work on some species may be possible during the whole year, e.g. next to paths. Consult WTBBC before starting work.	7c.	Committee: Awareness raising of habitat for Sandhurst residents (e.g. grass cuttings/garden waste dumping over fence and cutting down trees next to houses)	All year
7b.		Monitoring and reporting of Japanese Knotweed. There is currently a patch near the entrance from Bradgate Drive, near house number 53.  <b>IMPORTANT:</b> walking off the paths in the wet woodland must be kept to the bare minimum to avoid damaging this sensitive habitat.				
8a.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Monitor condition of whole habitat to ensure that it is not drying out	All year, with focus on winter and summer (to monitor high and low water levels and the amount of shade)	8c.	Committee: Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local	
8b.		Monitor condition of wet marsh/ swamp-like areas to				

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
8bi.		<p>ensure these do not get overly invaded by bramble, tree saplings etc.</p> <p>If monitoring suggests that work is needed, Committee to put plan in place for appropriate management</p>		8d.	<p>authority or the Environment Agency as appropriate)</p> <p>Committee: Consider an interpretation panel for the wet woodland habitat</p>	
9a.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Monitor condition of area where Moschatel grows for invading Ivy, Bramble etc.	In Spring, when Moschatel is above ground.	9c.	<p>Committee: consider projects to enhance the habitat conditions for specialist species such as Willow Tit (linking in with other projects nearby i.e. that based around Middleton Lakes and Tame Valley Wetlands), especially those species which have previously been recorded on the site, however, also consider the effects of climate change and species which may move north</p> <p>Committee: View the site and its habitats on a landscape scale and look for opportunities for linking the site to the wider landscape through corridors, 'stepping stones' and managing (or</p>	As the opportunity arises
9ai.		If necessary, carefully remove relevant species, preferably by hand (i.e. without using digging tools)	In Summer, when ground is at its driest to avoid compacting the soil and negatively impacting the Moschatel.			
9b.		Aim to establish a second area of Moschatel on site through propagules collected from the site	Once a suitable site has been identified and once propagules have been grown on off-site	9d.		As the opportunity arises

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
					encouraging the management) of all local sites with similar aims in mind, where appropriate.	
10.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Remove timber (sleepers etc.) store	As soon as possible.			
11a.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Monitor area adjoining Cricket Club where snowberry has been removed and trees/shrubs have been planted: remove any missed or re-growing snowberry and hand weed trees and replace trees that fail to establish, where necessary	Monitor, remove and hand weed in Spring and Summer.  Re-plant failed trees in Winter.	11d.	Committee: aim to stay in contact with the Cricket Club so that problems can be more easily raised, if necessary, e.g. by mutual advertising of events etc.	
11b.		Manage Blackthorn for the habitat requirements of the Brown Hairstreak butterfly	As appropriate			
11c.		Monitor for development of desire lines in area and through to Cricket Club: block if necessary	All year, but especially around Bonfire Night event.			
		Monitor for dumping of green waste etc.by Cricket Club. Ensure watercourses and marshy areas are not polluted by run-off from Cricket Club	All year			
12.	<b>Semi-natural wet</b>	Monitor coverage of species such as Holly	All year			

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
	<b>woodland (Cmpt 1)</b>	and Bramble – these are very valuable species for bird nesting and providing food but can become overly dominant. Coverage is currently less than desirable in some areas.				
13.	<b>Semi-natural wet woodland (Cmpt 1)</b>	Consider coppicing of hazel in block at rear of gardens on Sandhurst Road  Not to take place in year one of plan. If decision is taken to coppice this area, then this block to be added into the coppice rotation for the whole site	November-February (not in Year 1 of the plan)			
14a.	<b>Mill Pool including the overflow (Cmpt 2a)</b>	Maintain views from benches with a fringe of trees and marginal wetland vegetation to create marsh-like habitat fringe, especially along the eastern edge.	October-February for vegetation management			
14b.		Monitor to ensure the area where the Mute Swans breed, on the western edge, is undisturbed by management work or public access.				
14c.		Leave Bramble patches untouched, but monitor for spread.				
15a.	<b>Mill Pool including the</b>	Educate the public regarding feeding	All year, as and when possible/	15b.	Committee: Educate the	Whole year (posters), also

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
	<b>overflow (Cmpt 2a)</b>	the ducks, geese and swans etc.	opportunities arise		public regarding feeding the ducks, geese and swans etc.	potentially events, investigate possibility of involvement from other agencies.
16a.	<b>The Mill Pool including the overflow (Cmpt 2a)</b>	Note and report any issues to BCC e.g. signs of pollution, animal welfare issues e.g. bird flu, issues with the condition of the dam or outflow	All year	16c.	Committee: Consider project(s) to improve the habitat of the pool: •De-silting •Additional improvements to edge vegetation •Thinning of trees on island, especially those on the island edge	As time and funding allow
16b.		Monitor areas of wetland flora introductions and manage to maintain conditions e.g. remove bramble or other invading species or reduce spread of wetland flora to ensure some areas of bare ground at pool edge.	All year, unless habitat conditions mean that work needs to be carried out outside the bird nesting season i.e. carried out between October-February			
17.	<b>The dam (Cmpt 2b)</b>	Monitor banks for re-growth of snowberry (and signs of other non-native species) and remove	All year, unless habitat conditions mean that work needs to be carried out outside the bird nesting season i.e. carried out between October-February			
18a.	<b>The dam (Cmpt 2b)</b>	Aim to manage dam banks as a hay meadow, with a cut and remove Leave areas of 'bare ground' species such as White Deadnettle	Mid-July	18b.	Committee: Consider project to increase the floral diversity of the dam (see description above)	As time allows

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
		uncut to encourage flowers being present over as long a time as possible				
19a.	<b>The garden, adjoining amenity grassland (Cmpt 2c)</b>	Maintain as an attractive wildlife garden. Weed as necessary but do not remove all wildflowers (e.g. speedwells). Prune shrubs to maintain them to an appropriate size, especially the roses along the path edge. Prune after rose hips have disappeared.	All year  December or later.	19b.	Individual volunteers: weed as necessary, but do not remove all wildflowers (e.g. speedwells).	All year
				19c.	Committee: Plant up with wildlife friendly plants, depending on budget available, to standards given in 'Management approach' section	When possible
				19d.	Committee: Consider project to develop and enhance garden and showcase wildlife gardening to the public (e.g. interpretation panels and events)	When possible
20a.	<b>The central area of woodland (between the dam and Hill Hook Road) (Cmpt 3a)</b>	Remove/control non-native plant species e.g.: <ul style="list-style-type: none"> <li>• Sycamore and other non-native Maples (seedlings and saplings)</li> <li>• Cotoneaster</li> </ul>	October-February			
20b.		Monitoring and reporting of Japanese Knotweed. There is currently a patch near the entrance from Bradgate Drive/ behind house number 9.	April-September			



Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
21a.	<b>The central area of woodland (between the dam and Hill Hook Road) (Cmpt 3a)</b>	Consider establishing coppice rotation, linked to cycle of other areas of hazel coppice on the reserve, to create a mosaic of microhabitats across the site	November-February	21b.	Committee: Consider if the age structure of the trees needs to be diversified, particularly the Common Alder.	
22a.	<b>The central area of woodland (between the dam and Hill Hook Road) (Cmpt 3a)</b>	Maintain main path from dam to Hill Hook Road as a butterfly ride with an open route, with scalloped edges, delineated by dead hedges with a vegetation of varied structure and layers	Dependent on type of work: vegetation management to take place November-February			
22b.		Maintain dead hedges around areas of Bluebells				
23a.	<b>The central area of woodland (between the dam and Hill Hook Road) (Cmpt 3a)</b>	Possible installation of bird boxes from 2022 funding bid to Sutton Town Council		23b.	Contractor/tree climbers: Installation of bat boxes for the BrumBats bat monitoring scheme. Installation of bird boxes	As appropriate after delivery of boxes
24a.	<b>The central length of watercourse (between the dam and Hill Hook Road) (Cmpt 3b)</b>	Monitor for signs of damage and erosion by people and by the water flow.	All year	24b.	Committee: Consider stream dipping public events to help educate public in use of stream	As time and funding allow
25a.	<b>The central length of watercourse (between the dam and Hill Hook Road) (Cmpt 3b)</b>	Consider the introduction of large dead wood on the bank tops from felling on other areas of the reserve.	November-February	25b.	Committee: Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local	As time and funding allow

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
					authority or the Environment Agency as appropriate)	
26a.	<b>The area between Hill Hook Road and Blake Street: the grasslands – the grassland at Hill Hook Road entrance, the woodland glade and the main grassland plus watercourse bank top at Blake Street entrance (Cmpt 4a)</b>	Dig up bramble, nettles and dock as necessary.	February-April and after the hay cut until the ground becomes too wet and work would damage the habitat	26e.	Contractor: Manage as hay meadows with a cut and remove at a consistent time each year. Ideally this would be somewhere between mid-July and mid-August. Also ideally, if the cut takes places at this time, one area at the edge should be left, in rotation for a later cut (this could be carried out with hand tools), for a nectar source for invertebrates. Maintain ecotones between habitat types to maximise habitat for invertebrates. NB The grassland cut and removes are currently carried out by BCC, the current site owner.	Mid July – late August
26b.		Ensure bramble at the edge of the first grassland (at the Hill Hook Road entrance) is kept both for bird nesting habitat (Whitethroat have been known to use this area) and as a barrier for the adjoining gardens, whilst also ensuring that the bramble does not encroach further onto the grassland. Maintain ecotones between habitat types to maximise habitat for invertebrates.				
26c.		Survey each grassland using, for each grassland, a walkover recording all species with DAFOR plus 5 2m by 2m quadrats with percentage cover of each species.	Mid-late June			
26d.		While Yellow Rattle population remains low, once the seed has set, collect seed and store until after the hay cut and remove has taken place. Re-sow into	June/July depending on the time of the seed set and after surveying has taken place	26f.	Committee: Consider the creation of dragonfly scrapes. NB due to the nearby watercourse, this may need to be done under	As time and funding allow

