

SUNNYDALE PARK  
LOCAL NATURE RESERVE  
-  
MANAGEMENT PLAN  
2017 - 2026

On behalf of  
DERBY CITY COUNCIL

February 2017

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**Ecological Consultancy**

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**Plan 1 Boundaries and Access**

**Plan 2 Compartments and Existing Habitats**

**Plan 3 Desired State**

## **Stage 1: Description**

### **1.1 General Information**

#### **1.1.1 Location**

The area covered by this management plan is the whole area of Sunnydale Park Nature Reserve, which lies in south west of Derby in the Littleover and Normanton districts, some 2 miles from the City Centre, grid ref (site centre) SK 336 332. The boundaries and access points are shown on Plan 1.

#### **1.1.2 Summary Description**

The 13.2 hectare site lies at a height of around 70 metres above sea level. It consists of a variety of habitats: semi-natural woodland, grassland including semi-natural and amenity grassland, one large and one small pond with associated vegetation, a stream and hedgerows. It is bounded mostly by housing, with allotment gardens to the north east and school playing fields to the south east. The underlying solid geology is comprised of Mercia Mudstone Group - Edwalton Formation - red gypsiferous mudstones and siltstones. In the extreme south west of the site there are narrow bands of Hollygate Sandstone - medium to coarse sandstone, and Cropwell Bishop Mudstone - red mudstones and siltstones with gypsum. The soils are slightly acidic and slightly waterlogged in places due to the impeded drainage.

#### **1.1.3 Land Tenure**

Owner of all of the site: Derby City Council, The Council House, Corporation Street, Derby, DE1 2XJ.

The site is managed by a partnership of Derby City Council, Derbyshire Wildlife Trust, Natural England, Friends of Littleover Parks and Derby City Pond Warden Association.

#### **1.1.4 Map Coverage**

Ordnance Survey 1:50 000 Landranger Map Sheet 128

Ordnance Survey 1:10 000 Sheet SK33 SW

Geological Survey 1:10,000 Geological Map 33 SW 1996

## **1.2 Environmental Information**

### **1.2.1 Biological**

#### **1.2.1.1. Habitat Descriptions**

The main habitat types are: woodland, grassland, hedges, stream and ponds, as shown on Plan 2 Compartments and Existing Habitats. More detailed descriptions of each habitat can be found in the prescriptions section in Stage 3 under the relevant compartment. All compartments follow the numbering used in the previous (2010 to 2015) Management Plan.

#### **1.2.1.2 Fauna**

The site supports at least 9 species of butterfly, 4 species of dragonfly and 3 of damselfly. Bird records include species on the Birds of Conservation Concern red list namely song thrush, redwing and house sparrow. On the amber list are bullfinch, dunnock, swift, mallard, redwing, kingfisher, mute swan and black-headed gull.

A 2012 pond report prepared by Derbyshire Wildlife Trust reports common toad, common frog and three-spined stickleback in the main pond, along with 9 different taxa of macro-invertebrates as well as mallard and breeding moorhen.

Smooth newt, grey squirrel and brown rat have also been recorded in the park.

### **1.2.2 Cultural**

#### **1.2.2.1 Land Use**

The park is very popular for walking, jogging, cycling, dog exercising and as a play area for children. In addition to large areas of mown amenity grassland there is an enclosed playground area with play equipment near the main pond. The park includes a network of surfaced paths and informal paths throughout, with a wooden bridge and pond-dipping platform at the main pond.

#### **1.2.2.2 Public Interest**

The public have free access to the site at all times. There is a network of both maintained and informal paths throughout. An enthusiastic and knowledgeable Friends group, known as the Friends of Littleover Parks is involved in the management of this site, along with 7 other sites in the vicinity. The Friends organise an action group once a month to carry out practical tasks in the Park as well as other events such as picnics and walks. Derby City Pond Wardens Association have organised public pond-dipping events in the past. Annual public activities in the park include a family event as part of Love Parks Week. The three local schools visit the park up to 5 times a year when applicable to their curriculum.

## Stage 2: Evaluation and Objectives

### **2.1 Conservation status of the site**

The entire park was designated as a Local Wildlife Site (DE034) in 1990 and declared as a Local Nature Reserve in April 2005.

### **2.2 Evaluation of the features**

The park covers an area of 13.2 hectares, with a good variety of habitats within it. The habitats on site fall into the following UK Biological Action Plan (BAP) habitats:

- Lowland Meadow
- Ponds
- Hedgerows
- Lowland Mixed Deciduous Woodland

Other habitats include: immature plantation woodland, the stream known as Cuttle Brook, close mown amenity grassland and tall grassland/tall herb.

The site is important for birds with a number of locally and nationally important species having been recorded: On the Birds of Conservation Concern red list is house sparrow and on the amber list is mallard, bullfinch and dunnock.

The large pond is of moderate nature conservation value. A survey in 2012 scored it as 50% on the Predictive System for Multimetrics (PSYM) score, ie 'poor' ecological condition, at which time it scored 3.9, ie 'low' on the Average Score per Taxon (ASTP) in terms of water quality on a scale from 1 to 10. This is the Biological Monitoring Working Party (BMWP) score divided by the number of scoring taxa in the sample.) These results are likely to be the result of silting and poor water quality entering the pond from Cuttle Brook. The 2013 PSYM score was 61%, or 'fair' condition and in 2015, following de-silting, a further PSYM survey showed an improved score of 78%, giving it a 'good' condition score.

The pond supports: 9 taxa of macro-invertebrates; common frog, common toad and three-spined stickleback as well as providing breeding sites for mallard and moorhen.

The site is important locally for invertebrates including butterflies with 9 species having been recorded, 4 species of dragonfly and 3 of damselfly.

