THE SANCTUARY
LOCAL NATURE RESERVE
-
MANAGEMENT PLAN
2023 - 2032

On behalf of
DERBY CITY COUNCIL

September 2022

JAMES FRITH **MCIEEM** **Ecological Consultancy**

1 Ravensnest Cottages Ashover Chesterfield Derbyshire S45 0JP
E-mail: jamesfrith.ravensnest@outlook.com Tel: (01246) 591028

CONTENTS **Page**

Stage 1: Description

1.1 General Information

1.1.1 Location

The area covered by this management plan consists of the 12.25 hectares of Local Nature Reserve (LNR) known as The Sanctuary, which lies on the western bank of the River Derwent adjacent to Derby Arena, 3 km south-east of the city centre, Postcode DE24 8AN, Grid Reference SK 375352.

1.1.2 Summary Description

The LNR is an approximately 12.25-hectare brownfield site lying on former domestic/industrial landfill, and is heavily contaminated. It consists of a mosaic of habitats that have developed naturally as well as some features created to support the bird interest, including a lake, a sand martin bank, scrapes/seasonal pools and gravel beds. It is just 3 km south-east of Derby City centre and is adjacent to Pride Park football stadium and Derby Arena. It is bounded on the east by the River Derwent, on the south by the Derby-London railway line and on the east and north by car parks and roads. The underlying geology is alluvium over river terrace gravels over Mercia Mudstone, all of which is topped by the landfill/made ground with several bunds and a central raised mound over a contaminated waste repository.

1.1.3 Land Tenure

The site is owned and managed by Derby City Council, The Council House, Corporation Street, Derby, DE1 2XJ. There are no tenancy agreements or common rights.

The water and wastewater asset management company Alpheus and its contractors have a right of access to the Water Treatment Works. The Environment Agency has an obligation for groundwater monitoring, and the engineering company Arup need access for monitoring the stability of a storage repository.

1.1.4 Map Coverage

Ordnance Survey 1:50 000 Landranger Map Sheet 128
1:10 000 Sheets SK33 NW and SK33 NE
1:25,000 Pathfinder Map Sheet 832
1:25,000 Explorer Map Sheet 259
Geological Map of Derbyshire 1973 1:10,000
Geological Survey of Great Britain (England and Wales) 1973 1:50,000 Sheet 125
Soils of England and Wales Sheet 3 Midland and Western England 1983 1:250,000

1.2 Environmental Information

1.2.1 Biological

1.2.1.1. Habitat Descriptions

The main habitat types are: open mosaic habitat, short grassland, scrub-invaded tall grassland with tall herb and bramble, and mixed species scrub. There are also scrapes, gravel beds, the lake and margins and the artificial sand martin bank. More detailed descriptions of each habitat can be found in the prescriptions section in Stage 3 under the relevant Compartment heading.

1.2.1.2 Fauna

Site records include over 90 species of birds, the key species being: linnet, reed bunting, skylark, little ringed plover, grey partridge, ring ouzel, meadow pipit, kestrel, wheatear and lapwing.
Mammal records are fairly restricted due to the security fence, but rabbit, fox and weasel have been recorded.
Amphibians supported by the site are common frog, smooth newt and common toad. Other pond species recorded include diving beetle, water scorpion, water skater, water boatman, freshwater shrimp, pea mussel and emperor dragonfly.

1.2.1.3 Geology and soils

The alluvial river gravels that would have formed the geology have been completely replaced by the contaminated soils of past development and landfill. Large-scale earthworks formed the features that now exist. In 2003 the raised waste storage facility was created of contaminated soil scraped from the whole Pride Park area. Imported soil of unknown origin was used to cap the entire area.

1.2.2 Cultural

1.2.2.1 Land Use

Part of the National Cycle Network Route 6 runs along the banks of the Derwent, within the eastern part of the site. The remainder of the site is security-fenced and was designated as a Local Nature Reserve for the bird interest in 2006, managed with the twofold objectives of nature conservation and public enjoyment. The LNR was itself created on a Local Wildlife Site which had a waste mound built to house contaminated soil from the Pride Park development site. The area around this had open mosaic grassland with nesting skylark, meadow pipit, reed bunting, lapwing, grey partridge and snipe.

1.2.2.2 Public Interest

The public are excluded from the site at all times due to many parts of the site still being classified as contaminated and to avoid disturbance to nesting birds. A 2-metre high chain-link fence surrounds most of the site, except for the riverside strip, Compartment 6. There are 4 viewing platforms, 2 of which have ramped access, in the adjacent public car park. These give views across parts of the site, and have interpretation panels describing the ecological interest.

Stage 2: Evaluation and Objectives

2.1 Conservation status of the site

The Sanctuary is Derby's first bird reserve. The site was formerly a Wildlife Site known as Gas Works Tip (DE022), and was designated for the botanical interest of the rough grasslands present. It was then developed specifically as a bird reserve to protect ground-nesting species and renamed and formally opened in 2004. The site was declared a Local Nature Reserve (LNR) in June 2006, one of 10 in the city.

2.2 Evaluation of the features

The site covers an area of just 12.25 hectares, with several habitats within the site. Most of these are relatively species-poor but they should be seen in terms of their potential for habitat creation and enhancement and for the potential to support important bird species. The open mosaic habitat is the most interesting botanically, although this is rapidly succeeding to taller scrubby grassland.
The habitats on site include the UK BAP habitat: Open Mosaic Habitats on previously developed land. The pond is a Lowland Derbyshire BAP habitat.

The site is of great importance for birds with a considerable number of locally and nationally important species having been recorded. Regular records of birds have been made since before the site was designated as a local nature reserve, both by independent birdwatchers and members of the Derbyshire Ornithological Society. This has revealed 93 species recorded at some time, of which 25 are considered resident/breeding. The four bird species that have always been considered of special significance at The Sanctuary are skylark, lapwing, little ringed plover and reed bunting. All these have been shown to use the site as a breeding habitat at some time. Other species of note recorded since the site was opened as a bird reserve include Dartford warbler (the only County Record), stonechat, whinchat and curlew sandpiper.
Skylark and lapwing are both UK BAP Priority Species as well as being listed on Red List in the RSPB Birds of Conservation Concern list of 2021. Little ringed plovers are protected under Schedule 1 of the Wildlife & Countryside Act. A large colony of sand martins has been using the artificial nesting bank close to the lake. Also included are a number of other species of conservation concern including resident song thrush, dunnock, green woodpecker, house sparrow, kestrel, meadow pipit, starling and willow warbler. The site is known to be important for passage and over-wintering species, including wheatear, whinchat, common and black redstarts, jack snipe, fieldfare, redwing, lapwing and, since 2012, ring ouzel.

2.3 Management Objectives

2.3.1 Objective: To maintain the existing habitats in favourable conservation status and enhance them where possible

See Plan 1 Site Boundary and Compartments for compartment numbering.

A major objective is that the majority of Compartment 1 be developed as the principal open area for ground-nesting birds on the reserve - lapwing, skylark & little ringed plover. The aim is to create a gently undulating landform across Compartment 1b with occasional damp depressions and shallow pools as well as some small areas of exposed gravel. It is proposed using the existing earth bund to create some new scrapes/shallow wet depressions as habitat to support ground-nesting birds. Some of the existing depressions could be also be lined to provide further shallow water features. Compartment 1a should also be kept open both for the value of the Open Mosaic Habitat and as further bird nesting habitat. The grassland in both halves of the compartment should be mown and stands of rush topped to maintain it as open short grassland and control the competitive species, and the scrub and saplings that are rapidly colonising.
Favourable conservation status relies on minimal opportunities for predators, which will need scrub to be cut down to ground level, the nest box poles relocating and some deterrents used on lights and fence posts. The perimeter fence must be kept secure.