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
		most needed areas in grassland e.g. where grass is dominant or Yellow Rattle populations are at their lowest.  Undertake Butterfly Conservation's Big Butterfly Count	July-August (see website for dates)	26g.	permit from the relevant authority.  Individuals*: Undertake Butterfly Conservation's Big Butterfly Count * Multiple surveys are useful. Records should also be sent to WTBBC/ EcoRecord	July-August (see website for dates)
27.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Monitor areas of Japanese Knotweed within Ash woodland block, alongside Blake Street and report to site owner	April-September			
28.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Plan and carry out a coppice rotation for the hazel blocks consisting of this area and the area beyond Hill Hook Road (to Blake Street)	November-February			
29a.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Thin block of planted Ash woodland to diversify the species and age structure within the block.	November-February			
29b.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Survey field layer, then consider enhancing the field layer, ideally with propagules from	Survey: for a year			

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
		species already present on site.	Propagating and planting: April-October			
30.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Manage paths as butterfly rides, keeping them open and as floriferous as possible, including plant species that are valuable to non-specialist pollinators such as Hogweed and Yarrow. Continue to manage the pattern of alternate scalloped edges. Maintain as long a flowering period as possible. Include foodplants for specific relevant species, where possible and appropriate. Ensure that existing vegetation community is not lost through species introductions, as appropriate.	All year			
	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Maintain dead hedge along edge of triangle of land, adjoining Hill Hook Road on the opposite side of the stream to discourage public access to this area.	November-February			
31a.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Monitor wooded area along watercourse bank to retain varied age Crack Willow, Common Alder and other existing species. Ensure varied age and physical structure	All year			

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
31b.		<p>along the whole length of the watercourse in this section. The self-set Common Alder at the Blake Street end of the site are included in this action. These should be left to establish as they are important habitat for a variety of species and also add structure to the watercourse bank habitat at this end of the site. They should also not be allowed to spread further i.e. open areas of bank and watercourse should be maintained to allow sunlight to the water in places.</p> <p>Take cuttings from female native Black Poplar and distribute to appropriate sites via the Wildlife Trust</p>	October-February			
32a.	<b>The area between Hill Hook Road and Blake Street: woodlands, glades and rides (Cmpt 4b)</b>	Monitor newly installed bird boxes for use and record. See list in appendix for locations. Do not disturb nesting birds.	April-August	32b.	Individuals: Monitor newly installed bird boxes for use and record. See list in appendix for locations. Do not disturb nesting birds.	April-August
33.	<b>The area between Hill Hook Road and Blake Street: woodlands,</b>	Maintain dead hedge along edge of triangle of land, adjoining Hill Hook Road on the opposite side of the	November-February			

Action no.	Compartment/ Sub-compartment	Volunteer work parties	Timing	Action no.	Individual volunteers/work outside work parties*	Timing
	<b>glades and rides (Cmpt 4b)</b>	stream to discourage public access to this area.				
34.	<b>The area between Hill Hook Road and Blake Street: the watercourse (Cmpt 4c)</b>	Monitor for Himalayan Balsam and pull as soon as possible, and definitely before seed has set. Break stem between root and first node to ensure the plant cannot re-root. Previously found at Blake Street end of watercourse and continues beyond reserve between Blake Street and the farmland/field.	June-September			
35a.	<b>The area between Hill Hook Road and Blake Street: the watercourse (Cmpt 4c)</b>	Consider the introduction of large dead wood on the bank tops from felling on other areas of the reserve	November-February	35b.	Committee: Consider the introduction of 'leaky dams' into the watercourse. NB this will need consent from the relevant authority (i.e. the local authority or the Environment Agency as appropriate)	
36.	<b>The area between Hill Hook Road and Blake Street: the watercourse (Cmpt 4c)</b>	Monitor for signs of damage and erosion by people and by the water flow	All year			

## Management Actions – Other actions

This section includes actions in a variety of areas from public engagement to monitoring activities and the production of the next management plan. As discussed in previous sections, the aim of engagement and education activities is to involve and excite people of all ages and backgrounds, including people that are under-represented as site users or volunteers to help them become knowledgeable and passionate about wildlife and protecting local sites, special sites and our planet. The assumption is that this will be done in the context of this plan and its aims and the needs of the site and local people– e.g. events will take into account the needs of local residents in terms of disturbance and disruption and the needs of the site in terms of erosion, compaction and disturbance to wildlife and that educational engagement will be focused on local schools or schools that do not need access to toilets or indoor facilities on the site.

Action No.	Action	Details/comments	Timing
37.	<b>Events</b>	A range of events should be organised and run for the public and for specific groups.	As funding allows
38.	<b>Schools and other groups</b>	Links should be made with local schools and other groups and sessions for school and other groups run on (and possibly off) site. These groups should be encouraged and enabled to use the site on their own, e.g. through increase in confidence (through the use of the site with WTBBC staff), training and the supply of resources). The Wildlife Trust could run courses accredited through Open College Network West Midlands at the reserve. One aim would be to recruit young adults to volunteer with the group.	As funding allows
39.	<b>Educational materials</b>	A range of learning programmes and materials for primary and secondary schools should be produced, linking with the national curriculum and encouraging local schools to use the site for field trips and the delivery of lessons.	As funding allows
40.	<b>Further funding</b>	Further funding will be necessary to complete some of the actions within this management plan and also to extend staff time for the leading of volunteer groups, events and school groups etc.	As opportunities arise
41.	<b>Monitoring of results of management plan</b>	Monitoring of the results of management work allows the assessment of how successful or otherwise these works have been to allow further work to be carried out and/or changes to management approaches and to allow the production of the next management plan.	Ongoing 2022-2027
42.	<b>Production of new management plan</b>	A new management plan will ideally be needed to ensure planning, prioritising and continuation of the work within the reserve to maximise its value for people and for wildlife. It is also often necessary for funding applications. The management plan should be created in consultation with the local community and other stakeholders.	The start of 2027, for implementation in 2028

## Species Lists

Records from EcoRecord database as of March 2022

Taxon group	Scientific Name	Common Name
acarine (Acari)	<i>Eriophyidae</i>	acarine (Acari)
amphibian	<i>Bufo bufo</i>	Common Toad
amphibian	<i>Rana temporaria</i>	Common Frog
annelid	<i>Hirudinea</i>	Leech
annelid	<i>Theromyzon tessulatum</i>	duck leech
bird	<i>Acanthis flammea</i>	Common (Mealy) Redpoll
bird	<i>Accipiter nisus</i>	Sparrowhawk
bird	<i>Aegithalos caudatus</i>	Long-tailed Tit
bird	<i>Anas</i>	Duck
bird	<i>Anas platyrhynchos</i>	Mallard
bird	<i>Anser anser</i>	Greylag Goose
bird	<i>Apus apus</i>	Swift
bird	<i>Ardea cinerea</i>	Grey Heron
bird	<i>Aythya fuligula</i>	Tufted Duck
bird	<i>Branta canadensis</i>	Canada Goose
bird	<i>Buteo buteo</i>	Buzzard
bird	<i>Carduelis carduelis</i>	Goldfinch
bird	<i>Certhia familiaris</i>	Treecreeper
bird	<i>Chloris chloris</i>	Greenfinch
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull
bird	<i>Coloeus monedula</i>	Jackdaw
bird	<i>Columba livia</i>	Feral Pigeon
bird	<i>Columba oenas</i>	Stock Dove
bird	<i>Columba palumbus</i>	Woodpigeon
bird	<i>Corvus corone</i>	Carrion Crow
bird	<i>Corvus frugilegus</i>	Rook
bird	<i>Cuculus canorus</i>	Cuckoo
bird	<i>Curruca communis</i>	Whitethroat
bird	<i>Cyanistes caeruleus</i>	Eurasian Blue Tit
bird	<i>Cygnus olor</i>	Mute Swan
bird	<i>Delichon urbicum</i>	Common House Martin
bird	<i>Dendrocopos major</i>	Great Spotted Woodpecker
bird	<i>Emberiza schoeniclus</i>	Common Reed Bunting
bird	<i>Erithacus rubecula</i>	Robin
bird	<i>Falco peregrinus</i>	Peregrine
bird	<i>Fringilla coelebs</i>	Common Chaffinch
bird	<i>Fringilla montifringilla</i>	Brambling
bird	<i>Fulica atra</i>	Eurasian Coot
bird	<i>Gallinago gallinago</i>	Snipe
bird	<i>Gallinula chloropus</i>	Moorhen
bird	<i>Garrulus glandarius</i>	Jay
bird	<i>Haematopus ostralegus</i>	Oystercatcher
bird	<i>Hirundo rustica</i>	Swallow
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull



bird	<i>Linaria cannabina</i>	Linnet
bird	<i>Mergus merganser</i>	Common Merganser
bird	<i>Motacilla alba</i>	Pied Wagtail
bird	<i>Motacilla cinerea</i>	Grey Wagtail
bird	<i>Parus major</i>	Great Tit
bird	<i>Passer domesticus</i>	House Sparrow
bird	<i>Phalacrocorax carbo</i>	Cormorant
bird	<i>Phasianus colchicus</i>	Pheasant
bird	<i>Phylloscopus collybita</i>	Chiffchaff
bird	<i>Phylloscopus trochilus</i>	Willow Warbler
bird	<i>Pica pica</i>	Eurasian Magpie
bird	<i>Picus viridis</i>	European Green Woodpecker
bird	<i>Podiceps cristatus</i>	Great Crested Grebe
bird	<i>Poecile montanus</i>	Willow Tit
bird	<i>Prunella modularis</i>	Dunnock
bird	<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch
bird	<i>Regulus regulus</i>	Goldcrest
bird	<i>Riparia riparia</i>	Sand Martin
bird	<i>Sitta europaea</i>	Eurasian Nuthatch
bird	<i>Spinus spinus</i>	Siskin
bird	<i>Sterna hirundo</i>	Common Tern
bird	<i>Streptopelia decaocto</i>	Collared Dove
bird	<i>Strix aluco</i>	Tawny Owl
bird	<i>Sturnus vulgaris</i>	Starling
bird	<i>Sylvia atricapilla</i>	Eurasian Blackcap
bird	<i>Sylvia borin</i>	Garden Warbler
bird	<i>Tachybaptus ruficollis</i>	Little Grebe
bird	<i>Troglodytes troglodytes</i>	Eurasian Wren
bird	<i>Turdus iliacus</i>	Redwing
bird	<i>Turdus merula</i>	Blackbird
bird	<i>Turdus philomelos</i>	Song Thrush
bird	<i>Turdus viscivorus</i>	Mistle Thrush
bony fish (Actinopterygii)	<i>Abramis brama</i>	Common Bream
bony fish (Actinopterygii)	<i>Cyprinus carpio</i>	Common Carp
bony fish (Actinopterygii)	<i>Esox lucius</i>	Pike
bony fish (Actinopterygii)	<i>Perca fluviatilis</i>	Perch
bony fish (Actinopterygii)	<i>Rutilus rutilus</i>	Roach
bony fish (Actinopterygii)	<i>Tinca tinca</i>	Tench
conifer	<i>Taxus baccata</i>	Yew
crustacean	<i>Gammarus pulex/fossarum agg.</i>	crustacean
crustacean	<i>Asellus (Asellus) aquaticus</i>	Water hog lice/slaters
fern	<i>Athyrium filix-femina</i>	Lady-fern
fern	<i>Dryopteris dilatata</i>	Broad Buckler-fern
fern	<i>Dryopteris filix-mas agg.</i>	Male Fern
fern	<i>Polystichum setiferum</i>	Soft Shield-fern
fern	<i>Pteridium aquilinum</i>	Bracken
flowering plant	<i>Acer campestre</i>	Field Maple
flowering plant	<i>Acer pseudoplatanus</i>	Sycamore

flowering plant	<i>Achillea millefolium</i>	Yarrow
flowering plant	<i>Achillea ptarmica</i>	Sneezewort
flowering plant	<i>Aegopodium podagraria</i>	Ground-elder
flowering plant	<i>Aesculus hippocastanum</i>	Horse-chestnut
flowering plant	<i>Agrostis capillaris</i>	Common Bent
flowering plant	<i>Agrostis stolonifera</i>	Creeping Bent
flowering plant	<i>Aira caryophylla</i>	Silver Hair-grass
flowering plant	<i>Ajuga reptans</i>	Bugle
flowering plant	<i>Alliaria petiolata</i>	Garlic Mustard
flowering plant	<i>Allium subhirsutum</i>	Hairy Garlic
flowering plant	<i>Allium ursinum</i>	Ramsons
flowering plant	<i>Alnus glutinosa</i>	Alder
flowering plant	<i>Alopecurus geniculatus</i>	Marsh Foxtail
flowering plant	<i>Alopecurus pratensis</i>	Meadow Foxtail
flowering plant	<i>Anemone nemorosa</i>	Wood Anemone
flowering plant	<i>Angelica sylvestris</i>	Wild Angelica
flowering plant	<i>Anthriscus sylvestris</i>	Cow Parsley
flowering plant	<i>Apium nodiflorum</i>	Fool's-water-cress
flowering plant	<i>Arabidopsis thaliana</i>	Thale Cress
flowering plant	<i>Armoracia rusticana</i>	Horse-radish
flowering plant	<i>Arrhenatherum elatius</i>	False Oat-grass
flowering plant	<i>Artemisia vulgaris</i>	Mugwort
flowering plant	<i>Arum italicum subsp. italicum</i>	Italian Lords-and-Ladies
flowering plant	<i>Arum maculatum</i>	Lords-and-Ladies
flowering plant	<i>Aster</i>	Michaelmas-Daisy
flowering plant	<i>Aster novi-belgii</i>	Confused Michaelmas-daisy
flowering plant	<i>Aucuba japonica</i>	Spotted-laurel
flowering plant	<i>Bellis perennis</i>	Daisy
flowering plant	<i>Berula erecta</i>	Lesser Water-parsnip
flowering plant	<i>Betula</i>	Birch
flowering plant	<i>Betula pendula</i>	Silver Birch
flowering plant	<i>Bidens tripartita</i>	Trifid Bur-marigold
flowering plant	<i>Bromus hordeaceus subsp. hordeaceus</i>	Common Soft-brome
flowering plant	<i>Bromus sterilis</i>	Barren Brome
flowering plant	<i>Bryonia dioica</i>	White Bryony
flowering plant	<i>Callitriche</i>	Water-Starwort
flowering plant	<i>Callitriche stagnalis</i>	Common Water-starwort
flowering plant	<i>Caltha</i>	flowering plant
flowering plant	<i>Caltha palustris</i>	Marsh-marigold
flowering plant	<i>Calystegia sepium</i>	Hedge Bindweed
flowering plant	<i>Capsella bursa-pastoris</i>	Shepherd's-purse
flowering plant	<i>Cardamine amara</i>	Large Bitter-cress
flowering plant	<i>Cardamine flexuosa</i>	Wavy Bitter-cress
flowering plant	<i>Cardamine hirsuta</i>	Hairy Bitter-cress
flowering plant	<i>Cardamine pratensis</i>	Cuckooflower
flowering plant	<i>Carex</i>	Sedge
flowering plant	<i>Carex acutiformis</i>	Lesser Pond-sedge

flowering plant	<i>Carex otrubae</i>	False Fox-sedge
flowering plant	<i>Carex paniculata</i>	Greater Tussock-sedge
flowering plant	<i>Carex pendula</i>	Pendulous Sedge
flowering plant	<i>Carex pseudocyperus</i>	Cyperus Sedge
flowering plant	<i>Carex remota</i>	Remote Sedge
flowering plant	<i>Carex riparia</i>	Greater Pond-sedge
flowering plant	<i>Carex rostrata</i>	Bottle Sedge
flowering plant	<i>Centaurea nigra sens. lat. (=nigra/debauxii)</i>	Common Knapweed
flowering plant	<i>Cerastium fontanum</i>	Common Mouse-ear
flowering plant	<i>Chaerophyllum temulum</i>	Rough Chervil
flowering plant	<i>Chamerion angustifolium</i>	Rosebay Willowherb
flowering plant	<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage
flowering plant	<i>Circaea lutetiana</i>	Enchanter's-nightshade
flowering plant	<i>Cirsium arvense</i>	Creeping Thistle
flowering plant	<i>Cirsium palustre</i>	Marsh Thistle
flowering plant	<i>Cirsium vulgare</i>	Spear Thistle
flowering plant	<i>Claytonia sibirica</i>	Pink Purslane
flowering plant	<i>Conopodium majus</i>	Pignut
flowering plant	<i>Convolvulus arvensis</i>	Field Bindweed
flowering plant	<i>Cornus sanguinea</i>	Dogwood
flowering plant	<i>Corylus avellana</i>	Hazel
flowering plant	<i>Cotoneaster</i>	flowering plant
flowering plant	<i>Cotoneaster rehderi</i>	Bullate Cotoneaster
flowering plant	<i>Cotoneaster simonsii</i>	Himalayan Cotoneaster
flowering plant	<i>Crataegus monogyna</i>	Hawthorn
flowering plant	<i>Crepis biennis</i>	Rough Hawk's-beard
flowering plant	<i>Crocasmia pottsii x aurea = C. x crocosmiiflora</i>	Montbretia
flowering plant	<i>Cynosurus cristatus</i>	Crested Dog's-tail
flowering plant	<i>Dactylis glomerata</i>	Cock's-foot
flowering plant	<i>Dactylorhiza fuchsii</i>	Common Spotted-orchid
flowering plant	<i>Dactylorhiza fuchsii x praetermissa = D. x grandis</i>	Marsh-Orchid
flowering plant	<i>Daucus carota subsp. carota</i>	Wild Carrot
flowering plant	<i>Deschampsia cespitosa</i>	Tufted Hair-grass
flowering plant	<i>Deschampsia flexuosa</i>	Wavy Hair-grass
flowering plant	<i>Digitalis purpurea</i>	Foxglove
flowering plant	<i>Dioscorea communis</i>	Black Bryony
flowering plant	<i>Elodea canadensis</i>	Canadian Waterweed
flowering plant	<i>Elytrigia repens</i>	Common Couch
flowering plant	<i>Epilobium hirsutum</i>	Great Willowherb
flowering plant	<i>Epilobium montanum</i>	Broad-leaved Willowherb
flowering plant	<i>Epilobium palustre</i>	Marsh Willowherb
flowering plant	<i>Epilobium parviflorum</i>	Hoary Willowherb
flowering plant	<i>Euonymus europaeus</i>	Spindle
flowering plant	<i>Fagus sylvatica</i>	Beech
flowering plant	<i>Fallopia japonica</i>	Japanese Knotweed