The playing fields and other amenity grassland although currently botanically relatively species-poor, should be seen in terms of their potential for habitat creation and enhancement.

## **2.3 Management Objectives**

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

#### **Ponds**

**Maintenance:** The aim is to maintain the main pond (1b), and both existing recently-created smaller ponds (1c and 1d) with at least the same area of open water as at present and at least half the area free of emergent or floating vegetation, debris and rotting vegetation. There should be water until at least mid-summer, to support amphibian breeding habitats some un-shaded banks and no non-native species.

**Enhancement:** The enhancement of the main pond may be achieved by cleaning the water supply to it by the creation of a new reedbed as a capital project, see 2.3.2. and also by allowing more light to the surface by cutting back some of the trees overhanging on the northern end. The enhancement of the small ponds 1c and 1d can be achieved by enlarging their dimensions to ensure a better water-holding capacity through the summer.

#### **Stream**

**Maintenance:** The objective is to maintain Cuttle Brook (1a) with at least its current quality of water, flanked on the banks by tall native flora that is allowed to flower each year. Nettles are a competitive species that seem to be becoming more dominant along the stream banks and may need controlling so they don't spread further. The brook should be kept free of obstructions such as fallen branches and other debris that may alter the water flow. The current management of keeping the course of the brook free of debris and strimming a 2 metre strip of vegetation adjacent to the brook in autumn should continue. This could be by strimming one bank one year and the other bank the following year. Continue the removal of any of the non-native Himalayan balsam to allow native species to flourish.

**Enhancement:** There is currently no potential for enhancement of the brook.

#### **Woodland**

**Maintenance:** The objective is to maintain areas of woodland without loss of area. This applies to the main block of woodland 2a as well as all the smaller blocks and groups of mature and more recently planted woodland. These are: 2b - the line of crack willow along Cuttle Brook at the Rosamond's Ride entrance, 2c - refers to several areas of plantation woodland around the site's perimeter and includes the uncommon black poplar, and 2d - areas of young trees planted in small groups within the Park.

Mature trees and the ivy on them should be kept, whether they are in woods, in small groups or are individual specimens. Leave all fallen timber and standing dead wood in place (except where it poses a safety risk) as this is valuable fungi and invertebrate habitat. The 'Butterfly Glade' in the main block of woodland should continue to be managed to allow buddleia and species planted to attract butterflies to flourish.

**Enhancement:** Pollarding of some of the mature crack willow stems and creation of a sustainable pollard cycle would increase habitat for invertebrates, bats and birds in Area 3a close to Rosamonds Ride. Leaving an

un-mown margin around the woodlands would enhance the edges as cover for invertebrates and small mammals. Cutting rides into some of the woodland 2c would allow in more light.

### **Grassland**

Maintenance:

Area 3d is a moderately species-rich area at one end of, and alongside, the mown central cricket pitch that can be considered a kind of created meadow. It is managed by mowing once, late in summer and removing the cuttings. The cuttings are left to dry, ideally for a minimum of 48 hours and removed as soon as possible after that. This regime looks to be successful in maintaining the species-richness of the grassland and should continue as at present. Tall grassland also exists in Compartments 3c by the main pond, 3e adjacent to the main block of woodland, and smaller areas under groups of trees. These areas are less species-rich but have value as cover for small mammals and invertebrates.

Enhancement: The goal is to enhance the grassland to be more attractive and more species-rich with native nectar-providing wildflowers. There is an opportunity for habitat enhancement by altering the mowing regime and re-seeding into some currently species-poor areas of amenity grassland, and plug-planting into other areas.

### **Hedgerows**

Maintenance: Hedges form the majority of the boundaries around the site as well as a couple (H4 and H8) within the site. Some of the boundary hedges are managed by the owners of the properties adjoining the site and are not under the control of the site managers. Ideally the objective should be to manage some of the hedges to provide shelter and nest sites, flowers and fruit, with a variety of heights, ages and a good mixture of native species over the site as a whole. Some suitable hedges should be trimmed in rotation at the end of the winter, once the birds have been able to feed on the fruits, while others should be left to form tall dense hedgerows. Buffer strips with tall grassland alongside provide foraging habitat. Hedgelaying should be carried out where possible as it improves structure for breeding birds.

Enhancement: There are limited opportunity for enhancement beyond their routine maintenance as many of the hedges are not under the management control of Sunnydale Park. Leaving an un-mown margin against all hedges however would enhance their use as cover for invertebrates, birds and small mammals.

## **2.3.2 Objective: Capital Projects for Habitat Creation**

### **Pond and Wetland Creation**

It is proposed to create a new pond in the flood channel adjacent to and downstream of the main pond (1e on Desired State plan). This area is currently of no benefit to wildlife and could become a pond fairly easily and cheaply by widening and damming the channel and allowing rainwater to funnel in. The bigger the pond created, the greater the water retention and

storage capacity. A bank created here could also use up some of the soil moved from the reed bed creation area.

It is also proposed to create a small new tall herb/fen area (1f on Desired State plan) in a wet area of the main block of woodland. It is a boggy clearing close to the path, currently mown, with species including creeping buttercup, broad-leaved dock, couch, soft rush and Yorkshire-fog. There is a bank of bramble around it on the wood edge.

### **Reed bed Creation**

The largest planned capital project is designed to create new reed bed. This would create new BAP habitat, help with flood alleviation and improve the quality of the water entering the main pond - the pond gets full of silt and pollution from the stream and the proposed reed bed would help break down the pollutants and trap the silt.

A new reed bed is proposed in an area currently of mown grass adjacent to and upstream of the main pond. A number of other sites and a range of possible solutions to flooding are also being offered for consideration by flood alleviation modellers in the future.