In Compartment 2 the aim is that it be managed as another area for ground-nesting birds, principally skylark, by controlling the teasel and bramble on the mound top and the northern slopes so that it is more open for spring nesting. Elsewhere on the mound maintain as it is as good foraging and nesting habitat. Minimise predator opportunities by moving the nest box pole.

In Compartment 3 the intention is to restore the original mosaic of habitats and maintain them in the ideal condition. With this in mind, the lake islands are to be cleared of vegetation, the dragonfly ponds restored to bare gravel, the sand martin bank top cleared of vegetation and some trees round the lake cleared.
Another important aim is to restore the views from the viewing platform, by some tree clearance.

The objective in Compartment 4 is to provide bird, bat and invertebrate interest by maintaining the boxes already provided.

In Compartments 5 and 6 the principal feature is the mosaic of bramble, tall herb and buddleia providing habitat for invertebrates, and adjacent to an open, sunny track. The objective is to maintain as is and enhance Compartment 6, the riverside track, by creating annually mown grassy ‘scallops’ into the scrub alongside the track.

2.3.2 Objective: Capital Projects for Habitat Creation

In Compartment 3 the aim is to develop a more interesting habitat immediately in front of the viewing platform by creating a wildflower meadow.

2.3.3 Objective: To carry out further survey, monitor key species and formalise the record-keeping

There are many important gaps in our knowledge of the status of other key species of fauna on the site, namely: bats; invertebrates including butterflies, moths and dragonflies; mammals and reptiles. New surveys should be initiated to cover gaps in our knowledge.

All species records should be collated and added to a centrally held website, curated by one person, and to which anyone can add their observations.

It is also important to carry out regular monitoring of species and habitat condition to inform future management.

2.3.4 Objective: To develop the use and interpretation of the site for public enjoyment and education, within the existing access constraints

The Sanctuary is very close to the centre of Derby and also has good access from the Riverside Path along the River Derwent. This, together with its ability to be viewed safely and easily from a public car park, provides an opportunity to communicate a range of conservation messages to the general public. The main objective should be to capitalize on this and extend the use of the site.

This should include:

- On-site interpretation.
- Website and use of social media.
- Involvement of volunteers.

2.4 Description of Optimal State for the site

The ideal layout is shown on Plan 2, the Optimal State and Management Summary map.

The ideal condition of The Sanctuary is a long-term continuation of secure, undisturbed habitats, with each habitat maintained in the best condition for breeding and non-breeding birds and for biodiversity.
The perimeter fence would be maintained as a secure barrier to unauthorised access and predators.
The open mosaic habitat (Compartment 1a) and open grassland (Compartment 1b) and would be maintained as open habitat for ground nesting birds, enhanced by additional scrapes and maintained scrub-free and with no opportunities for predators.

In Compartment 2, on top of the waste storage mound, there would be an open short grassland area maintained in the long term free of encroaching scrub and bramble. The storage mound slopes would be maintained as dense bramble for breeding birds.
In Compartment 3 the mosaic of habitats would be maintained including the lake and its margins, stands of reed and tall sedges and scattered willow scrub. The small ponds would hold enough water for long enough to support dragonfly species. The grassland between the viewing point and the lake would be an attractive wildflower area, with banks of limestone quarry spoil to attract breeding butterflies. The sand martin bank would be maintained in a suitable condition for breeding sand martins with a bare open top and a row of anti-predator spikes that succeed in discouraging predators.
Compartment 4 the water treatment works would offer a range of bird, bat and invertebrate habitats.
In Compartment 5 the bramble, tall herb and buddleia on the open, sunny track would be maintained in an ideal mosaic of tall and short vegetation as invertebrate habitat.
Compartment 6 the riverside corridor would be maintained with mown grassy ‘scallops’ into the scrub alongside the track.

Stage 3: Prescription

3.1 Project register and prescription

3.1.1. Habitat Management

Compartment 1 The Open Grassland

Description: This compartment is composed of some 4.5 hectares of short rabbit-grazed grassland that developed since the original 1980s landfill. It should be treated as 2 sub-compartments: Compartment 1a is open mosaic habitat that developed after extensive earthworks in 2014. Here the Open Mosaic Habitat has a more open sward with some bare areas and early successional vegetation including mosses. Species include purple fleabane, sheep's sorrel, yellow-wort, red fescue, ribwort plantain, creeping cinquefoil and white clover, in a patchy distribution with wetter rushy areas and is becoming colonised by bramble and scrub. A soil bund of up to 2 metres in height runs across this compartment, pushed up during the 2014 earthworks. Compartment 1b is short grassland with dominant red fescue with smaller amounts of common bent, Yorkshire-fog and rough meadow-grass. There are patches where creeping cinquefoil, silverweed or creeping buttercup are frequent. Ribwort plantain, selfheal and white clover are occasional. Common centaury, red bartsia and yellow-wort occur rarely. The slightly wetter depressions have tussocky rushes up to 80 cm occurring in mosaic with the short grassland. Here hard rush is dominant with some small patches of reed canary-grass. 1b is becoming colonised by bramble, scrub and rushes.

Compartment Objectives:

The overall aim is to maintain the open areas for key breeding bird species, many of which need open, undisturbed habitats, while keeping active management to a minimum and with no excavations below ground level.

- To develop and maintain as the principal open area for ground-nesting birds on the reserve, mainly lapwing, skylark & little ringed plover. The aim is to create a gently undulating level surface with occasional damp depressions, shallow pools and small areas of exposed gravel and pebbles. It should be free of predator perches and securely fenced to prevent access.
- To maintain the area of open mosaic habitat that has developed extensively since the earthmoving episode for its botanical interest and as a UK BAP habitat (Open Mosaic Habitat on Previously Developed Land).
- An important objective should be to maintain areas of bare ground within the open mosaic habitat, as these create warm microclimates for invertebrates and nesting opportunities for ground-nesting birds. Maintain the low nutrient status of the site with no inputs and no storage of materials.
- Aim to ensure that there is always some over-wintering invertebrate habitat with flower heads, seeds, taller stems and leaf litter present by minimal management; just enough to prevent scrub colonisation.
- Renovation of the Interpretation Boards to reflect the changes.

Prescriptions:

- There is a substantial earth bund across this area that was pushed up during landscaping works for the proposed cycleway that was later abandoned. The part of the bund lying at the foot of the central mound should be levelled by grading it into the bottom of the mound. The other parts of the bund should be levelled and the material used to re-landscape Compartment 1b, the eastern half of the compartment, to produce a patchwork of wetland features. The bund material will lie on top of the existing soil level, which will not be disturbed. This would not involve any digging, as the bottom of the pools created would be the existing ground surface, but would need the turf and plant litter removing to a depth of 10 cm. This will create a single open level area of gentle 'ridge and furrow' topography, with some of the wetter hollows lined to produce shallow water pools, each one some 10cm to 20cm deep and 3m x 15m in area. Install a butyl liner over a geo-textile and cover with a thin layer of imported topsoil.
- As part of this re-landscaping several new gravel/pebble beds can be created as Little Ringed Plover nest habitats in Compartment 1a. These will have a geo-textile underlay and up to 15 cm of loose gravel on top.
- Minimising opportunities for predators, including birds and foxes, will be essential:
    - All existing scrub – goat willow, grey willow, buddleia, rose etc should be cut to ground level and the stumps treated with herbicide, then ground down with a stump-grinder so they can be mown over. Retain a band of scrub some 20 metres wide along the riverbank margin, as a screen.
    - The kestrel box pole will be removed and relocated to the south of the mound.
    - Deterrents can be added on top of the lighting poles on the edge of the car park, and possibly on top of fence posts too to prevent crows perching.
    - A more robust type of fencing around the entire site is needed to minimise the chances of foxes getting in. A predator-proof specification should be used and the fence dug in to the ground.