flowering plant	<i>Festuca rubra</i> agg.	Red Fescue
flowering plant	<i>Ficaria verna</i>	Lesser Celandine
flowering plant	<i>Ficaria verna</i> subsp. <i>verna</i>	Lesser Celandine
flowering plant	<i>Ficaria verna</i> var. <i>bulbifer</i>	Lesser Celandine
flowering plant	<i>Filipendula ulmaria</i>	Meadowsweet
flowering plant	<i>Frangula alnus</i>	Alder Buckthorn
flowering plant	<i>Fraxinus excelsior</i>	Ash
flowering plant	<i>Galeopsis tetrahit</i> agg.	Common Hemp-Nettle agg.
flowering plant	<i>Galium aparine</i>	Cleavers
flowering plant	<i>Galium mollugo</i> subsp. <i>mollugo</i>	Great Hedge Bedstraw
flowering plant	<i>Galium saxatile</i>	Heath Bedstraw
flowering plant	<i>Geranium macrorrhizum</i>	Rock Crane's-bill
flowering plant	<i>Geranium molle</i>	Dove's-foot Crane's-bill
flowering plant	<i>Geranium robertianum</i>	Herb-Robert
flowering plant	<i>Geum urbanum</i>	Wood Avens
flowering plant	<i>Glechoma hederacea</i>	Ground-ivy
flowering plant	<i>Glyceria fluitans</i>	Floating Sweet-grass
flowering plant	<i>Glyceria maxima</i>	Reed Sweet-grass
flowering plant	<i>Hedera helix</i>	Ivy
flowering plant	<i>Hedera helix</i> subsp. <i>helix</i>	Common Ivy
flowering plant	<i>Heracleum sphondylium</i>	Hogweed
flowering plant	<i>Hesperis matronalis</i>	Dame's-violet
flowering plant	<i>Holcus lanatus</i>	Yorkshire-fog
flowering plant	<i>Holcus mollis</i>	Creeping Soft-grass
flowering plant	<i>Hyacinthoides non-scripta</i>	Bluebell
flowering plant	<i>Hyacinthoides non-scripta</i> x <i>hispanica</i> = <i>H. x massartiana</i>	Hybrid Bluebell
flowering plant	<i>Hydrangea petiolaris</i>	Hydrangea
flowering plant	<i>Hypericum androsaemum</i>	Tutsan
flowering plant	<i>Hypericum maculatum</i>	Imperforate St John's-wort
flowering plant	<i>Hypochaeris radicata</i>	Cat's-ear
flowering plant	<i>Ilex aquifolium</i>	Holly
flowering plant	<i>Iris pseudacorus</i>	Yellow Iris
flowering plant	<i>Iris pseudacorus</i>	Yellow Flag
flowering plant	<i>Jacobaea vulgaris</i>	Common Ragwort
flowering plant	<i>Juncus</i>	Common Rush
flowering plant	<i>Juncus acutiflorus</i>	Sharp-flowered Rush
flowering plant	<i>Juncus conglomeratus</i>	Compact Rush
flowering plant	<i>Juncus effusus</i>	Soft-rush
flowering plant	<i>Juncus inflexus</i>	Hard Rush
flowering plant	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>	Yellow Archangel
flowering plant	<i>Lamium album</i>	White Dead-nettle
flowering plant	<i>Lapsana communis</i>	Nipplewort
flowering plant	<i>Lathyrus pratensis</i>	Meadow Vetchling
flowering plant	<i>Lemna minor</i>	Common Duckweed
flowering plant	<i>Leucanthemum vulgare</i>	Oxeye Daisy
flowering plant	<i>Lolium perenne</i>	Perennial Rye-grass

flowering plant	<i>Lonicera henryi</i>	Henry's Honeysuckle
flowering plant	<i>Lonicera periclymenum</i>	Honeysuckle
flowering plant	<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil
flowering plant	<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil
flowering plant	<i>Lunaria annua</i>	Honesty
flowering plant	<i>Luzula campestris</i>	Field Wood-rush
flowering plant	<i>Lycopus europaeus</i>	Gypsywort
flowering plant	<i>Lysimachia vulgaris</i>	Yellow Loosestrife
flowering plant	<i>Lythrum salicaria</i>	Purple-loosestrife
flowering plant	<i>Mahonia aquifolium</i>	Oregon-grape
flowering plant	<i>Matricaria discoidea</i>	Pineappleweed
flowering plant	<i>Medicago lupulina</i>	Black Medick
flowering plant	<i>Mentha aquatica</i>	Water Mint
flowering plant	<i>Menyanthes trifoliata</i>	Bogbean
flowering plant	<i>Milium effusum</i>	Wood Millet
flowering plant	<i>Mimulus guttatus</i>	Monkeyflower
flowering plant	<i>Mimulus luteus</i>	Blood-drop-emlets
flowering plant	<i>Myosotis</i>	Forget-Me-Not
flowering plant	<i>Myosotis arvensis</i>	Field Forget-me-not
flowering plant	<i>Myosotis scorpioides</i>	Water Forget-me-not
flowering plant	<i>Myosotis sylvatica</i>	Wood Forget-me-not
flowering plant	<i>Narcissus</i>	daffodils
flowering plant	<i>Narcissus pseudonarcissus subsp. pseudonarcissus</i>	Daffodil
flowering plant	<i>Oxalis acetosella</i>	Wood-sorrel
flowering plant	<i>Persicaria campanulata</i>	Lesser Knotweed
flowering plant	<i>Persicaria hydropiper</i>	Water-pepper
flowering plant	<i>Phleum pratense</i>	Timothy
flowering plant	<i>Phragmites australis</i>	Common Reed
flowering plant	<i>Pilosella aurantiaca</i>	Fox-and-cubs
flowering plant	<i>Plantago lanceolata</i>	Ribwort Plantain
flowering plant	<i>Plantago major</i>	Greater Plantain
flowering plant	<i>Poa</i>	Meadow-Grass
flowering plant	<i>Poa annua</i>	Annual Meadow-grass
flowering plant	<i>Poa pratensis</i>	Smooth Meadow-Grass
flowering plant	<i>Poa trivialis</i>	Rough Meadow-grass
flowering plant	<i>Polygonum aviculare agg.</i>	Knotgrass agg.
flowering plant	<i>Populus tremula</i>	Aspen
flowering plant	<i>Potamogeton crispus</i>	Curled Pondweed
flowering plant	<i>Potentilla anglica</i>	Trailing Tormentil
flowering plant	<i>Potentilla palustris</i>	Marsh Cinquefoil
flowering plant	<i>Potentilla reptans</i>	Creeping Cinquefoil
flowering plant	<i>Primula veris</i>	Cowslip
flowering plant	<i>Prunella vulgaris</i>	Selfheal
flowering plant	<i>Prunus</i>	Cherry
flowering plant	<i>Prunus avium</i>	Wild Cherry
flowering plant	<i>Prunus domestica</i>	Wild Plum
flowering plant	<i>Prunus laurocerasus</i>	Cherry Laurel

flowering plant	<i>Prunus padus</i>	Bird Cherry
flowering plant	<i>Prunus spinosa</i>	Blackthorn
flowering plant	<i>Prunus spinosa x domestica = P. x fruticans</i>	Cherry
flowering plant	<i>Pyracantha</i>	flowering plant
flowering plant	<i>Pyrus communis</i>	Pear
flowering plant	<i>Quercus</i>	Oak
flowering plant	<i>Quercus petraea</i>	Sessile Oak
flowering plant	<i>Quercus robur</i>	Pedunculate Oak
flowering plant	<i>Ranunculus acris</i>	Meadow Buttercup
flowering plant	<i>Ranunculus flammula</i>	Lesser Spearwort
flowering plant	<i>Ranunculus repens</i>	Creeping Buttercup
flowering plant	<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup
flowering plant	<i>Reseda lutea</i>	Wild Mignonette
flowering plant	<i>Rhinanthus minor</i>	Yellow-rattle
flowering plant	<i>Ribes nigrum</i>	Black Currant
flowering plant	<i>Ribes rubrum</i>	Red Currant
flowering plant	<i>Rorippa nasturtium-aquaticum agg.</i>	Water Cress
flowering plant	<i>Rorippa palustris</i>	Marsh Yellow-cress
flowering plant	<i>Rosa arvensis</i>	Field-rose
flowering plant	<i>Rosa canina agg.</i>	Dog Rose
flowering plant	<i>Rosa rugosa</i>	Japanese Rose
flowering plant	<i>Rubus caesius</i>	Dewberry
flowering plant	<i>Rubus fruticosus agg.</i>	Blackberry
flowering plant	<i>Rubus idaeus</i>	Raspberry
flowering plant	<i>Rumex acetosa</i>	Common Sorrel
flowering plant	<i>Rumex acetosella</i>	Sheep's Sorrel
flowering plant	<i>Rumex conglomeratus</i>	Clustered Dock
flowering plant	<i>Rumex crispus</i>	Curled Dock
flowering plant	<i>Rumex obtusifolius</i>	Broad-leaved Dock
flowering plant	<i>Sagina procumbens</i>	Procumbent Pearlwort
flowering plant	<i>Salix</i>	Willow
flowering plant	<i>Salix alba</i>	White Willow
flowering plant	<i>Salix caprea</i>	Goat Willow
flowering plant	<i>Salix cinerea</i>	Common Sallow
flowering plant	<i>Salix euxina x alba = S. x fragilis</i>	Crack-willow
flowering plant	<i>Salix pentandra</i>	Bay Willow
flowering plant	<i>Salix viminalis</i>	Osier
flowering plant	<i>Sambucus nigra</i>	Elder
flowering plant	<i>Sanguisorba officinalis</i>	Great Burnet
flowering plant	<i>Saponaria officinalis</i>	Soapwort
flowering plant	<i>Scirpus</i>	flowering plant
flowering plant	<i>Scrophularia auriculata</i>	Water Figwort
flowering plant	<i>Scrophularia nodosa</i>	Common Figwort
flowering plant	<i>Senecio inaequidens</i>	Narrow-leaved Ragwort
flowering plant	<i>Senecio squalidus</i>	Oxford Ragwort
flowering plant	<i>Senecio vulgaris</i>	Groundsel
flowering plant	<i>Silene dioica</i>	Red Campion