### **Creation of New Flood Storage Areas**

There are a range of possible solutions for creating new flood storage areas in the park including:

- Expansion of the main pond.
- Creation of new lower area for flood capacity by lowering the ground in an area of woodland at Nevinson Drive entrance. Wet woodland could be created here by planting alder, osier etc. The area has a potential capacity of 5000 cubic metres of water storage.
- Creation of water storage on the area currently a playground near the main pond and move the play area elsewhere.
- Creation of a flood storage area adjacent to the wood near the main pond.
- Re-route the stream to the head of the main pond.

The Plan will need to be amended over the next few years to fit with the flood defence proposals and funding. Detailed prescriptions are not discussed at this stage due to funding uncertainties.

### **Cornfield Annuals**

It is proposed to create 2 small areas of cornfield annuals in separate parts of the Park - one at the pond end of the main sports field and the other alongside the surfaced path in the ridge and furrow field 3f (see Desired State map).

This would create attractive areas of annual species not represented elsewhere on the site. This is a non-essential item and would involve annual maintenance, so is included as an optional extra.

### **Tall Grassland/Meadow Creation**

It is proposed to create some tall grassland from the currently short mown turf of the cricket field and also to create a new area of meadow in the ridge and furrow grassland of Top Field. Both new areas will be designed to enhance the habitat for invertebrates, particularly butterflies, bees and other pollinators. This is not an expensive or labour intensive project (it should in fact save

some mowing time and therefore money), but a small, permanent change in the mowing regime with some addition of native species that could have wildlife benefits.

It is desirable to extend area 3e into an adjacent triangle area of currently short regularly-mown grass.

### **2.3.3 Objective: To encourage responsible use of the site.**

The Friends Of Littleover Parks (FOLPs) group encourage active involvement in this and several other Parks in the area. The park is very well used by the public and it would be valuable to use every opportunity to promote an understanding of the wildlife. Access should be maintained, - all paths and desire lines need to be managed. Rubbish needs to continue to be collected regularly to reduce this eyesore and potential health hazard and so it does not become acceptable through familiarity. FOLPs meet on the first Saturday of each month to form a working party to carry out practical conservation tasks, and all are very welcome to join in, and this is probably the best way of fostering a sense of responsibility, as well as being educational and doing a useful task. Updated interpretive material such as display boards at access points and near main features such as the large pond would be useful to explain the value of the site. Damage, whether deliberate or accidental should continue to be promptly mended or replaced to demonstrate the caring attitude of the park's managers and the majority of users of the site. Regular safety checks will be needed for trees, water bodies, access infrastructure and paths, with appropriate management as necessary.

### **2.3.4 Objective: To carry out further survey, monitor key species and assess habitat condition**

It is important that management is based on sound objectives, which must be informed by knowledge of species and habitats. There are some gaps in our knowledge of the recent status of key species of fauna on the site, namely: bats; invertebrates including butterflies and moths; breeding birds, reptiles and mammals. New surveys should be initiated to update and fill gaps in knowledge. These could be carried out by skilled groups such as the Derbyshire Bat Group or the Derby City Pond Wardens Association, and also by training volunteers who could then add records to a central database. Systematic monitoring is the only way of checking that the management prescriptions are working. Regular monitoring of species and habitat condition is vital to inform and adapt future management.

Annual PSYM surveys of the main pond should continue to be carried out, in order to provide updated information to enable monitoring of the effectiveness of any management work and review as necessary. All amphibian records should be passed to the County Amphibian Recorder (Chris Monk). Encourage local recording groups to use the site. Consider setting up training days for interested volunteers.

### **2.3.5. Objective: Securing external sources of funding**

It is hoped that the proposed reed bed creation - a method of reducing the ground level and increasing flood capacity on site - can be funded by the European Regional Development Fund (ERDF) as flood defence work, and

also the majority of the Biological Action Plan (BAP) habitat extension work as part of the wider project.

## **2.4 Description of Optimal State for the Site**

The ideal condition of Sunnydale Park is a long term continuation of the valuable mosaic of habitats already present, with each habitat maintained in the best condition for wildlife and where possible, extended in area, as shown on Plan 3 Desired State map. The grassland areas would be managed to provide a range of structures to suit different wildlife needs. The small species-rich grassland areas within the amenity grassland would be larger and enhanced with nectar-rich species for butterflies, bees and other pollinators. Tall grassland around the edges of woodland and against hedges would provide shelter for a range of wildlife including invertebrates, amphibians, small mammals and birds. Remaining grassland areas would be managed as at present to provide amenity grassland for public use.

The ponds would be maintained as permanent water bodies holding water until late summer, and ideally all year, thus supporting a good population of amphibians. The number of small ponds could be increased.

There would be some crack willow carr along Cuttle Brook with both mature trees and pollard trees as an excellent foraging habitat for warblers.

Ideally the hedgerows would contain native species of varying ages, provide good berry and nut production, some protection for nesting birds and an all-year-round habitat with flowers from early spring through to late summer and with some fruit through the winter. As many as practicable would have wide tall herb or grassy margins as cover for small mammals.

The woodlands would have a canopy of native species with good natural regeneration as replacements. The ground flora would have a good cover and include some native bluebells. Ivy in the woods and individual trees would continue to provide an excellent habitat for both birds and bats, as well as an early source of berries when other food is scarce and a source of nectar in winter.

## Stage 3: Prescription

### 3.1 Project register and prescription

#### 3.1.1 To maintain the existing habitats in favourable conservation status and enhance them where possible

##### 1. Wetland

###### *Description:*

###### Compartment 1a Cuttle Brook

Cuttle Brook is a small brook flowing roughly south through the eastern part of the site. It enters the site at Rosamonds Ride and leaves opposite Wellesley Avenue. The banks support tall herbs including common nettle, false oat-grass, couch, great willowherb, hogweed and in places a few plants of Himalayan balsam. In the northern section it is lined by mature crack willow trees.