- Routine management will be limited to mowing the grassland and topping rushes and other tall vegetation once a year at the end of the summer, to keep the cover open and the vegetation short in spring. There should be no need to collect the cuttings. This should control the competitive species, scrub and saplings that are rapidly colonising.
- Scrapes should be designed so they can easily be mown around, the exact positions to be decided on site. Rush cover should be kept at or below 10%.
- Collect litter regularly.
- The viewing panels all need the signage renewing and updating, and the buddleia in front of them removing for visibility. A new access ramp

is needed and access from the car park should be available at all times by leaving a gap in the car parking.
- Buddleia should be retained or planted at the sides of the viewing panels to screen them.

Compartment 2 The Waste Depository Mound

Description:

This compartment covers an area of some 3 hectares, and consists of a raised circular mound containing contaminated soil under a sealed membrane. It was constructed and hydra-seeded in 2003.

It should be treated as 2 sub-compartments – 2a the flat top and northern slopes adjacent to Compartment 1 are more open and kept short by grazing rabbits. 2b consists of the other sloping sides of the mound (plus former Compartment 5b from the 2011 Management Plan) that have a high cover of dense bramble.

Much of 2a is kept short by rabbit grazing, with the height varying from 2 cm to 15 cm. The sward is grass-dominated, made up mostly of red fescue and common bent. The herb component is not diverse, with common ragwort, teasel and creeping thistle locally abundant, and bramble suppressed by grazing pressure. 2b has dominant bramble in mounds in places, and tall grassland with abundant teasel plus rosebay willowherb, creeping thistle, nettle and some hawthorn.

Compartment Objectives:

Compartment 2a the flat top of the mound and the northern slopes adjacent to Compartment 1: This should be managed as another area for ground-nesting birds, principally skylark.

Compartment 2b the other sloping sides of the mound: Maintain as is, with bramble, rough grassland and teasel as habitat for nesting and foraging birds. Allow to develop as a thicker band of bramble to discourage access into the open areas of Compartment 1.

Prescriptions:

Compartment 2a. Control the teasel and bramble that are now quite abundant and making the area sub-optimal. Mow or strim this area in late autumn or winter so that it is more open for spring nesting. This could be a volunteer task.

Compartment 2b. This now has quite a high cover of bramble as well as rough grassland with abundant teasel. Maintain the current cover of bramble, rough grassland and teasel with minimal intervention. Relocate the nest box pole to the base of the eastern slope.

Compartment 3 Lake Area

The lake, islands, grassland, gravel beds and sand martin bank were created following the construction of the raised waste storage facility in 2003. This compartment has probably shown the greatest development of vegetation since the original landscaping – trees now surround the lake, *Phragmites* beds have developed, the 'dragonfly ponds' are full of vegetation, the plover

gravels have been colonised and the top of the sand martin bank is now mostly bramble.

Description:

Lake and margins

The lake was created 2 metres deep at the deepest and with bare islands topped with gravel to discourage rapid plant colonisation. Unfortunately the cover on the islands is now approaching 100% and consists of bramble, great willowherb, creeping thistle and reedmace with tree species including willow scrub and birch. The lake surrounds now have mature willows, brooklime, purple loosestrife, common reed, hard rush and great willowherb. Vegetation in the lake itself looks to consist mostly of *Potamogeton* species and ivy-leaved duckweed.

Short grassland

This is the most widespread habitat in this area, and was created by seeding, following creation of the lake in 2003/4. It is grazed by rabbits to a sward height typically of up 5 cm. Red fescue is abundant with creeping buttercup, creeping cinquefoil, common sorrel, dandelion, ragwort and creeping thistle, with hard rush and hairy sedge in the wetter areas. The area between the viewing platform and the lake was sown with wildflower seed mix, but this is now indistinguishable from the rest of the area.

Tall herb

This habitat occurs in places throughout the compartment and has bramble, teasel, nettle and creeping thistle with buddleia and briar rose.

Gravel beds

These were created using imported material over a membrane with the aim of providing an open substrate for ground nesting birds. The membrane has limited plant colonisation to an extent but a few colonising plants such as creeping thistle, common nettle and rosebay willowherb.

Scrapes/dragonfly ponds

Three scrapes were created, but these are now completely covered by dense vegetation and fringed by grey willow, bramble, common reed, purple loosestrife, and hard rush, and only visible as slight depressions some 8m by 8m.

Sand martin bank and quarry spoil

The sand martin bank is basically a vertical breezeblock ‘cliff' inset with pipes to provide nest sites. The area on top of the sand martin bank was covered in imported limestone quarry material and has since been rapidly colonised and is now mostly dense bramble and teasel. The gravel at the base of the structure is now becoming covered in bramble, nettle, teasel, Yorkshire-fog, creeping buttercup and tall herb.

Compartment Objectives:

- Restore the views from the viewpoint.
- Restore the existing habitats by restoration of the dragonfly ponds and plover gravels.
- Create new habitats by creation of new dragonfly ponds.
- Develop a more interesting habitat immediately in front of the viewing platform by creating a wildflower meadow.
- Maintain the large pond so that it can support breeding amphibians, and has some surrounding vegetation that provides a terrestrial amphibian habitat.
- Maintain the sand martin bank nesting tunnels and keep the overall structure as predator-free as possible by vegetation management at the base and on top. Install a row of anti-predator (or anti-pigeon) spikes along the top of the front edge of the wall.

Prescriptions

- Clear some trees between the pond and the viewpoint and treat the stumps with herbicide. Also cut the *Phragmites* in the north-western pond corner to ground level annually in spring.
- Manage the large pond so that it has some open water, enough depth of water in spring and early summer to support breeding amphibians, and some surrounding vegetation providing a terrestrial amphibian habitat.
- Restore the plover gravels by removal of the existing vegetation and maintaining as vegetation-free.
- Scrape out and empty the sand martin nest pipes each winter.
- Maintain the base and top of the sand martin bank as vegetation free: Clear the brambles and other vegetation for at least 5 metres at the base of the cliff and at least 2 metres along the top to help prevent access by rats, weasels and other predators.
- Restore the existing dragonfly ponds by removing the vegetation over the central third of the pond. Maintain by regular hand-removal of a proportion of the vegetation.
- Create a new dragonfly pond closer to the viewpoint. Use a small mini-digger just scraping off the vegetation and upper layer of turf, installing a new liner and covering with a thin layer of imported topsoil.
- To create the wildflower meadow, scrape off existing vegetation and turf to a depth of 5 cm, import a layer of topsoil (5 to 10 cm) and seed with a wildflower mix. Cut and remove cuttings annually at the end of summer.
- Maintain this area by annual hand scything - cut and remove the vegetation annually at the end of summer, which could be a volunteer task.
- Fund a 3-year Clerk of Works for ongoing ecological advice on the substrate to import, the positioning of the scrapes and how and what to sow etc.

<u>Compartment 4 The Water Treatment Works</u>

Description:

This compartment consists of concrete buildings that were included in the LNR as they provide potential for bird and bat habitats, as boxes for house

martin, swift, bats, house sparrow, blue tit and great tit were installed and lacewing and bumble bee boxes also provided.

Compartment Objectives:
- Create suitable house sparrow nest sites: House sparrows are known to be resident on site, and nest colonially.
- Maintain the bird, bat and insect boxes provided.
- Monitor the usage of the artificial habitats provided to inform ongoing management.

Prescriptions:
- Clean out and repair the bird, bat and insect boxes provided, replacing them with new if beyond repair.
- Install a group of 4 or 5 house sparrow nest boxes in a different location on the buildings.
- Monitor for usage and check for maintenance all the bird boxes, bat boxes and insect boxes.

Compartment 5 Access Track

Description:
This is a narrow strip of land with a vegetated earth bund and a stone access track running along the site's western and southern boundaries. There is a mixture of tall herbs on the margins and short grassland on the trackway. The tall herbs include creeping thistle, teasel, rosebay willowherb, great willowherb and nettle. Behind are banks of bramble with briar rose, buddleia and hawthorn. The track is bare stone in places, the short grassland has fine grasses and a few herbs including creeping cinquefoil, common mouse-ear, ragwort and teasel

Compartment Objectives:
Maintain as invertebrate habitat enhanced by the creation of micro-climates in some new grassy scallops.