flowering plant	<i>Silene flos-cuculi</i>	Ragged-Robin
flowering plant	<i>Silene latifolia</i>	White Champion
flowering plant	<i>Sinapis arvensis</i>	Charlock
flowering plant	<i>Sisymbrium officinale</i>	Hedge Mustard
flowering plant	<i>Solanum dulcamara</i>	Bittersweet
flowering plant	<i>Solidago</i>	Goldenrod
flowering plant	<i>Sonchus oleraceus</i>	Smooth Sow-thistle
flowering plant	<i>Sorbus aria agg.</i>	Whitebeam
flowering plant	<i>Sorbus aucuparia</i>	Rowan
flowering plant	<i>Sparganium erectum</i>	Branched Bur-reed
flowering plant	<i>Stachys sylvatica</i>	Hedge Woundwort
flowering plant	<i>Stellaria alsine</i>	Bog Stitchwort
flowering plant	<i>Stellaria graminea</i>	Lesser Stitchwort
flowering plant	<i>Stellaria media agg.</i>	Chickweed
flowering plant	<i>Symphoricarpos albus</i>	Snowberry
flowering plant	<i>Taraxacum officinale agg.</i>	Dandelion
flowering plant	<i>Tellima grandiflora</i>	Fringecups
flowering plant	<i>Trifolium dubium</i>	Lesser Trefoil
flowering plant	<i>Trifolium medium</i>	Zigzag Clover
flowering plant	<i>Trifolium pratense</i>	Red Clover
flowering plant	<i>Trifolium repens</i>	White Clover
flowering plant	<i>Tussilago farfara</i>	Colt's-foot
flowering plant	<i>Typha angustifolia</i>	Lesser Bulrush
flowering plant	<i>Typha latifolia</i>	Bulrush
flowering plant	<i>Ulex europaeus</i>	Gorse
flowering plant	<i>Ulmus</i>	Elm
flowering plant	<i>Ulmus procera</i>	English Elm
flowering plant	<i>Urtica dioica</i>	Common Nettle
flowering plant	<i>Valeriana officinalis</i>	Common Valerian
flowering plant	<i>Veronica arvensis</i>	Wall Speedwell
flowering plant	<i>Veronica beccabunga</i>	Brooklime
flowering plant	<i>Veronica chamaedrys</i>	Germander Speedwell
flowering plant	<i>Veronica hederifolia</i>	Ivy-leaved Speedwell
flowering plant	<i>Veronica persica</i>	Common Field-speedwell
flowering plant	<i>Viburnum lantana</i>	Wayfaring-tree
flowering plant	<i>Viburnum opulus</i>	Guelder-rose
flowering plant	<i>Vicia cracca</i>	Tufted Vetch
flowering plant	<i>Vicia sativa</i>	Common Vetch
flowering plant	<i>Vicia sativa subsp. sativa</i>	Cultivated Vetch
flowering plant	<i>Vinca minor</i>	Lesser Periwinkle
flowering plant	<i>Viola riviniana</i>	Common Dog-violet
horsetail	<i>Equisetum arvense</i>	Field Horsetail
horsetail	<i>Equisetum fluviatile</i>	Water Horsetail
horsetail	<i>Equisetum fluviatile x arvense = E. x litorale</i>	Shore Horsetail
horsetail	<i>Equisetum palustre</i>	Marsh Horsetail
horsetail	<i>Equisetum sylvaticum</i>	Wood Horsetail
insect - beetle (Coleoptera)	<i>Cantharis nigricans</i>	insect - beetle (Coleoptera)

insect - beetle (Coleoptera)	<i>Dytiscidae</i>	insect - beetle (Coleoptera)
insect - butterfly	<i>Aglais io</i>	Peacock
insect - butterfly	<i>Aglais urticae</i>	Small Tortoiseshell
insect - butterfly	<i>Anthocharis cardamines</i>	Orange-tip
insect - butterfly	<i>Anthocharis cardamines britannica</i>	Orange-tip
insect - butterfly	<i>Gonepteryx rhamni</i>	Brimstone
insect - butterfly	<i>Gonepteryx rhamni rhamni</i>	Brimstone
insect - butterfly	<i>Lycaena phlaeas</i>	Small Copper
insect - butterfly	<i>Pararge aegeria</i>	Speckled Wood
insect - butterfly	<i>Pieris napi</i>	Green-veined White
insect - butterfly	<i>Pieris rapae</i>	Small White
insect - butterfly	<i>Polygonia c-album</i>	Comma
insect - butterfly	<i>Thymelicus sylvestris</i>	Small Skipper
insect - butterfly	<i>Vanessa atalanta</i>	Red Admiral
insect - caddis fly (Trichoptera)	<i>Trichoptera</i>	caddisflies
insect - dragonfly (Odonata)	<i>Aeshna grandis</i>	Brown Aeshna
insect - dragonfly (Odonata)	<i>Aeshna juncea</i>	Common Aeshna
insect - dragonfly (Odonata)	<i>Enallagma cyathigerum</i>	Common Blue Damselfly
insect - dragonfly (Odonata)	<i>Zygoptera</i>	insect - dragonfly (Odonata)
insect - hymenopteran	<i>Andrena haemorrhoa</i>	Orange-tailed Mining Bee
insect - hymenopteran	<i>Bombus hortorum</i>	Garden Bumblebee
insect - mayfly (Ephemeroptera)	<i>Ephemeroptera</i>	Mayfly
insect - moth	<i>Abrostola tripartita</i>	Spectacle
insect - moth	<i>Acronicta aceris</i>	Sycamore
insect - moth	<i>Apamea monoglypha</i>	Dark Arches
insect - moth	<i>Cabera pusaria</i>	Common White Wave
insect - moth	<i>Eilema lurideola</i>	Common Footman
insect - moth	<i>Epirrhoe alternata</i>	Common Carpet
insect - moth	<i>Eulithis prunata</i>	Phoenix
insect - moth	<i>Euthrix potatoria</i>	Drinker
insect - moth	<i>Hemithea aestivaria</i>	Common Emerald
insect - moth	<i>Hypena proboscidalis</i>	Snout
insect - moth	<i>Idaea aversata ab. remutata</i>	Riband Wave (non-banded form)
insect - moth	<i>Idaea biselata</i>	Small Fan-footed Wave
insect - moth	<i>Melanchra persicariae</i>	Dot Moth
insect - moth	<i>Mesapamea secalis agg.</i>	Common Rustic agg.
insect - moth	<i>Mythimna impura</i>	Smoky Wainscot
insect - moth	<i>Noctua janthe</i>	Lesser Broad-bordered Yellow Underwing
insect - moth	<i>Noctua pronuba</i>	Large Yellow Underwing
insect - moth	<i>Plemyria rubiginata</i>	Blue-bordered Carpet
insect - moth	<i>Pleuroptya ruralis</i>	Mother of Pearl
insect - moth	<i>Xanthorhoe fluctuata</i>	Garden Carpet
insect - true bug (Hemiptera)	<i>Corixidae</i>	Lesser Water-Boatman
insect - true fly (Diptera)	<i>Bombylius major</i>	Dark-edged Bee-fly
insect - true fly (Diptera)	<i>Chironomidae</i>	insect - true fly (Diptera)
insect - true fly (Diptera)	<i>Chironomidae</i>	insect - true fly (Diptera)
mollusc	<i>Hippeutis complanatus</i>	Flat Ramshorn



mollusc	<i>Pisidium</i>	Indet. Pea Mussel
mollusc	<i>Radix balthica</i>	Wandering Snail
moss	<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss
terrestrial mammal	<i>Arvicola amphibius</i>	European Water Vole
terrestrial mammal	<i>Chiroptera</i>	Bats
terrestrial mammal	<i>Erinaceus europaeus</i>	West European Hedgehog
terrestrial mammal	<i>Felis catus</i>	Feral Cat
terrestrial mammal	<i>Myotis daubentonii</i>	Daubenton's Bat
terrestrial mammal	<i>Nyctalus noctula</i>	Noctule Bat
terrestrial mammal	<i>Oryctolagus cuniculus</i>	European Rabbit
terrestrial mammal	<i>Pipistrellus</i>	Pipistrelle
terrestrial mammal	<i>Pipistrellus pipistrellus</i>	Pipistrelle
terrestrial mammal	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle
terrestrial mammal	<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle
terrestrial mammal	<i>Rattus norvegicus</i>	Brown Rat
terrestrial mammal	<i>Sciurus carolinensis</i>	Eastern Grey Squirrel
terrestrial mammal	<i>Talpa europaea</i>	European Mole
terrestrial mammal	<i>Vulpes vulpes</i>	Red Fox

Records from surveys carried out during 2021

Taxon group	Scientific Name	Common Name
annelid	<i>Hirudinea</i>	Leech
annelid	<i>Oligochaeta</i>	Bloodworm
platyhelminthe	<i>Tricladida</i>	Flatworm
bird	<i>Aegithalos caudatus</i>	Long-tailed Tit
bird	<i>Anas platyrhynchos</i>	Mallard
bird	<i>Anas platyrhynchos domesticus</i>	Domestic Duck
bird	<i>Anser anser</i>	Greylag Goose
bird	<i>Apus apus</i>	Swift
bird	<i>Ardea cinerea</i>	Grey Heron
bird	<i>Aythya fuligula</i>	Tufted Duck
bird	<i>Branta canadensis</i>	Canada Goose
bird	<i>Buteo buteo</i>	Buzzard
bird	<i>Carduelis carduelis</i>	Goldfinch
bird	<i>Certhia familiaris</i>	Treecreeper
bird	<i>Chloris chloris</i>	Greenfinch
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull
bird	<i>Coloeus monedula</i>	Jackdaw
bird	<i>Columba livia</i>	Feral Pigeon
bird	<i>Columba oenas</i>	Stock Dove
bird	<i>Columba palumbus</i>	Woodpigeon
bird	<i>Corvus corone</i>	Carrion Crow
bird	<i>Curruca communis</i>	Whitethroat
bird	<i>Cyanistes caeruleus</i>	Eurasian Blue Tit
bird	<i>Cygnus olor</i>	Mute Swan
bird	<i>Delichon urbicum</i>	Common House Martin