###### Compartment 1b Main Pond

The main pond lies on the Cuttle Brook, and was created as part of Derby's flood alleviation scheme. It was de-silted in 2012, and the dipping platform was erected in 2013. The PSYM (the Predictive System for Multimetrics) (pronounced "sim") method is a standard method providing an assessment of the ecological quality of a site compared to ponds nationally. It requires basic environmental information including pH and identification of the plant species and/or invertebrate families found at the site. A survey in 2015 noted a PYSM score of the pond at Sunnydale Park to be 78%, (greater than 75% is 'high' for ecological quality) up from 50%, ('poor' ecological condition) the 2012 score prior to restoration.

Floating species include duckweed, water starwort, blanketweed, and Canadian pondweed. Emergent vegetation includes branched bur-reed, yellow flag iris, reed sweet-grass, great willowherb, reedmace and water mint. Terrestrial plants in wet ground surrounding the pond include cow parsley, Himalayan balsam, purple loosestrife, creeping buttercup, great willowherb, common nettle, broad-leaved dock and marsh marigold.

The pond is known to contain a population of breeding frog and common toad and it also supports stickleback, a good number of dragonflies and breeding moorhen. There are brown rat burrows in the banks.

###### Compartments 1c and 1d Small ponds

Pond 1c is a small seasonal pond created in 2011/12. It tends to hold water until mid summer and then becomes a damp basin covered by creeping buttercup, floating sweet-grass and brooklime. The surrounding vegetation on the stream side includes purple loosestrife, meadowsweet, bramble and great burnet in un-mown tall grass/tall herb margins beneath grey willows with some willow saplings colonising.

Pond 1d is a very small seasonal pond created in 2014 and containing branched bur-reed, marsh marigold and common water starwort. It lies at the northern end of a block of young woodland.

*Compartment Objectives:*

- Maintain Cuttle Brook as free-flowing and free of invasive non-native species.
- To maintain the ponds, both the small recently-created ones and the large well-established main pond with at least their current area of clear open water.
- To extend the area and deepen both the smaller ponds so they hold water for longer through the summer and into autumn.
- Provide all ponds with adjacent terrestrial amphibian habitat with plenty of cover, but no encroaching scrub species and limited overhanging or shading trees.
- Allow more light to the large pond by some overhanging tree clearance.
- Aid aeration of the pond water by adding riffles (shallow section with rapid current) to the inflow stream.
- To have updated information by carrying out annual PSYM surveys of the main pond during June to August, thus enabling monitoring of the effectiveness of management and reviewing it as necessary. the results should be forwarded to Derby City Pond Wardens Association and the Derbyshire Wildlife Trust.
- Keep all the ponds free from colonising scrub by removing saplings as soon as they develop.
- Monitor for amphibians and send results to the County Amphibian Recorder.

*Prescriptions:*Cuttle Brook:

- Remove all plants of Himalayan Balsam by pulling, then burning or composting off-site. This should be carried out every year around June before the flowers are produced. Any seedlings that appear in the cut areas should also be removed, which may need doing 2 or 3 times before winter.
- Remove debris, fallen branches and litter from Cuttle Brook in order to maintain the flow.

*Work by individual pond:*Main pond 1b

- Carry out annual PSYM surveys of the main pond during June to August and send the results to Derby City Pond Wardens Association and the Derbyshire Wildlife Trust.
- Monitor main pond and smaller ponds for amphibians.
- Re-profile the inflow to the pond into a series of riffles, rather than a vertical drop, to aid aeration of the water. This work could be timed to proceed when the reedbed is created. Alternatively re-route the stream to the head of the main pond.
- Cut back some of the overhanging branches on the north side of the pond to allow more light in and re-establish marsh vegetation.

- Clear a proportion of the floating vegetation, especially blanketweed every year and if needed, twice a year, in order to provide at least 50% open water. This will need to be done by boat and grappling hook.
- Remove saplings from pond and immediate surrounds as soon as they colonise.
- If the reed bed upstream of the pond is not created within 2 years as planned, (see Objective 2.3.2 below) the main pond should be dredged to reduce the silt.
- Pond enlargement - one proposal is to use the pond as more storage capacity in times of heavy rainfall and potential flooding.

#### Pond 1c

- Clear out a proportion of the floating sweet-grass every year to leave around half the pond free of vegetation cover.
- Remove all regenerating goat willow saplings from the margins of the pond in winter (November - February) to prevent any increase in shading and to minimise the effect of water loss as a result of uptake by the willows. Remove all rubbish regularly, avoiding disturbance during the amphibian breeding season ie February to July.
- Re-dredging may be necessary after 2 or 3 years and should be undertaken in autumn.

#### Pond 1d

- Extend pond 1d to have more open water by digging out to an additional depth of 50 to 75 cm and enlarging to keep the same shallow edge profile. Maintain as open wetland - remove any colonising saplings as necessary. The pond vegetation should be monitored and if required, a proportion removed every 1 to 2 years to maintain an area of open water. Keep free of any rubbish.
- If decided necessary by monitoring, in late August every year, reduce the amount of branched bur-reed by about half its current area. Leave the cleared vegetation at the side of the pond for 24 hours, then remove from site, or compost in the wood.
- Cut back some of the alders at the edge of the pond to reduce shading.
- Remove any colonising saplings of willow and other woody species from the pond surrounds.
- Some surrounding vegetation should be left standing at the pond edges as amphibian terrestrial habitat. In the case of 1d this should be on the side with the trees.
- It is also proposed to create a small new tall herb/fen area (1f on Desired State plan) in a wet area of the main block of woodland. A new tall herb area here would undo the need to mow in this awkward area and simply by scraping the surface with a mini-digger and planting suitable species as plant plugs or pot-grown plants, create a new wetland habitat. Species to plant could include:  
Hemp agrimony (*Eupatorium cannabinum*),  
Marsh marigold (*Caltha palustris*)  
Cuckoo flower (*Cardamine pratensis*)

Meadowsweet (*Filipendula ulmaria*)

Ragged-robin (*Lychnis flos-cuculi*)

Yellow flag iris (*Iris pseudacorus*)

Purple loosestrife (*Lythrum salicaria*)

Water mint (*Mentha aquatica*)

It will need to be maintained by annual management of the bramble and blackthorn at the edges, and any invasive emergent plants should be controlled, but there should be no mowing of the wetland area all summer. It should be cut back during late September, which could be done at the same time as the adjacent butterfly glade's annual maintenance cut.