Prescriptions:
Maintain as it is with minimal intervention, but for developing some mown grassy scallops into the scrub alongside the track. Mow these annually in autumn and stack up the cuttings on the edge of each small clearing.

Compartment 6 Riverside Corridor

Description:
This strip of land is outside the perimeter fence but within the LNR boundary. It consists of a close-mown path flanked by mounds of bramble up to 2 metres high with nettle, teasel, buddleia, elder, rosebay willowherb, briar rose and willow species.
The grassland of the path is both mown and rabbit-grazed and has frequent red fescue, silverweed and creeping cinquefoil with cowslip and self heal. Each of the inspection chambers at the side of the path has a cleared area

around it. The edges of the path have creeping thistle, comfrey, great willowherb and Himalayan balsam.

Compartment Objectives:
While not particularly species-rich, this area provides a sheltered place for invertebrates and nest sites for birds. The objective should be to maintain as it is and enhance by increasing the 'edge effect' by the addition of scalloped edges.
The Himalayan balsam should be controlled as far as possible, so it does not pose an erosion threat close to the riverbanks, or suppress native plants, but it is likely that this non-native invasive species will spread from the river annually.

Prescriptions:
Add 8 or so mown scallops on each side of the path. The 4 inspection chamber sites are cleared anyway. Mow annually in autumn and stack up cuttings on the edge of each clearing.
Control Himalayan balsam by hand-pulling early enough in the year, probably in late May or early June, before there is any chance of it seeding. If possible, bag and remove the cuttings as the balsam can re-root if stacked.
Leave all buddleia shrubs.

Whole site:

- Update on-site interpretation, information leaflets and the email list of Sanctuary supporters.
- Update (or restart) and then maintain Social Media and the site's website to add sightings.
- Consider offering events for the wider community such as organized site tours.
- Encourage and inform Media coverage of special events such as the annual arrival of sand martins.
- Volunteer bird-watchers regularly observe the site but there is no formal 'Friends' group - create such a group for the Sanctuary to co-ordinate management work, fund-raise and promote an understanding of the site's wildlife value.
- Create links with Derbyshire Wildlife Trust and Derby Green Spaces Forum, a partnership whose aim is to work with local people and communities to enable everyone in the City to have access to wildlife, for their enjoyment and for protection and improvement of biodiversity.
- Collect litter regularly.

3.1.2 Capital Projects for Habitat Creation

In Compartment 3 the aim is to develop a more interesting habitat immediately in front of the viewing platform by creating a wildflower meadow:

- Scrape off existing vegetation and turf to a depth of 5 cm.
- Import a layer of topsoil (5 to 10 cm), spread evenly and cultivate to provide a seedbed.

- Seed with a suitable wildflower mix appropriate to the characteristics of the imported topsoil.
- Initiate hay meadow management by cutting and removing the vegetation annually at the end of summer.

Also in Compartment 3 install a suitable swift nesting tower.

- Adopt an existing design that has been shown to be successful (e.g. at The Avenue DWT Reserve).
- It should incorporate a solar-powered sound system to draw in birds.
- Install anti-predator spikes on the roof.
- Ideal location might be between the Water Treatment Works and the mound.

3.1.3 Carry out further survey, monitor key species and formalise the record-keeping

The site is designed and managed for birds, which have been well recorded for many years, but there are many important gaps in our knowledge of the status of other key species of fauna on the site, namely: bats; invertebrates including butterflies, moths and dragonflies; mammals and reptiles. New surveys should be initiated to cover gaps in our knowledge.

An initial pond survey should be done, then annual Predictive System for Multimetrics (PSYM) surveys of the large pond carried out in order to provide updated information to enable monitoring and review of the effectiveness of management work. The PYSM is a standard method that provides an assessment of the ecological quality of a site compared to ponds nationally. It requires basic environmental information including identification of the plant species and invertebrate groups found at the site.

It is also important to carry out regular monitoring of species and habitat condition to inform future management. All species records should be passed to the relevant County Recorder for that group. Any new habitats such as new scrapes should be monitored to determine their use and to assess them for maintenance and aftercare. All species records should be collated and added to a centrally held website, curated by one person, and to which anyone can add their observations.

3.1.4 Develop the use and interpretation of the site for public enjoyment and education, within the existing access constraints

To reflect and interpret the changes the site has seen over the last 15 years it is important to renovate the access facilities and update the Interpretation Boards. This should include boards inside the Arena and in the car park.
To increase the involvement of volunteer groups: volunteer groups and work parties should meet on a regular basis to carry out practical conservation tasks and monitoring to ensure that the requirements of the Management Plan are kept implemented.

To maintain a facility for further habitat-creation experiments, monitoring and research.
Update or restart and then maintain social media and the site's website to add sightings. Update on-site interpretation, information leaflets and the email list of Sanctuary supporters. Consider offering organized site tours.
Encourage and inform Media coverage of special events such as the annual arrival of sand martins.

3.2 Natural and Man-induced trends

Natural Trends

Nothing remains the same for long in the natural world, and in the absence of management, the tendency will be for grassland and open mosaic habitat to decline as scrub and bramble colonises, a relatively rapid process already underway in some areas. The speed of this occurring will depend partly on the rabbit population levels, where a drop in rabbit numbers will allow faster colonisation by invasive species. This steady invasion by hawthorn, bramble and goat willow if left unmanaged will result in large areas of scrub becoming locally dominant and shading out the grassland and wetland species. The gravel beds created to encourage little ringed plover to nest are already heavily colonised by ruderals and saplings of scrub species.
Tall emergents and willow scrub will colonize the lake margins, islands and scrapes, ultimately resulting in dense vegetation cover. This process has already taken place very rapidly in some areas.

Man-induced trends:

Due to climate change, the following impacts may occur in Derby over the next decade: increased summer temperatures, milder winters, reduced summer rainfall and increased winter rainfall. Harmful impacts of climate change can include extreme weather events like high winds, heat waves and severe rain or snow. The site might be vulnerable from an extreme flood event from the River Derwent. Birds may have to change their nesting and egg-laying times as a response to changing timing of availability of food for their young. Migratory species seem particularly vulnerable, while new ones may appear. Breeding birds may move further north than ever before. All this adds up to a huge reshuffling of birds in the UK. Swallows, whitethroats and warblers stay longer before migrating. Some shorter-distance migrators may now stay all winter instead of migrating at all. Some species of common birds tolerate a range of temperatures, so may not be affected. The weather extremes caused by climate change cannot yet be fully predicted.
The current restricted access is having little or no impact on the wildlife interest and is effective at maintaining favourable conditions for breeding birds including ground-nesting species. There is a low level of unauthorised access, including people with dogs, but this should not become a problem if the perimeter fence is regularly monitored and maintained.
The hydrology of the site is very important. This is controlled through the operation of the pump at the water treatment works and monitored through a series of boreholes. This is a stable regime, but it may be decided for the benefit of the site in future to raise the water table and make the site wetter.
Another potential threat caused by human activity is the introduction of non-native species.

3.3 Management Constraints

3.3.1 Legal obligations:
The Wildlife and Countryside Act 1981 and subsequent amendments has relevant sections and must be consulted, for example there is an obligation not to disturb or damage protected species including badgers, bats and newts as well as birds in the nesting season.

Bats All bat species and their places of shelter (roosts) are legally protected and is is an offence to kill, injure or disturb a bat or destroy, damage or obstruct a bat roost. Planning authorities have a legal obligation to consider whether bats are likely to be affected by a proposed development. This will become relevant if any tree work is considered, plus the sand martin bank and other structures should be checked for the presence of bats. New and existing bat boxes must only be checked by a licenced ecologist.