bird	<i>Dendrocopos major</i>	Great Spotted Woodpecker
bird	<i>Erithacus rubecula</i>	Robin
bird	<i>Fringilla coelebs</i>	Common Chaffinch
bird	<i>Fulica atra</i>	Eurasian Coot
bird	<i>Gallinula chloropus</i>	Moorhen
bird	<i>Garrulus glandarius</i>	Jay
bird	<i>Hirundo rustica</i>	Swallow
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull
bird	<i>Motacilla alba</i>	Pied Wagtail
bird	<i>Motacilla cinerea</i>	Grey Wagtail
bird	<i>Parus major</i>	Great Tit
bird	<i>Passer domesticus</i>	House Sparrow
bird	<i>Periparus ater</i>	Coal Tit
bird	<i>Phalacrocorax carbo</i>	Cormorant
bird	<i>Phylloscopus collybita</i>	Chiffchaff
bird	<i>Picus viridis</i>	European Green Woodpecker
bird	<i>Prunella modularis</i>	Dunnock
bird	<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch
bird	<i>Regulus regulus</i>	Goldcrest
bird	<i>Sitta europaea</i>	Eurasian Nuthatch
bird	<i>Spinus spinus</i>	Siskin
bird	<i>Streptopelia decaocto</i>	Collared Dove
bird	<i>Sturnus vulgaris</i>	Starling
bird	<i>Sylvia atricapilla</i>	Eurasian Blackcap
bird	<i>Tachybaptus ruficollis</i>	Little Grebe
bird	<i>Troglodytes troglodytes</i>	Eurasian Wren
bird	<i>Turdus iliacus</i>	Redwing
bird	<i>Turdus merula</i>	Blackbird
bird	<i>Turdus philomelos</i>	Song Thrush
bird	<i>Turdus viscivorus</i>	Mistle Thrush
bony fish (Actinopterygii)	<i>Cottus gobio</i>	Bullhead
bony fish (Actinopterygii)	<i>Phoxinus phoxinus</i>	Minnow
conifer	<i>Taxus baccata</i>	Yew
crustacean	<i>Asellus (Asellus) aquaticus</i>	Water hog lice/slaters
crustacean	<i>Gammarus pulex/fossarum agg.</i>	crustacean
fern	<i>Asplenium scolopendrium</i>	Hart's-tongue fern
fern	<i>Dryopteris filix-mas agg.</i>	Male Fern
fern	<i>Pteridium aquilinum</i>	Bracken
flowering plant	<i>Acer campestre</i>	Field Maple
flowering plant	<i>Acer pseudoplatanus</i>	Sycamore
flowering plant	<i>Achillea millefolium</i>	Yarrow
flowering plant	<i>Adoxa moschatellina</i>	Moschatel
flowering plant	<i>Aegopodium podagraria</i>	Ground-elder
flowering plant	<i>Aesculus hippocastanum</i>	Horse-chestnut
flowering plant	<i>Agrostis capillaris</i>	Common Bent
flowering plant	<i>Agrostis stolonifera</i>	Creeping Bent
flowering plant	<i>Ajuga reptans</i>	Bugle
flowering plant	<i>Alliaria petiolata</i>	Garlic Mustard

flowering plant	<i>Allium ursinum</i>	Ramsons
flowering plant	<i>Alnus glutinosa</i>	Alder
flowering plant	<i>Alopecurus geniculatus</i>	Marsh Foxtail
flowering plant	<i>Alopecurus pratensis</i>	Meadow Foxtail
flowering plant	<i>Anemone</i>	A Garden Anemone
flowering plant	<i>Anemone nemorosa</i>	Wood Anemone
flowering plant	<i>Anthriscus sylvestris</i>	Cow Parsley
flowering plant	<i>Aquilegia</i>	A garden Columbine
flowering plant	<i>Arabidopsis thaliana</i>	Thale Cress
flowering plant	<i>Arctium minus</i>	Lesser Burdock
flowering plant	<i>Arrhenatherum elatius</i>	False Oat-grass
flowering plant	<i>Arum italicum subsp. italicum</i>	Italian Lords-and-Ladies
flowering plant	<i>Arum maculatum</i>	Lords-and-Ladies
flowering plant	<i>Aucuba japonica</i>	Spotted-laurel
flowering plant	<i>Bellis perennis</i>	Daisy
flowering plant	<i>Betonica officinalis</i>	Betony
flowering plant	<i>Betula pendula</i>	Silver Birch
flowering plant	<i>Brachypodium sylvaticum</i>	Wood False-brome
flowering plant	<i>Bromus hordeaceus</i>	Common Soft-brome
flowering plant	<i>Bromus sterilis</i>	Barren Brome
flowering plant	<i>Bryonia dioica</i>	White Bryony
flowering plant	<i>Buddleia davidii</i>	Butterfly Bush
flowering plant	<i>Caltha palustris</i>	Marsh-marigold
flowering plant	<i>Calystegia</i>	False-Bindweed
flowering plant	<i>Capsella bursa-pastoris</i>	Shepherd's-purse
flowering plant	<i>Cardamine amara</i>	Large Bitter-cress
flowering plant	<i>Cardamine flexuosa</i>	Wavy Bitter-cress
flowering plant	<i>Cardamine hirsuta</i>	Hairy Bitter-cress
flowering plant	<i>Cardamine pratensis</i>	Cuckooflower
flowering plant	<i>Carex</i>	Sedge sp.
flowering plant	<i>Carex otrubae</i>	False Fox-sedge
flowering plant	<i>Carex pendula</i>	Pendulous Sedge
flowering plant	<i>Carex remota</i>	Remote Sedge
flowering plant	<i>Centaurea nigra sens. lat.</i>	Common Knapweed
flowering plant	<i>Cerastium fontanum</i>	Common Mouse-ear
flowering plant	<i>Chamerion angustifolium</i>	Rosebay Willowherb
flowering plant	<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage
flowering plant	<i>Circaea lutetiana</i>	Enchanter's-nightshade
flowering plant	<i>Cirsium arvense</i>	Creeping Thistle
flowering plant	<i>Cirsium palustre</i>	Marsh Thistle
flowering plant	<i>Cirsium vulgare</i>	Spear Thistle
flowering plant	<i>Cornus sanguinea</i>	Dogwood
flowering plant	<i>Corylus avellana</i>	Hazel
flowering plant	<i>Cotoneaster</i>	Cotoneaster
flowering plant	<i>Crataegus monogyna</i>	Hawthorn
flowering plant	<i>Crocus</i>	A garden Crocus
flowering plant	<i>Cynosurus cristatus</i>	Crested Dog's-tail
flowering plant	<i>Dactylis glomerata</i>	Cock's-foot

flowering plant	<i>Dactylorhiza fuchsii</i>	Common Spotted-orchid
flowering plant	<i>Dactylorhiza praetermissa</i>	Southern Marsh-orchid
flowering plant	<i>Dispacus fullonum</i>	Wild Teasel
flowering plant	<i>Epilobium ciliatum</i>	American Willowherb
flowering plant	<i>Epilobium hirsutum</i>	Great Willowherb
flowering plant	<i>Erophila verna</i>	Common Whitlowgrass
flowering plant	<i>Euphorbia peplus</i>	Petty Spurge
flowering plant	<i>Fagus sylvatica</i>	Beech
flowering plant	<i>Fallopia japonica</i>	Japanese Knotweed
flowering plant	<i>Festuca rubra agg.</i>	Red Fescue
flowering plant	<i>Ficaria verna</i>	Lesser Celandine
flowering plant	<i>Filipendula ulmaria</i>	Meadowsweet
flowering plant	<i>Frangula alnus</i>	Alder Buckthorn
flowering plant	<i>Fraxinus excelsior</i>	Ash
flowering plant	<i>Galanthus nivalis</i>	Snowdrop
flowering plant	<i>Galium aparine</i>	Cleavers
flowering plant	<i>Galium palustre</i>	Marsh Bedstraw
flowering plant	<i>Galium verum</i>	Lady's Bedstraw
flowering plant	<i>Geranium molle</i>	Dove's-foot Crane's-bill
flowering plant	<i>Geranium robertianum</i>	Herb-Robert
flowering plant	<i>Geum urbanum</i>	Wood Avens
flowering plant	<i>Glechoma hederacea</i>	Ground-ivy
flowering plant	<i>Hedera helix</i>	Ivy
flowering plant	<i>Hedera helix</i>	Variegated Ivy
flowering plant	<i>Helleborus</i>	A Purple Hellebore
flowering plant	<i>Helleborus foetidus</i>	Stinking Hellebore
flowering plant	<i>Heracleum sphondylium</i>	Hogweed
flowering plant	<i>Holcus lanatus</i>	Yorkshire-fog
flowering plant	<i>Hyacinthoides non-scripta</i>	Bluebell
flowering plant	<i>Hyacinthoides non-scripta x hispanica = H. x massartiana</i>	Hybrid Bluebell
flowering plant	<i>Hypericum androsaemum</i>	Tutsan
flowering plant	<i>Hypericum perforatum</i>	Perforate St John's-wort
flowering plant	<i>Hypochaeris radicata</i>	Cat's-ear
flowering plant	<i>Ilex aquifolium</i>	Holly
flowering plant	<i>Impatiens glandulifera</i>	Himalayan Balsam
flowering plant	<i>Iris foetidissima</i>	Stinking Iris
flowering plant	<i>Iris pseudacorus</i>	Yellow Iris
flowering plant	<i>Jacobaea vulgaris</i>	Common Ragwort
flowering plant	<i>Juglans</i>	Walnut sp.
flowering plant	<i>Juncus</i>	Rush sp.
flowering plant	<i>Juncus bufonius</i>	Toad Rush
flowering plant	<i>Juncus effusus</i>	Soft Rush
flowering plant	<i>Knautia arvensis</i>	Field Scabious
flowering plant	<i>Lamiastrum galeobdolon subsp. argentatum</i>	Variegated Yellow Archangel
flowering plant	<i>Lamium album</i>	White Dead-nettle
flowering plant	<i>Lamium purpureum</i>	Red Dead-nettle