## 2. Woodland

### Description:

#### Compartment 2a

Compartment 2a consists of semi-natural woodland forming a substantial block across the centre of the site. The canopy is predominantly ash, with pedunculate oak and Scots pine towards the edges. The shrub layer has a lot of tall, quite old hawthorn with tall goat willow, holly, blackthorn, field maple, hazel, elder, bramble and some old fruit trees including apple and pear. There are some areas of dense young hawthorn. The ground flora is mostly rather sparse and includes wood dock, hedge woundwort, herb bennett, herb robert, hogweed, male fern, cuckoo pint and cow parsley. Some areas have a dense cover of ivy. There are formal and informal trampled paths throughout.

There are clearings at the side of the main path - one damp area, now with creeping buttercup and soft rush currently kept mown and an area known as 'the butterfly glade'. Formerly solid bramble, this area was cleared to create an open area where there is tall herb vegetation including great willowherb and hogweed as well as species planted to attract butterflies, such as red flax, viper's-bugloss, buddleia and raspberry.

#### Compartment 2b

This refers to the line of mature crack willow along one bank of the Cuttle Brook, above and just below the bridge over the stream. There are a few ash trees and a shrub layer of hawthorn, silver birch, privet and garden escapes such as cherry laurel. In places ivy forms a dense ground cover and in more open areas there is nettle, comfrey and creeping buttercup.

#### Compartments 2c

This compartment comprises 6 separate areas of plantation woodland, mostly around the site perimeter. They consist of mixed species including crack willow, Scot's pine, ash, pedunculate oak, alder and a shrub layer of field maple, hawthorn, cherry, elder, apple and privet. There are areas of dense blackthorn thickets on the edge of the plantation along the north of the cricket field. The canopy is mostly closed with little light reaching the ground, the result being bare ground or a sparse ground flora which includes nettle, cleavers, couch, cow parsley and wood dock. The block of woodland by the main pond has crack willow, grey willow, alder, blackthorn dogwood and guelder-rose. It is less densely-shaded than the others. Most blocks,

particularly those adjacent to housing, have trampled paths throughout. There is also some litter and garden waste.

### Compartments 2d

This compartment comprises all the separate small blocks of woodland planted in the open areas of amenity grassland in the south-western end of the site. Species are very wide-ranging and include ash, alder, rowan, buckthorn, silver birch, field maple, hazel, pedunculate oak, dogwood, guelder-rose, holly, and in one area, bay willow. Ground flora is mostly grassy species due to the open canopy and includes false oat-grass, common bent, Yorkshire-fog and knapweed. One small rectangular area of tree planting in the south west corner of the site was planted in 2014 and has un-mown grass and scattered trees from 30 cm to 1 metre high. It includes some disease-resistant elm trees.

### *Compartment Objectives:*

- To maintain the woodland with no loss of area.
- To maintain the crack willows fringing the stream.
- To establish a tall grass base to all woodland edges and around copses as foraging habitat for birds and small mammals.
- To maintain the clearing known as the Butterfly Glade to allow light to the woodland floor and provide an area with species attractive to butterflies and other invertebrates.
- To cut sections or rides into 2c to allow in more light and create sight lines.

### *Prescriptions:*

- In the main block of woodland and all small copses manage all trees by non-intervention, including leaving all ivy on them, all fallen timber and all standing dead wood, unless there is a safety issue or branches fall and block paths. Stack any cut or fallen timber into piles as habitat stacks to rot down naturally. Ash dieback disease has reached Derby. If in future it kills the ash trees in the wood, they may have to be felled for safety reasons. If they pose no danger to the public, the trees should be left as standing dead wood to rot down naturally.
- Continue the pollarding regime for the crack willows in 2b. (NB Some of these willows are subject to a tree preservation order (TPO) so would need formal, written permission from the Planning Authority before pruning them in any way.)
- Adjust the current grass mowing regime around all woodlands and small copses to leave a minimum of 2 metres of margin un-mown as discussed under Compartment 3: Grassland, below. A possibility is that Derby Parks Volunteers could carry out the annual cutting, raking and piling up the cuttings at an agreed site. Ideally this should be done during September.
- 
- Carry out annual management of the Butterfly Glade in 2a in autumn by cutting back encroaching bramble and any colonising woody species and strimming of the tall herb vegetation if needed to maintain

an open area with plants attractive to butterflies, some of which are already present, more can be sown or planted if desired.

- Cut rides into wood 2c.

### 3: Grassland

#### *Description:*

#### Compartment 3a

This is the small strip of tall grass/tall herb vegetation alongside Cuttle Brook adjacent to Rosamonds Ride. It consists mostly of false oat-grass, cocksfoot, nettle, hogweed, cleavers, comfrey, creeping buttercup and broad-leaved dock.

#### Compartment 3b

This area refers to the tall edges adjacent to close-mown grassland and includes rough meadow-grass, Yorkshire-fog, false oat-grass, Timothy, ryegrass, meadowsweet, hogweed, meadow cranesbill and nettle.