Amphibians and Reptiles There are 6 native species of reptiles and 6 native amphibians in the UK. Reptiles are not known to be on site, but can easily be missed if not specifically surveyed for. Great crested newts have the highest protection, while common lizard, grass snake, slow worm and adder are protected by law against killing, injuring and sale.The four widespread species of amphibian - smooth and palmate newts, the common frog and common toad, are protected only by Section 9(5) of the Wildlife and Countryside Act 1981. This prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy. Collection and keeping of these widespread amphibian species is not an offence.

Birds It is an offence under the Wildlife & Countryside Act 1981 to intentionally disturb any bird on its nest unless undertaken as part of some other authorised activity. Little ringed plovers are a Schedule 1 species, having even greater protection under the law, requiring a licence to disturb or even photograph on their nest.
Report all trespass incidents to Derbyshire Police immediately, requesting an incident number.

Disability Discrimination Act 1998. Provisions under this Act will need to be considered as regards signs, information media, viewing platforms and volunteer and other opportunities.

Planning Permission This may be needed for operations considered as engineering works such as constructing the new scrapes and pools.

Health and Safety
Anyone visiting the site should sign in with the Car Park Security Office on arriving and leaving.
The Sanctuary was established on an old refuse tip and is still officially regarded as contaminated land. For practical reasons, active works need to be kept to a minimum and protective gloves should be worn while working.

No excavation of ponds or scrapes is permitted without prior consultation with The Environment Agency. There should be no excavation tree planting or heavy structures without approval from Alpheus, ARUP engineers and Property Service due to the risk of damage to the membrane.
All volunteers should be made aware that they are working in a former toxic landfill site, and to take appropriate care. Any work groups should always undertake a risk assessment, be given appropriate training and clear safety instructions and have a first-aid certificate holder present.
Even thought it poses a low risk to people, avian influenza or 'bird 'flu' must be considered as it is a seasonal occurrence in the UK, seemingly brought by migrating birds. Dead birds found must be reported to the DEFRA helpline and dead or sick birds must not be touched. All protection zones must be avoided. It is strongly recommended that birds are not handled during an epidemic.
There are Health and Safety considerations when working near water. Several diseases including Weil's disease must be considered in any work near water, as the bacteria which cause it can be present wherever rodents are found. Weil's disease can be dangerous and in extreme cases can result in serious illness or death. The infection is contracted mainly through open cuts and abrasion in the skin. Make sure any cuts are covered beforehand with a waterproof plaster or waterproof clothing. If blue-green algae or visible pollution is present, postpone the task. Tetanus vaccinations must be up to date. There should be no lone working in or near water.
It is hoped that COVID-19 restrictions do not cause significant limitations to site access, but all Government regulations must be observed, and co-workers protected. The likelihood of COVID-19 transmission to and from bats remains unknown, so everyone undertaking surveys should take precautions where handling bats is required. If a bat worker shows symptoms of COVID-19 or has been in contact with a person with symptoms, they should not carry out any bat survey or handling of animals. When entering a roost or coming into close proximity to bats, effective measures of hygiene must be applied: wear single-use gloves (over handling gloves if needed) and cover mouth and nose with a face mask. Strict hygiene procedures should be followed, e.g. washing hands and disinfecting equipment used.
Guidance for all contractors and site visitors should be prepared.
The Occupier Liability Act imposes an obligation to ensure that every reasonable care is taken to remove any risk to visitors and trespassers alike.
There is a legal obligation to consider all relevant byelaws.

Consultations: The Environment Agency should be consulted on all works affecting a watercourse or within 50m of one, and must be consulted prior to constructing any new pools, ponds or scrapes.

3.3.3 Cost

Renewal or maintenance of the perimeter fence will need an annual budget to allow for management of this vital infrastructure. Once the works are completed, The Sanctuary will probably require a relatively low level of input, but it does need a budget in order to ensure the management plan is implemented and the site is maintained at its optimum.

3.3.4 Knowledge. There is a lack of up to date information about most species, as only birds and terrestrial vascular plants have been comprehensively recorded. This makes planning for wildlife difficult in the long term and key species may have been missed.

3.3.5 Site security and access restrictions Continuous disturbance by the general public is not an issue as there is a perimeter security fence allowing no public access. Many of the breeding birds are ground-nesting species and are vulnerable to disturbance. Access to The Sanctuary must therefore be restricted even more than normal during the nesting season between mid-March and early July. Only access for essential maintenance, bird ringing or survey tasks will normally be permitted. Derbyshire Police advise that all unauthorised intrusions onto The Sanctuary to be reported to them immediately, most importantly during the bird-nesting season.

3.3.6 Practical management constraints:
There should be no tree planting on the site, and no heavy structures should be placed on it without approval from Alpheus and ARUP engineers, due to the risk of damage to the contaminated waste material membrane. ARUP surveyors need to make annual checks of the mound for stability. No fires are permitted.
Derby City Council has an obligation to take borehole samples regularly from across the entire landfill site and the waste mound has to be surveyed annually to ensure its integrity and stability. Companies contracted to do this should be requested to avoid the period March – July. No vehicle is permitted to drive over the plover gravels at any time and if Little Ringed Plover breed here, the sampling companies must be contacted immediately and asked to keep site disturbance to an absolute minimum.

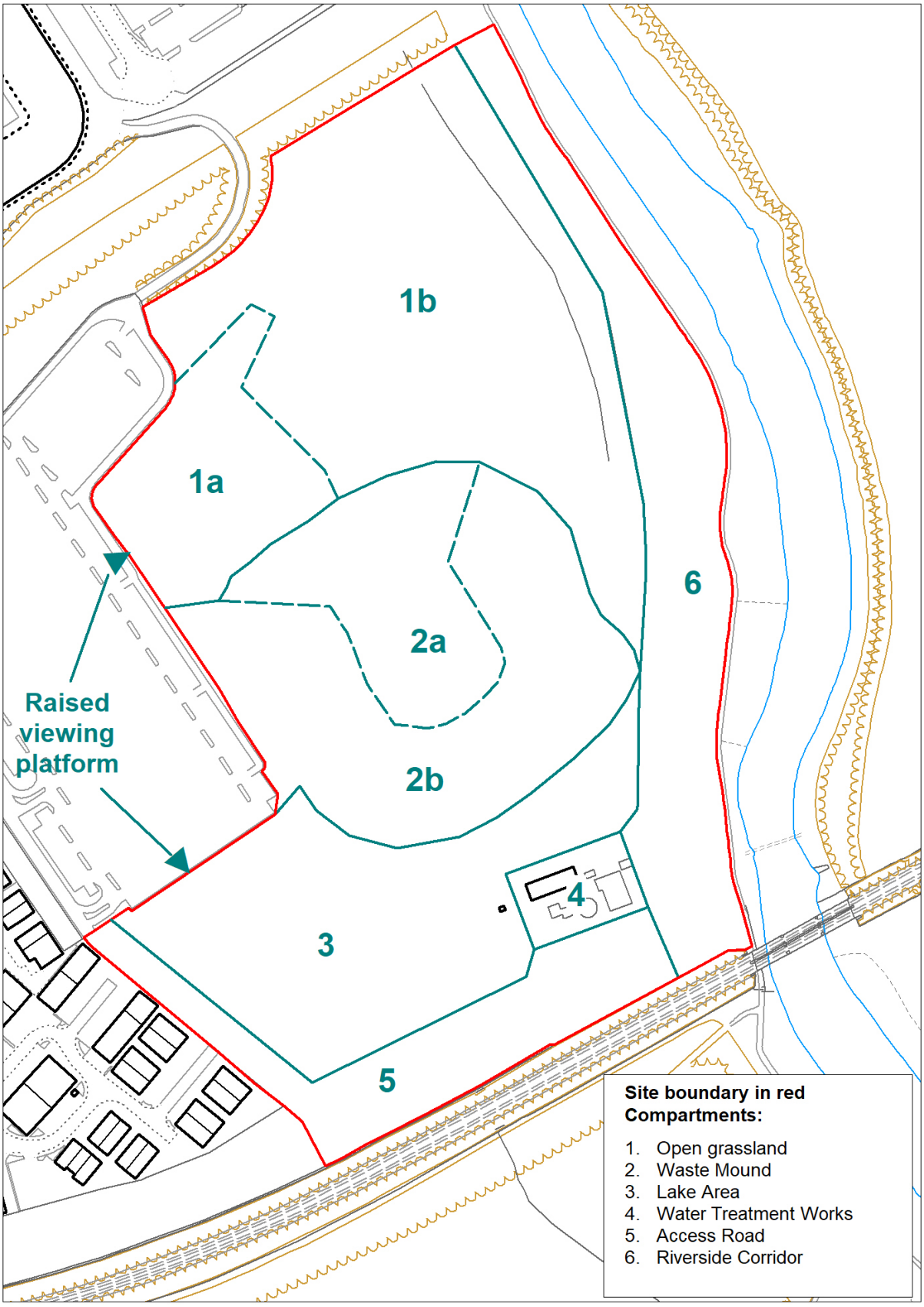
Unlike most of the LNRs in the city of Derby, The Sanctuary has no formal management group or 'Friends' group to undertake the routine tasks, such as recording, site management and site interpretation, which essentially keep most nature reserves running.