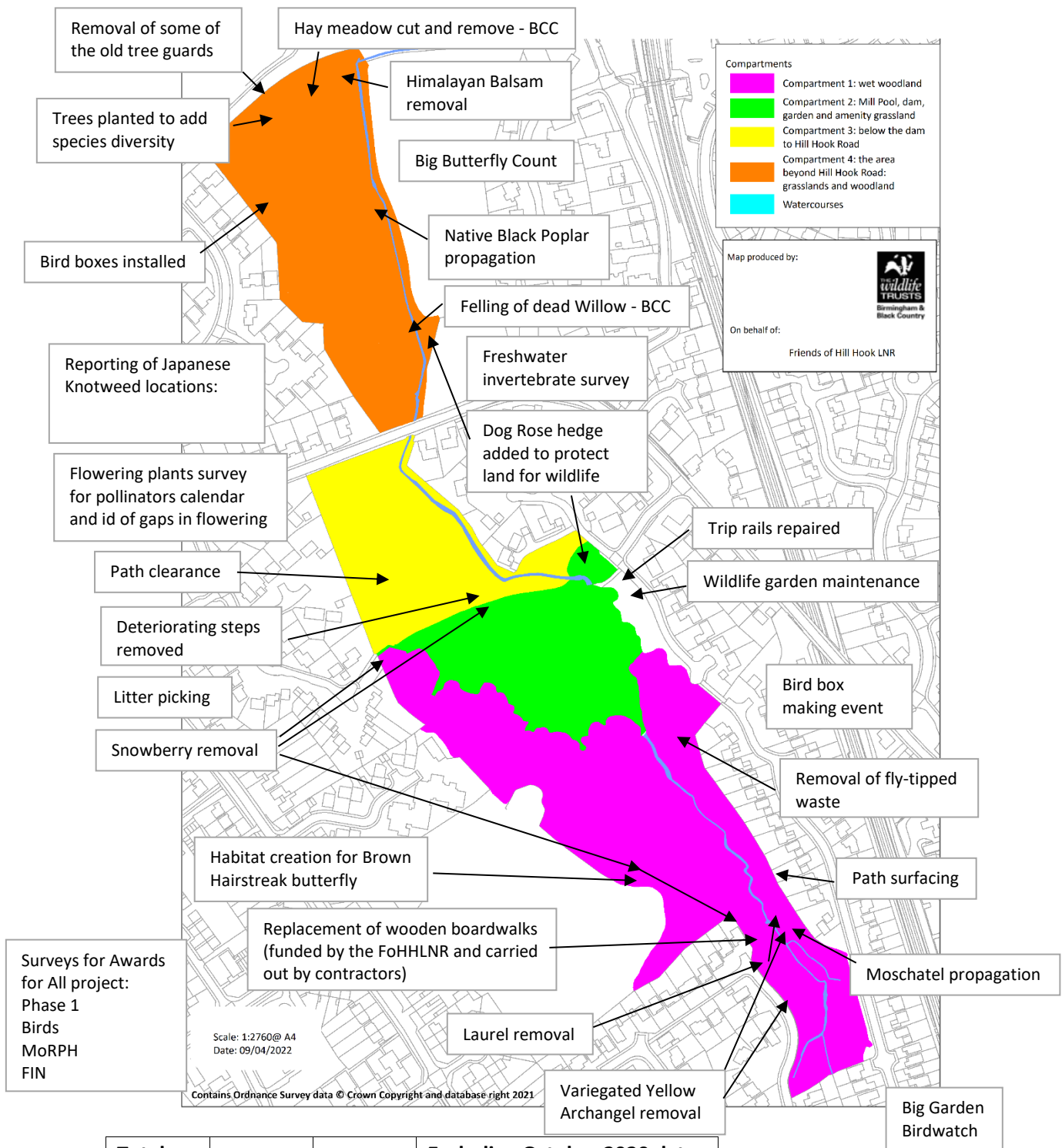
flowering plant	<i>Lapsana communis</i>	Nipplewort
flowering plant	<i>Lathyrus pratensis</i>	Meadow Vetchling
flowering plant	<i>Leucanthemum vulgare</i>	Oxeye Daisy
flowering plant	<i>Leycesteria formosa</i>	Himalayan Honeysuckle
flowering plant	<i>Ligustrum</i>	Privet sp.
flowering plant	<i>Lolium perenne</i>	Perennial Rye-grass
flowering plant	<i>Lonicera henryi</i>	Henry's Honeysuckle
flowering plant	<i>Lonicera periclymenum</i>	Honeysuckle
flowering plant	<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil
flowering plant	<i>Luzula campestris</i>	Field Wood-rush
flowering plant	<i>Mahonia aquifolium</i>	Oregon-grape
flowering plant	<i>Malva</i>	Mallow sp.
flowering plant	<i>Matricaria discoidea</i>	Pineappleweed
flowering plant	<i>Medicago lupulina</i>	Black Medick
flowering plant	<i>Mentha aquatica</i>	Water Mint
flowering plant	<i>Menyanthes trifoliata</i>	Bogbean
flowering plant	<i>Milium effusum</i>	Wood Millet
flowering plant	<i>Muscari</i>	Garden Grape Hyacinth
flowering plant	<i>Myosotis</i>	Forget-Me-Not
flowering plant	<i>Myosotis sylvatica</i>	Wood Forget-me-not
flowering plant	<i>Narcissus</i>	Daffodils
flowering plant	<i>Narcissus pseudonarcissus subsp. pseudonarcissus</i>	Daffodil
flowering plant	<i>Oxalis acetosella</i>	Wood-sorrel
flowering plant	<i>Papaver</i>	An Orange Poppy; A Yellow Poppy
flowering plant	<i>Pentaglottis sempervirens</i>	Green Alkanet
flowering plant	<i>Phleum pratense</i>	Timothy
flowering plant	<i>Pilosella aurantiaca</i>	Fox-and-cubs
flowering plant	<i>Plantago lanceolata</i>	Ribwort Plantain
flowering plant	<i>Plantago major</i>	Greater Plantain
flowering plant	<i>Poa annua</i>	Annual Meadow-grass
flowering plant	<i>Poa pratensis</i>	Smooth Meadow-Grass
flowering plant	<i>Poa trivialis</i>	Rough Meadow-grass
flowering plant	<i>Populus nigra</i>	Native Black Poplar (female)
flowering plant	<i>Populus tremula</i>	Aspen
flowering plant	<i>Potentilla reptans</i>	Creeping Cinquefoil
flowering plant	<i>Primula veris</i>	Cowslip
flowering plant	<i>Primula vulgaris</i>	Primrose
flowering plant	<i>Prunella vulgaris</i>	Selfheal
flowering plant	<i>Prunus avium</i>	Wild Cherry
flowering plant	<i>Prunus cerasifera</i>	Cherry Plum
flowering plant	<i>Prunus laurocerasus</i>	Cherry Laurel
flowering plant	<i>Prunus padus</i>	Bird Cherry
flowering plant	<i>Prunus spinosa</i>	Blackthorn
flowering plant	<i>Pyracantha</i>	Firethorn
flowering plant	<i>Pyrus communis</i>	Pear
flowering plant	<i>Quercus robur</i>	Pedunculate Oak
flowering plant	<i>Ranunculus acris</i>	Meadow Buttercup

flowering plant	<i>Ranunculus repens</i>	Creeping Buttercup
flowering plant	<i>Rhinanthus minor</i>	Yellow-rattle
flowering plant	<i>Ribes</i>	Currant
flowering plant	<i>Rosa canina</i> agg.	Dog Rose
flowering plant	<i>Rubus fruticosus</i> agg.	Blackberry/Bramble
flowering plant	<i>Rubus idaeus</i>	Raspberry
flowering plant	<i>Rumex acetosa</i>	Common Sorrel
flowering plant	<i>Rumex obtusifolius</i>	Broad-leaved Dock
flowering plant	<i>Salix</i>	Willow sp.
flowering plant	<i>Sambucus nigra</i>	Elder
flowering plant	<i>Scilla</i>	A garden Squill
flowering plant	<i>Scrophularia nodosa</i>	Common Figwort
flowering plant	<i>Senecio vulgaris</i>	Groundsel
flowering plant	<i>Silene dioica</i>	Red Campion
flowering plant	<i>Silene flos-cuculi</i>	Ragged Robin
flowering plant	<i>Solanum dulcamara</i>	Bittersweet
flowering plant	<i>Sonchus oleraceus</i>	Smooth Sow-thistle
flowering plant	<i>Sorbus aucuparia</i>	Rowan
flowering plant	<i>Stachys palustris</i>	Marsh Woundwort
flowering plant	<i>Stachys sylvatica</i>	Hedge Woundwort
flowering plant	<i>Stellaria graminea</i>	Lesser Stitchwort
flowering plant	<i>Stellaria media</i> agg.	Chickweed
flowering plant	<i>Succisa pratensis</i>	Devil's-bit Scabious
flowering plant	<i>Symphoricarpos albus</i>	Snowberry
flowering plant	<i>Taraxacum officinale</i> agg.	Dandelion
flowering plant	<i>Tellima grandiflora</i>	Fringecups
flowering plant	<i>Trifolium dubium</i>	Lesser Trefoil
flowering plant	<i>Trifolium pratense</i>	Red Clover
flowering plant	<i>Trifolium repens</i>	White Clover
flowering plant	<i>Tussilago farfara</i>	Colt's-foot
flowering plant	<i>Ulmus procera</i>	English Elm
flowering plant	<i>Urtica dioica</i>	Common Nettle
flowering plant	<i>Veronica arvensis</i>	Wall Speedwell
flowering plant	<i>Veronica beccabunga</i>	Brooklime
flowering plant	<i>Veronica chamaedrys</i>	Germander Speedwell
flowering plant	<i>Veronica persica</i>	Common Field-speedwell
flowering plant	<i>Veronica sublobata</i>	Pink Ivy-leaved Speedwell
flowering plant	<i>Viburnum opulus</i>	Guelder-rose
flowering plant	<i>Vicia cracca</i>	Tufted Vetch
flowering plant	<i>Vicia sativa</i>	Common Vetch
flowering plant	<i>Vicia tetrasperma</i>	Smooth Tare
flowering plant	<i>Viola reichenbachiana/riviniana</i>	Early/Common Dog-violet
horsetail	<i>Equisetum arvense</i>	Field Horsetail
insect – alderfly (Megaloptera)	<i>Sialidae</i>	An Alderfly
Insect - hymenopteran	<i>Anthophila</i>	A Solitary bee
insect - hymenopteran	<i>Bombus hypnorum</i>	Tree Bumblebee
insect - hymenopteran	<i>Formicidae</i>	An Ant
insect – hymenopteran	<i>Vespula</i> sp.	A Wasp