#### Compartment 3c

This is the small species-rich and attractive meadow area on the sloping southern and western sides of the main pond. Here there is frequent false oat-grass, cocksfoot and common bent with tufted vetch, meadow cranesbill, red clover, knapweed and meadow vetchling and rare common spotted orchid. A single dense area of horseradish has established. The pond banks at its lower edge have hard rush, purple-loosestrife, lousewort and fleabane. Current management is a late, single annual mow and remove cut material.

#### Compartment 3d

This is the un-mown meadow area at the end of and along one long side of the central cricket field. It is the most species-rich and attractive grassland in the park and has a number of grasses and frequent herb species. Grasses include red fescue, false oat-grass, couch, crested dogstail and Yorkshire-fog. Frequent herb species include meadow vetchling, common knapweed, tufted vetch and meadow cranesbill, with more occasional bird's-foot trefoil and ladies bedstraw. Current management is a late, single annual mow and removal of the cut material.

#### Compartment 3e

This is an area of tall grassland/tall herb left completely un-mown for a number of years. Here there is cocksfoot, false oat-grass, couch, great willowherb, creeping thistle, nettle, bramble, meadow vetchling, cleavers and hedge bindweed. There is a 2 metre mown strip against the path.

#### Compartment 3f

This refers to all the areas of close-mown amenity grassland covering a large portion of the site. It is species-poor, consisting mostly of perennial rye-grass and common bent with few herbs, mostly white clover, creeping buttercup, common mouse-ear and dandelion which are rarely able to flower as the grass is mown every 2 weeks during spring and summer. The largest 2 areas

are the central cricket field and the area with ridge and furrow known as Blagreaves Field at the western end of the site.

*Compartment Objectives:*

- While continuing to maintain an area of close-mown grassland for amenity use, create some tall grassland meadows from the currently close-mown turf of the amenity areas without compromising the accessibility and availability of the short grassland for recreation.
- To maintain the flower-rich status of the tall grassland meadows by continuing the appropriate management.
- To manage a single area of tall grass/tall herb (Compartment 3e) with no annual mowing, to maintain an area of cover for small mammals.
- To enhance the flower-rich nature of the existing tall grassland meadows through management by seed and/or plant plug introduction.
- To establish a wide margin of tall grass/tall herb where possible to boundary hedgerows and woodland as foraging habitat for birds and small mammals.

*Prescriptions*

Amenity grassland compartments 3f Continue the current spring and summer mowing regime of about 12 cuts a year on all areas to be left as amenity grassland (3f). Mow 'desire line' paths regularly in tall grassland and meadow areas to encourage their use and leave other areas less disturbed.

Cricket Field and Allotment Bank Alter the mowing regime on the cricket field and the allotment bank to leave more extensive edge areas un-mown adjacent to the woodland (see Plan 3 Desired State - compartments 3dii and 3diii). This is not an expensive or labour intensive change project, but a simple, permanent change in management that should in fact save both mowing time and therefore money and could have excellent wildlife benefits. The un-mown areas should have a single late summer or early autumn cut and the cuttings must be removed. (The current regime is regular summer mowing with the short clippings left *in situ*.)

Large Pond and Cricket Field Meadow Areas 3c and 3d Manage the tall grassland meadows by cutting and removing the cut grass after the end of August each year to achieve a sward height of between 2 cm and 10 cm in October/November. After mowing, the cuttings should be removed and composted off site.

Compartment 3e adjacent to main woodland The tall grass/tall herb in Compartment 3e (see Existing State plan) should be maintained as a mixture of tall grasses and tall flowering plants and kept free of scrub. There should be no mowing in this area, as the value to wildlife here is the cover for birds and small mammals at all times. It should be monitored for colonising scrub, which should be removed as required. It could be enhanced by the addition of plug plants of suitable species, and if this proves popular and successful, could then be extended in area into the currently mown triangular area adjacent.

Top Field Part of this currently close-mown grassland area should be prepared for the introduction of seed by chain harrowing (or other method of scarifying/breaking up the thatch of vegetation) on the tops of the ridges only, to maintain the integrity of this important feature. Bare ground should ideally be around 50%. Late autumn is the best time to carry out the harrowing as it creates gaps which remain open to flower seed germination from autumn through to spring. It might be advisable to scarify a small area first to check the method used will not damage the ridge and furrow. If it proved too destructive, plug-planting on the ridges could be done instead.

Suitable species to add as seed include:

- Ox-eye Daisy (*Leucanthemum vulgare*)
- Common Knapweed (*Centaurea nigra*)
- Tufted vetch (*Vicia cracca*)
- Meadow Buttercup (*Ranunculus acris*)
- Field scabious (*Knautia arvensis*)
- Selfheal (*Prunella vulgaris*)
- Meadow Vetchling (*Lathyrus pratensis*)
- Lady's Bedstraw (*Galium verum*)
- Red Clover (*Trifolium pratense*)
- Rough Hawkbit (*Leontodon hispidus*)

The cheaper method of achieving this is to source some local species-rich hay and strew this on the field after mowing. Choose a sunny day in autumn and ensure a good spread of hay across the area mown. Use around 20 small bales on the whole mown area to be enhanced. The strewn hay should be turned at least once and as the field is not going to be grazed, the hay should then be removed.

A more expensive method is to buy a wildflower seed mix of the above species from a reputable supplier. Although more costly, this method would be less labour intensive as it avoids the need to turn, collect and remove hay. Prepare the ground in the same way as given above and hand-scatter the seed after the field is mown, bulked up with an inert carrier such as coloured sand or sawdust, for ease of visibility while scattering. Choose a dry sunny day in autumn or spring so the seed germinates and does not rot.