Table 1. 10-YEAR WORK PROGRAMME

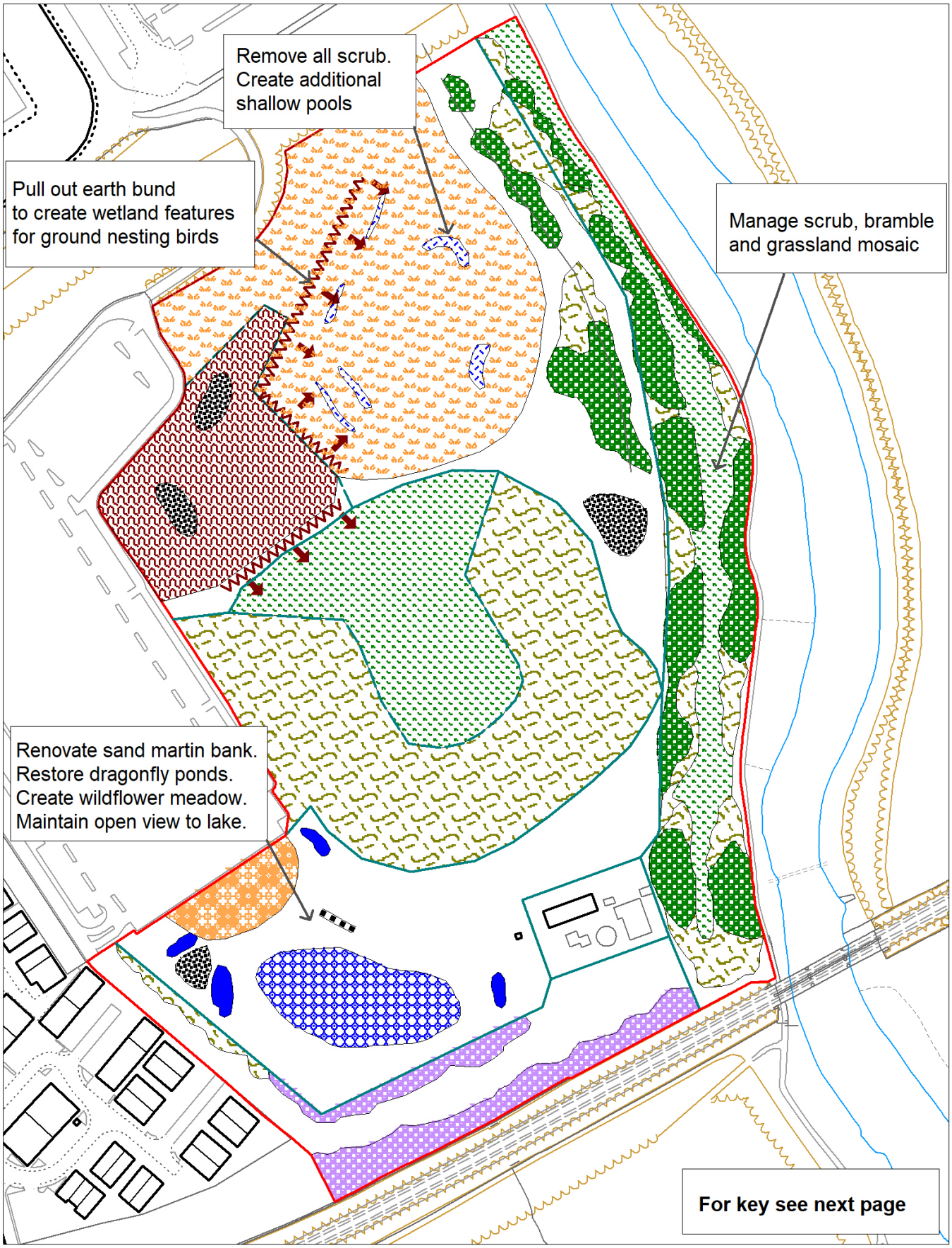
Compartment	Management Prescription	Priority		1	2	3	4	5	6	7	8	9	10
		Essential	Desirable										
Compartment 1 The Open Grassland	Landscape area to produce scrapes, pools and gravel beds suitable for ground-nesting birds.	●		✓									
	Remove existing scrub in area landscaped for ground-nesting birds. Remove stumps or treat with herbicide.	●		✓		✓		✓		✓		✓	
	Remove kestrel nestbox pole (and re-site to south of the Mound.)	●		✓									
	Install anti-predator spikes on adjacent lighting poles.	●		✓									
	Ensure fencing is fully predator-proof (around entire site). Renew poor sections where necessary.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Mow grassland and top rushes at end of summer.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Update signage.	●		✓									
	Plant Buddleia to screen viewpoint.		●		✓								
Compartment 2 The Waste Mound	In 2a mow or strim teasel and bramble during winter.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	In 2b relocate nest box pole at base of slope.		●	✓									

Compartment	Management Prescription	Priority		1	2	3	4	5	6	7	8	9	10
		Essential	Desirable										
Compartment 3 The Lake Area	Clear trees between viewing platform and the lake to restore views. Treat stumps.	●		✓					✓				
	Cut reeds between viewing platform and the lake to restore views.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Restore plover gravel beds by hand pulling vegetation over winter.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Empty sand martin nest holes and clear vegetation on top of bank during early winter.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Restore existing dragonfly ponds by clearing vegetation. Maintain by routine vegetation removal.	●		✓		✓		✓		✓		✓	
	Create new dragonfly pond close to viewing platform		●		✓								
	Create wildflower meadow in front of viewing platform.		●		✓								
	Maintain wildflower meadow by scything in late summer and removing cuttings.		●			✓	✓	✓	✓	✓	✓	✓	✓
	Construct swift nesting tower		●		✓								
Compartment 4 The Water Treatment Works	Clean out and repair/replace bird, bat and insect boxes.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Install 4 or 5 house sparrow boxes		●		✓								
Compartment 5 Access Track	Create scallops alongside track and maintain by late summer cutting.		●			✓	✓	✓	✓	✓	✓	✓	✓
Compartment 6 Riverside corridor	Create 8 scallops alongside track and maintain by late summer cutting.		●			✓	✓	✓	✓	✓	✓	✓	✓
	Control Himalayan balsam by hand pulling	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Compartment	Management Prescription	Priority		1	2	3	4	5	6	7	8	9	10
		Essential	Desirable										
Whole site	Update on-site interpretation, information leaflets and signage	●		✓	✓								
	Initiate and maintain website and social media channels		●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Organise events for the wider community and encourage media coverage.		●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Create a Friends Group to co-ordinate management work and site interpretation.		●	✓	✓								
	Provide ongoing support for the Friends Group		●			✓	✓	✓	✓	✓	✓	✓	✓
	Create links with DWT and Derby Greenspace Forum		●	✓	✓								
	Keep site free from litter by regular litter picking.	●		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