insect - beetle (Coleoptera)	<i>Calvia quattuordecimguttata</i>	Cream Spot Ladybird
insect - beetle (Coleoptera)	<i>Coccinella septempunctata</i>	7-spot Ladybird
insect - beetle (Coleoptera)	<i>Dytiscidae</i>	Diving Beetle (larva)
insect - beetle (Coleoptera)	<i>Harmonia axyridis</i>	Harlequin Ladybird
insect - beetle (Coleoptera)	<i>Oedemera nobilis</i>	Thick-legged flower beetle
insect - beetle (Coleoptera)	<i>Rhagonycha fulva</i>	Common Red Solider Beetle
insect – bugs (Hemiptera)	<i>Corixidae</i>	Lesser Water Boatman
insect - butterfly	<i>Aglais io</i>	Peacock
insect - butterfly	<i>Aglais urticae</i>	Small Tortoiseshell
insect - butterfly	<i>Anthocharis cardamines</i>	Orange-tip
insect - butterfly	<i>Gonepteryx rhamni</i>	Brimstone
insect - butterfly	<i>Lycaena phlaeas</i>	Small Copper
insect – butterfly	<i>Maniola jurtina</i>	Meadow Brown
insect - butterfly	<i>Pararge aegeria</i>	Speckled Wood
insect - butterfly	<i>Pieris</i>	Whites
insect - butterfly	<i>Pieris brassicae</i>	Large White
insect - butterfly	<i>Polygonia c-album</i>	Comma
insect - butterfly	<i>Pyronia tithonus</i>	Gatekeeper
insect - butterfly	<i>Vanessa atalanta</i>	Red Admiral
insect - caddis fly (Trichoptera)	<i>Trichoptera</i>	Cased caddis fly (larva)
insect - dragonfly (Odonata)	<i>Zygoptera</i>	A Blue Damselfly
insect - dragonfly (Odonata)	<i>Zygoptera</i>	A Dragonfly
insect – mayfly	<i>Ephemeralidae</i>	Blue-winged Olive Mayfly (larva)
insect - true fly (Diptera)	<i>Bombylius major</i>	Dark-edged Bee-fly
insect - true fly (Diptera)	<i>Eristalis</i>	Drone fly
insect - true fly (Diptera)	<i>Tipulidae</i>	A Cranefly
insect - true fly (Diptera)	<i>Volucella pellucens</i>	Pellucid Hoverfly
mollusc	<i>Planorbidae</i>	Ram’s-horn Snail
mollusc	<i>Pisidium</i>	Indet. Pea Mussel
moss	<i>Bryophyte</i>	Mosses
terrestrial mammal	<i>Rattus norvegicus</i>	Brown Rat
terrestrial mammal	<i>Sciurus carolinensis</i>	Eastern Grey Squirrel
terrestrial mammal	<i>Talpa europaea</i>	European Mole

# Appendix 1 – Management work, Bird box locations and Visitor Survey

## Management work carried out in October 2020 and April 2021 – March 2022



Total		Excluding October 2020 date	
540.5	hours	477.5	hours
125	volunteer days	113	volunteer days
25 individual volunteers - incl 4 children			
8 volunteers new to the Wildlife Trust incl 4 children			



## Locations of bird boxes

Wooden bird boxes installed 26/2/2022 in woodland from Blake Street end of site

Letter on bottom of box	Grid reference	What3words
A	SK10366 00761	only.zones.sorry
B	SK10365 00771	dream.crate.tinsel
C	SK10368 00774	steps.candle.ruins
D	SK10349 00764	until.email.payer
E	SK10340 00759	muddy.plays.actors
F	SK10332 00744	major.posed.blows
G	SK10335 00736	dinner.twigs.puppy
H	SK10312 00715	drank.clocks.spit
(no I)		
J	SK10325 00695	funded.soda.curry
K	SK10348 00636	little.spine.list
L	SK10366 00620	latest.summer.puts
M	SK10365 00622	hungry.scrap.rinse
N	SK10367 00613	major.joke.gasp

## Visitor survey results

	Total no. of visits	No. of Hours	Visits per hour	Visits per 12 hour day	Days per year	Total visits per year
<b>Weekdays</b>	97	4	24.25	291	261	75,951
<b>Weekends</b>	102	4	25.5	306	104	31,824

## List of surveys carried out for the production of this plan

- Phase 1 Habitat survey (as per JNCC methodology), with plant species lists, plus recording of incidental species- for details of methodology see <https://jncc.gov.uk/our-work/terrestrial-habitat-classification-schemes/#phase-1-habitat-classification> and <https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf>
- Winter and Summer bird walkover surveys
- MORPH survey – for details of methodology see <https://modularriversurvey.org/morph-rivers/> and <https://modularriversurvey.org/citizen-science-help/>
- Freshwater Invertebrate Network survey – contact EcoRecord or see survey sheets for details

**Appendix 2 – First year work programme** NB activities may need to be amended due to unforeseeable circumstances, weather etc.

	<b>April</b>	<b>June</b>	<b>August</b>	<b>October</b>	<b>December</b>	<b>February</b>
<b>W O R K  P A R T I E S</b>	<ul style="list-style-type: none"> <li>- Weeding of garden</li> <li>- Removal of Variegated Yellow Archangel from patch along Sandhurst Road.</li> <li>- Collect Moschatel propagules (into pots)</li> <li>- Removal of tree guards – from whole site, especially garden and hedge along Blake Street.</li> <li>- Check on newly planted trees</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p> <ul style="list-style-type: none"> <li>- Plants in Flower survey</li> <li>- FIN survey</li> <li>- Bird box survey</li> </ul>	<ul style="list-style-type: none"> <li>- Weeding of garden and any other preparatory work for ‘in Bloom’ visit</li> <li>- Cut back any vegetation growing over paths</li> <li>- Check on newly planted trees, hand weed if necessary</li> <li>- Check on re-growth of snowberry</li> <li>- Check for Himalayan Balsam (especially at Blake Street end) and uproot if found</li> <li>- Collect Yellow Rattle seed and re-sow (depending on timing)</li> <li>- Check JKW</li> <li>- Check VYA on Sandhurst Road and remove any re-growth</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p>	<ul style="list-style-type: none"> <li>- Weeding of garden</li> <li>- Cut back any vegetation growing over paths</li> <li>- Check on newly planted trees, hand weed if necessary</li> <li>- Check on re-growth of snowberry and remove and re-growth</li> <li>- Check JKW</li> <li>- Check VYA on Sandhurst Road and remove any re-growth</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p> <ul style="list-style-type: none"> <li>- Plants in Flower survey</li> <li>- FIN survey</li> <li>- Bird box survey</li> <li>- Butterfly survey</li> </ul>	<ul style="list-style-type: none"> <li>- Weeding of garden</li> <li>- Removal of Variegated Yellow Archangel from patch along Sandhurst Road and patches along watercourse in wet woodland</li> <li>- Ensure view from benches is clear</li> <li>- Take cuttings from female Black Poplar</li> <li>- Dig up Dock and Bramble from meadow areas, as necessary</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p> <ul style="list-style-type: none"> <li>- Plants in Flower survey</li> <li>- FIN survey</li> </ul>	<ul style="list-style-type: none"> <li>- Pruning in garden</li> <li>- Removal of Variegated Yellow Archangel from patch along Sandhurst Road and patches along watercourse in wet woodland</li> <li>- Removal of Laurel – wet woodland and around pool.</li> <li>- Thinning of Ash woodland block on Blake Street</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p> <ul style="list-style-type: none"> <li>- Plants in Flower survey</li> </ul>	<ul style="list-style-type: none"> <li>- Removal of Variegated Yellow Archangel from patch along Sandhurst Road and patches along watercourse in wet woodland</li> <li>- Removal of Laurel – wet woodland and around pool.</li> <li>- Thinning of Ash woodland block on Blake Street</li> <li>- Litter pick</li> </ul> <p>Survey and monitoring:</p> <ul style="list-style-type: none"> <li>- Plants in Flower survey</li> </ul>

		<ul style="list-style-type: none"> <li>- Plants in Flower survey</li> <li>- Meadow survey (DAFOR plus quadrats)</li> <li>- FIN survey</li> <li>- Bird box survey</li> </ul>				
<b>O T H E R</b>	<p><b>April-September</b></p> <ul style="list-style-type: none"> <li>- Weeding of garden</li> <li>- Check JKW and report to Committee if seen.</li> <li>- Check stream visually for pollution and report if seen.</li> <li>- Litter pick</li> <li>- Plants in Flower survey</li> <li>- Bird box survey</li> <li>- Butterfly survey</li> </ul>			<p><b>October-March</b></p> <ul style="list-style-type: none"> <li>- Check stream visually for pollution and report to Environment Agency Pollution line if seen.</li> <li>- Litter pick</li> <li>- Plants in Flower survey</li> </ul>		
<b>E V E N T S</b>	<p>13<sup>th</sup> May</p> <p>Bat and Moth night – Brumbats</p>	<p>TBC: Committee meetings and AGM</p>	<p>26<sup>th</sup> August</p> <p>Bat and Moth night - Brumbats</p>			