There are several proprietary seed mixes that are suitable, including Emorsgate's EM2F Standard General Purpose wildflowers. This is a wildflower-only mix to be sown into existing grassland. The recommended rate of sowing is 15kg/hectare at a cost of around £150/kilo, although lower sowing rates can be used. At the above rate the cost of seed would be £975 for the proposed 0.5 hectares of meadow to be created.

If the winter following sowing is mild and has an extended growing season, mow once at the end of March if conditions allow and remove the cuttings. Otherwise leave any management until August/September, at which time manage the field by a single late cut as you would with established grassland as described above.

3d(i), 3d(ii), 3d(iii) and 3e These are areas of plug planting proposed, 3e and 3d(i) to enhance the current tall grassland, and 3d(ii) and 3d(iii) to enhance

mown areas to be left as tall grassland in future. Areas 3d(i) and 3d (ii) on the Desired State plan lie along each long side of the cricket field. Area 3d(iii) is on the edge of the allotment bank and 3e is adjacent to the main block of woodland.

Species to plant in 3e and in 3d (i), the more sunny south-facing side of the field are as follows: 12 species are recommended and about 30 plants of each could be added. All have wildlife benefits, some are chosen particularly for their value to butterflies and moths.

- Teasel (*Dipsacus fullonum*)
- Ox-eye daisy (*Leucanthemum vulgare*)
- Mullein (*Verbascum thapsus*)
- Wild carrot (*Daucus carota*)
- Bladder campion (*Silene vulgaris*)
- Dame's violet (*Hesperis matronalis*)
- Foxglove (*Digitalis purpurea*)
- Evening primrose (*Oenothera biennis*)
- Common mallow (*Malva sylvestris*)
- Valerian (*Valeriana officinalis*)
- Meadow cranesbill (*Geranium pratense*)
- Tansy (*Tanacetum vulgare*)

Area 3d(ii) and 3d(iii) are on damper soils, and are more shaded. Shade-tolerant, mostly tall plants with benefits to invertebrates have been chosen. Numbers of species for each area as above.

- Agrimony (*Agrimonia eupatoria*)
- Red campion (*Silene dioica*)
- Foxglove (*Digitalis purpurea*)
- Nettle-leaved bellflower (*Campanula trachelium*)
- Ramsons (*Allium ursinum*)
- Cowslip (*Primula veris*)
- Primrose (*Primula vulgaris*)
- Meadowsweet (*Filipendula vulgaris*)
- Teasel (*Dipsacus fullonum*)
- White campion (*Silene latifolia*)
- Dame's violet (*Hesperis matronalis*)
- Meadow buttercup (*Ranunculus acris*)

Leave at least 2 metre un-mown margins by all the hedges, young and mature copses and woodlands. These margins should be monitored for scrub encroachment and may need to be topped every third year to prevent scrub from establishing. If this is the case, the cuttings should be removed.

If the planting in 3e proves popular and is successful, it could be extended in area into the adjacent triangle of grass simply ceasing mowing, and plug-planting if desired.

## Compartment 4: Hedgerows

### *Description:*

#### Hedgerow H1

This boundary hedge against Blagreaves Lane is kept regularly trimmed to around 1.5 metres. It consists of a mixture of ash, hawthorn, elder and sycamore. The field layer of tall herb and tall grasses looks to be herbicide-treated on a regular basis.

#### Hedgerow H2

This hedge forms the site boundary against gardens. It is tall and un-managed and is mostly hawthorn with dog rose, blackthorn and ash and has an old ash tree within it. The ground flora is a wide strip of un-managed tall grassland and tall herb.

#### Hedgerow H3

Hedge 3 is also a tall overgrown line of ash, wych elm, hawthorn, holly, yew and elder against gardens of adjacent properties. There is ivy, cleavers, bramble, nettle and false oat-grass beneath.

#### Hedgerow H4

This internal hedge is of elder, hawthorn and ash and is trimmed to about 2 to 3 metres high. The field layer is tall herb including cow parsley, nettle, creeping thistle, cleavers and garlic mustard.

#### Hedgerow H5

This is a tall unmanaged 3 to 4 metre high line of hawthorn, hazel, guelder rose, dog rose and elder. Parts of it look to be managed by the property owners adjacent. It has garden fences at the back and is mown right up to the hedge bottom on the park side.

#### Hedgerow H6

This is a short, regularly-managed mostly hawthorn hedge forming a garden boundary against the park. It has one mature pedunculate oak within it.

#### Hedgerow H7

Adjacent to H6 is H7 which lies on the site boundary against a school. It is growing up to the school's security fence and comprises mostly hawthorn, kept trimmed to 2.5 metres.

#### Hedgerow H8

This is of mostly hawthorn with holly, ash, elder and dog-rose. It is some 5 metres high and about the same wide. It looks to have been laid in the distant past, but not managed recently.

#### Hedgerow H9

This hedge is a continuation of H4 and forms the site boundary against an adjacent property's garden. Some 4 metres tall, it lies against a panel fence and consists of a mixture of hawthorn, field maple, elder, hazel and dog-rose.

#### Hedgerow H10

This is a mixed hedge of mostly hawthorn, with hazel, dog-rose and bramble. It forms the boundary of the site against the gardens of properties on Field Rise. It is dense and trimmed regularly. At one end it grades into a tall line of trees/small woodland with sessile oak, Scots pine and ash.

#### Hedgerow H11

H11 lies on the site boundary against a school security fence. It consists of hawthorn, blackthorn, bramble, dog-rose and elder at a height of about 3

metres tall. The ground flora is of un-mown tall grasses and tall herb including false oat-grass, cow parsley and nettle.

Hedgerow H12

This is a section of hedge planted relatively recently and consisting of hawthorn, field maple, holly, hazel and blackthorn lying against the school security fence and kept trimmed to about 2.5 metres tall.

Hedgerow H13

This 'hedge' is more a wide band of un-managed blackthorn at the southern edge of the central woodland block. There is some bramble and dog-rose within it.