The Sanctuary LNR Management Plan
Plan 1 Site Boundary and Compartments



The Sanctuary LNR Management Plan
Map 2 Optimal State and Management Summary

KEY


Open Mosaic Habitat


Short open grassland


Grass mown in winter


Create wildflower meadow


Dense bramble


Mixed scrub


Buddleia scrub


Shallow water feature


Dragonfly pond


Existing lake


Plover gravel beds


Earth bund

Sand Martin bank

Appendix 1 Species records

Group	Full Name	Common Name
Fungus	Coprinus comatus	Shaggy Ink-cap
Ferns/Horsetails	Equisetum arvense	Field Horsetail
Ferns/Horsetails	Pteridium aquilinum	Bracken
Flowering Plants	Acer campestre	Field Maple
Flowering Plants	Achillea millefolium	Yarrow
Flowering Plants	Agrostis capillaris	Common Bent
Flowering Plants	Agrostis gigantea	Black Bent
Flowering Plants	Agrostis stolonifera	Creeping Bent
Flowering Plants	Alisma plantago-aquatica	Water-plantain
Flowering Plants	Alliaria petiolata	Garlic Mustard
Flowering Plants	Alnus glutinosa	Alder
Flowering Plants	Alopecurus geniculatus	Marsh Foxtail
Flowering Plants	Alopecurus pratensis	Meadow Foxtail
Flowering Plants	Anagallis arvensis	Scarlet Pimpernel
Flowering Plants	Anisantha sterilis	Barren Brome
Flowering Plants	Anthriscus sylvestris	Cow Parsley
Flowering Plants	Aquilegia vulgaris	Columbine
Flowering Plants	Arctium minus	Lesser Burdock
Flowering Plants	Arenaria serpyllifolia	Thyme-leaved Sandwort
Flowering Plants	Armoracia rusticana	Horse-radish
Flowering Plants	Arrhenatherum elatius	False Oat-grass
Flowering Plants	Artemisia absinthium	Wormwood
Flowering Plants	Artemisia vulgaris	Mugwort
Flowering Plants	Avena sativa	Oat
Flowering Plants	Betula pendula	Silver Birch
Flowering Plants	Buddleja davidii	Butterfly-bush
Flowering Plants	Calamagrostis epigejos	Wood Small-reed
Flowering Plants	Calystegia sepium	Hedge Bindweed
Flowering Plants	Carduus crispus	Welted Thistle
Flowering Plants	Carex hirta	Hairy Sedge
Flowering Plants	Catapodium rigidum	Fern-grass
Flowering Plants	Centaurea nigra	Common Knapweed
Flowering Plants	Centaurium erythraea	Common Centaury
Flowering Plants	Cerastium fontanum	Common Mouse-ear
Flowering Plants	Cerastium glomeratum	Sticky Mouse-ear
Flowering Plants	Chamerion angustifolium	Rosebay Willowherb
Flowering Plants	Chenopodium album sens.str.	Fat-hen
Flowering Plants	Cirsium arvense	Creeping Thistle
Flowering Plants	Cirsium vulgare	Spear Thistle
Flowering Plants	Conium maculatum	Hemlock
Flowering Plants	Convolvulus arvensis	Field Bindweed
Flowering Plants	Conyza canadensis	Canadian Fleabane
Flowering Plants	Crataegus monogyna	Hawthorn
Flowering Plants	Crepis capillaris	Smooth Hawk's-beard
Flowering Plants	Cynosurus cristatus	Crested Dog's-tail
Flowering Plants	Cytisus scoparius	Broom
Flowering Plants	Dactylis glomerata	Cock's-foot
Flowering Plants	Deschampsia cespitosa	Tufted Hair-grass
Flowering Plants	Dipsacus fullonum	Wild Teasel

Flowering Plants	Elytrigia repens	Common Couch
Flowering Plants	Epilobium ciliatum	American Willowherb
Flowering Plants	Epilobium hirsutum	Great Willowherb
Flowering Plants	Epilobium montanum	Broad-leaved Willowherb
Flowering Plants	Epilobium sp.	a willowherb
Flowering Plants	Erodium cicutarium agg	Common Stork's-bill
Flowering Plants	Eupatorium cannabinum	Hemp-agrimony
Flowering Plants	Fallopia japonica	Japanese Knotweed
Flowering Plants	Festuca rubra agg.	Red Fescue
Flowering Plants	Fraxinus excelsior	Ash
Flowering Plants	Galium aparine	Cleavers
Flowering Plants	Geranium dissectum	Cut-leaved Crane's-bill
Flowering Plants	Geranium lucidum	Shining Crane's-bill
Flowering Plants	Geranium molle	Dove's-foot Crane's-bill
Flowering Plants	Geranium pratense	Meadow Crane's-bill
Flowering Plants	Glechoma hederacea	Ground-ivy
Flowering Plants	Heracleum sphondylium	Hogweed
Flowering Plants	Holcus lanatus	Yorkshire-fog
Flowering Plants	Hordeum murinum	Wall Barley
Flowering Plants	Hypericum perforatum	Perforate St. John's-wort
Flowering Plants	Hypochaeris radicata	Cat's-ear
Flowering Plants	Impatiens glandulifera	Indian Balsam
Flowering Plants	Juncus articulatus	Jointed Rush
Flowering Plants	Juncus bufonius agg.	Toad Rush [agg.]
Flowering Plants	Juncus conglomeratus	Compact Rush
Flowering Plants	Juncus effusus	Soft Rush
Flowering Plants	Juncus inflexus	Hard Rush
Flowering Plants	Lactuca serriola	Prickly Lettuce
Flowering Plants	Lactuca virosa	Greater Lettuce
Flowering Plants	Lamium album	White Dead-nettle
Flowering Plants	Leontodon autumnalis	Autumnal Hawkbit
Flowering Plants	Linaria vulgaris	Common Toadflax
Flowering Plants	Lolium perenne	Perennial Rye-grass
Flowering Plants	Lonicera periclymenum	Honeysuckle
Flowering Plants	Lotus corniculatus	Common Bird's-foot-trefoil
Flowering Plants	Malus domestica	Apple
Flowering Plants	Malva sylvestris	Common Mallow
Flowering Plants	Matricaria discoidea	Pineapple Weed
Flowering Plants	Matricaria recutita	Scented Mayweed
Flowering Plants	Medicago lupulina	Black Medick
Flowering Plants	Melilotus altissimus	Tall Melilot
Flowering Plants	Melilotus officinalis	Ribbed Melilot
Flowering Plants	Odontites vernus	Red Bartsia
Flowering Plants	Papaver rhoeas	Common Poppy
Flowering Plants	Papaver somniferum	Opium Poppy
Flowering Plants	Persicaria amphibia	Amphibious Bistort
Flowering Plants	Persicaria maculosa	Redshank
Flowering Plants	Petasites hybridus	Butterbur
Flowering Plants	Phalaris arundinacea	Reed Canary-grass
Flowering Plants	Phleum pratense sens.lat.	Timothy
Flowering Plants	Phragmites australis	Common Reed
Flowering Plants	Picris echioides	Bristly Oxtongue
Flowering Plants	Plantago lanceolata	Ribwort Plantain
Flowering Plants	Plantago major	Greater Plantain

Flowering Plants	Poa annua	Annual Meadow-grass
Flowering Plants	Poa pratensis sens.str.	Smooth Meadow-grass
Flowering Plants	Polygonum aviculare agg.	Knotgrass [agg.]
Flowering Plants	Potentilla anserina	Silverweed
Flowering Plants	Potentilla reptans	Creeping Cinquefoil
Flowering Plants	Prunella vulgaris	Selfheal
Flowering Plants	Ranunculus repens	Creeping Buttercup
Flowering Plants	Reseda luteola	Weld
Flowering Plants	Rhinanthus minor	Yellow-rattle
Flowering Plants	Rosa canina agg.	Dog Rose
Flowering Plants	Rosa sp.	a rose (unidentified)
Flowering Plants	Rubus fruticosus agg.	Bramble
Flowering Plants	Rumex acetosella	Sheep's Sorrel [agg.]
Flowering Plants	Rumex crispus	Curled Dock
Flowering Plants	Rumex crispus ssp. crispus	a curled dock
Flowering Plants	Rumex obtusifolius	Broad-leaved Dock
Flowering Plants	Sagina procumbens	Procumbent Pearlwort
Flowering Plants	Salix alba	White Willow
Flowering Plants	Salix caprea	Goat Willow
Flowering Plants	Salix cinerea	Grey Willow
Flowering Plants	Salix cinerea ssp. oleifolia	a willow
Flowering Plants	Salix viminalis	Osier
Flowering Plants	Sambucus nigra	Elder
Flowering Plants	Sedum acre	Biting Stonecrop
Flowering Plants	Senecio jacobaea	Common Ragwort
Flowering Plants	Senecio squalidus	Oxford Ragwort
Flowering Plants	Senecio viscosus	Sticky Groundsel
Flowering Plants	Senecio vulgaris	Groundsel
Flowering Plants	Silene dioica	Red Campion
Flowering Plants	Silene dioica x latifolia (S. x	Hybrid Campion
Flowering Plants	Silene latifolia	White Campion
Flowering Plants	Sinapis arvensis	Charlock
Flowering Plants	Solanum dulcamara	Bittersweet
Flowering Plants	Sonchus arvensis	Perennial Sow-thistle
Flowering Plants	Sonchus asper	Prickly Sow-thistle
Flowering Plants	Sparganium erectum	Branched Bur-reed
Flowering Plants	Stachys sylvatica	Hedge Woundwort
Flowering Plants	Stellaria media	Common Chickweed
Flowering Plants	Symphytum asperum x officinale (	Russian Comfrey
Flowering Plants	Symphytum officinale	Common Comfrey
Flowering Plants	Tanacetum vulgare	Tansy
Flowering Plants	Taraxacum sp.	Dandelion agg.
Flowering Plants	Trifolium campestre	Hop Trefoil
Flowering Plants	Trifolium dubium	Lesser Trefoil
Flowering Plants	Trifolium pratense	Red Clover
Flowering Plants	Trifolium repens	White Clover
Flowering Plants	Tripleurospermum inodorum	Scentless Mayweed
Flowering Plants	Tripleurospermum maritimum agg.	Scentless Mayweed [agg.]
Flowering Plants	Tussilago farfara	Colt's-foot
Flowering Plants	Typha latifolia	Bulrush/Reedmace
Flowering Plants	Urtica dioica	Common Nettle
Flowering Plants	Urtica urens	Small Nettle
Flowering Plants	Verbascum thapsus	Great Mullein
Flowering Plants	Vicia cracca	Tufted Vetch

Flowering Plants	Vicia hirsuta	Hairy Tare
Flowering Plants	Vicia sativa	Common Vetch
Flowering Plants	Vicia tetrasperma	Smooth Tare
Flowering Plants	Vulpia myuros	Rat's-tail Fescue
Amphibians	Bufo bufo	Common Toad
Insects	Aglais urticae	Small Tortoiseshell
Insects	Bibio sp.	
Insects	Coccinella septempunctata	Seven-spot Ladybird
Insects	Gonepteryx rhamni	Brimstone Butterfly
Insects	Polyommatus icarus	Common Blue
Insects	Tyria jacobaeae	Cinnabar
Insects	Zygaena lonicerae	Narrow-bordered Five-spot
Birds	Tachybaptus ruficollis	Little Grebe
Birds	Phalacrocorax carbo	Cormorant
Birds	Ardea cinerea	Grey Heron
Birds	Cygnus olor	Mute Swan
Birds	Anser brachyrhyncus	Pink-footed Goose
Birds	Anser anser	Greylag Goose
Birds	Branta canadensis	Canada Goose
Birds	Tadorna tadorna	Shelduck
Birds	Anas strepera	Gadwall
Birds	Anas platyrhynchos	Mallard
Birds	Aythya fuligula	Tufted Duck
Birds	Mergus merganser	Goosander
Birds	Accipiter nisus	Sparrowhawk
Birds	Buteo buteo	Buzzard
Birds	Falco tinnunculus	Kestrel
Birds	Alectoris rufa	Red-legged Partridge
Birds	Perdix perdix	Grey Partridge
Birds	Phasianus colchicus	Pheasant
Birds	Gallinula chloropus	Moorhen
Birds	Fulica atra	Coot
Birds	Charadrius dubius	Little Ringed Plover
Birds	Charadrius hiaticula	Ringed Plover
Birds	Vanellus vanellus	Lapwing
Birds	Calidris ferruginea	Curlew Sandpiper
Birds	Gallinago gallinago	Snipe
Birds	Tringa totanus	Redshank
Birds	Tringa ochropus	Green Sandpiper
Birds	Larus ridibundus	Black-headed Gull
Birds	Larus canus	Common Gull
Birds	Larus argentatus	Herring Gull
Birds	Larus marinus	Great Black-backed Gull
Birds	Larus argentatus cachinnans/mich	Yellow-legged Herring Gull
Birds	Sterna hirundo	Common Tern
Birds	Columba oenas	Stock Dove
Birds	Columba palumbus	Woodpigeon
Birds	Tyto alba	Barn Owl
Birds	Asio flammeus	Short-eared Owl
Birds	Apus apus	Swift
Birds	Picus viridis	Green Woodpecker

Birds	Dendrocopos major	Great Spotted Woodpecker
Birds	Alauda arvensis	Skylark
Birds	Riparia riparia	Sand Martin
Birds	Delichon urbica	House Martin
Birds	Anthus pratensis	Meadow Pipit
Birds	Motacilla cinerea	Grey Wagtail
Birds	Motacilla alba yarrellii	Pied Wagtail
Birds	Troglodytes troglodytes	Wren
Birds	Prunella modularis	Dunnock
Birds	Erithacus rubecula	Robin
Birds	Phoenicurus ochruros	Black Redstart
Birds	Saxicola rubetra	Whinchat
Birds	Saxicola torquata	Stonechat
Birds	Oenanthe oenanthe	Wheatear
Birds	Oenanthe oenanthe leucorrhoa	Greenland Wheatear
Birds	Turdus merula	Blackbird
Birds	Turdus pilaris	Fieldfare
Birds	Turdus philomelos	Song Thrush
Birds	Turdus iliacus	Redwing
Birds	Turdus viscivorus	Mistle Thrush
Birds	Turdus toquatus	Ring Ouzel
Birds	Acrocephalus schoenobaenus	Sedge Warbler
Birds	Sylvia undata	Dartford Warbler
Birds	Sylvia curruca	Lesser Whitethroat
Birds	Sylvia communis	Whitethroat
Birds	Phylloscopus trochilus	Willow Warbler
Birds	Aegithalos caudatus	Long-tailed Tit
Birds	Parus caeruleus	Blue Tit
Birds	Pica pica	Magpie
Birds	Corvus corone corone	Carrion Crow
Birds	Corvus corax	Raven
Birds	Sturnus vulgaris	Starling
Birds	Passer domesticus	House Sparrow
Birds	Carduelis chloris	Greenfinch
Birds	Carduelis carduelis	Goldfinch
Birds	Carduelis spinus	Siskin
Birds	Carduelis cannabina	Linnet
Birds	Emberiza citrinella	Yellowhammer
Birds	Emberiza schoeniclus	Reed Bunting
Mammals	Oryctolagus cuniculus	Rabbit
Mammals	Vulpes vulpes	Fox
Mammals	Mustela nivalis	Weasel