Hedgerow H14

This hedge lies against the allotments and forms the site's north-eastern boundary. It is a neatly-laid fairly thin hedge of mostly hawthorn trimmed to 2.5 metres high and with a chain-link fence against it. Dog-rose and bramble are occasional. It is fairly shaded from the adjacent wood and thus has little in the way of ground flora with plenty of bare soil beneath it.

*Compartment Objectives:*

All hedges should as far as possible be managed to provide shelter and nest sites, flowers and fruit, with a variety of heights, ages and a good mixture of native species. This will not be not possible however on the hedges managed by property owners of adjacent properties. Some of the hedges should be laid, if suitable, others left to form tall dense hedges with plenty of fruit in autumn and winter. Wide buffer strips with tall herb and tall tussocky grassland alongside provides foraging habitat for birds and small mammals.

*Prescriptions:*

In consultation with adjacent property owners as appropriate, manage hedges as follows:

H1 It is probably not practicable to manage this hedge for wildlife, as it is kept closely trimmed by the adjacent property owners. The grassy margins, however, should not continue to be treated with herbicide, but left un-mown to form a tall strip at least 2 metres wide alongside the hedge.

H2 Also lies against the site boundary and adjacent properties. Leave as is.

H3 More a tall line of trees. Leave as is.

H4 Trim on a 2 to 3 year cycle.

H5 It is probably not practicable to manage this hedge differently to the current regime, as it is trimmed by the adjacent property owners. The grassy margins on the Park side should be left un-mown to form a tall strip at least 2 metres wide alongside the hedge.

H6 As H5.

H7 This hedge grows up to the school's security fence and is kept trimmed. It is probably not practicable to change the hedge management. The grassy margins on the Park side should be left un-mown to form a tall strip at least 2 metres wide alongside the hedge.

H8 Lay hedge over 2 or even 3 years. The work should be done by traditional methods of hedge-laying using hand tools, work to be done in winter, preferably February or later when the berries have been available to birds all winter and before the nesting season starts. Add the following mix of native shrubs to gap up any gaps at time of laying:

Hawthorn (*Crataegus monogyna*) 60%  
Blackthorn (*Prunus spinosa*) 15%  
and the remaining 25% a mixture of:  
Crab apple (*Malus sylvestris*)  
Hazel (*Corylus avellana*)  
Field Maple (*Acer campestre*)  
Dog-rose (*Rosa canina*)  
Guelder rose (*Viburnum opulus*)  
Holly (*Ilex aquifolium*)

Plants to be 60 to 90 cm (45 cm and pot grown for the holly) and pit-planted. Keep plants weed-free for 3 years until established, by weeding at least 3 times during each summer. Replace losses in the first winter following planting. A thick layer of mulch can be useful in suppressing weed growth.

H9 Leave - not practicable to alter management, as hedge lies against panel fence of adjacent properties.

H10 if possible should be left un-trimmed to provide shelter and food for birds. Clear up all dumped rubbish and garden waste regularly.

H11 Continue with current trimming regime, as hedge lies against school security fence. Ensure as wide as possible a strip is left un-mown alongside.

H12 Trim on a 2 to 3 year cycle. Ensure as wide as possible a strip is left un-mown alongside.

H13 Leave as is and as provide as wide as possible a strip un-mown alongside.

H14 Trim side of hedge against path annually.

All hedges: Wherever possible, adjust current grass mowing regime to leave a minimum of 2 metres of margin un-mown alongside the hedges. These margins may be topped every third year to prevent scrub from establishing. The hedge tops could be left un-mown for 2 or 3 years to improve the hedges as a wildlife resource.

### 3.1.2 Capital projects for habitat creation

#### New Reed Bed Construction

Construction of a reedbed at Sunnydale Park will contribute to a UK Biodiversity Action Plan (UK BAP) priority habitat. Reedbeds provide an environmentally friendly solution for contaminated waste water. As well as providing a valuable wetland habitat for wildlife, reedbeds are cost effective and if well designed are sustainable and robust with low maintenance requirements. *Phragmites Australis*, common reed, has the ability to transfer oxygen from its leaves down through its stem and out through its root system. This then encourages micro-organisms that digest the pollutants in the water to colonise the area. The polluted water flows through the reedbed and is treated by the micro-organisms. It is hoped that a by 'mopping up' pollutants and silt from the stream, a new reed bed up-stream of the main pond (for location see Desired State plan) would offer a large saving in not having to de-silt the pond every few years.

A horizontal flow reedbed is proposed by diverting the flow of Cuttle Brook by an inlet pipe to the new reedbed (see Desired State plan). This can deal with low strength effluent, such as the road run-off into Cuttle Brook. A horizontal flow reed-bed is simply one in which effluent comes in at one end, flows over the bed, which always remains full of water, and discharges from the other. Bacteria grow around the root systems of the reeds where the oxygen-rich atmosphere they produce assists this breakdown of pollutants. The cleaner water then flows back via an outlet pipe to the stream and thus into the main pond. The original stream channel is to be left so that the adjacent reedbed can be drained for management if necessary.

The Environment Agency must be consulted before any work starts, to see if an environmental permit and/or abstraction licence is needed, and should also be consulted if the final proposals include retaining water above the original ground level or building a dam or bund. If spoil is going to be transported off site via a public highway, or sold, or used to construct bunds (ie for a possible new pond on site) the relevant department of the local Planning Authority must be consulted.

It will be important at all stages of the work to use an experienced and reputable Contractor, who understands the details of design and construction including surface profile, use of sand, gravel or other materials, and inlet and outlet arrangements. As the site is managed by a partnership of Derby City Council, Derbyshire Wildlife Trust, Natural England, Friends of Littleover Parks and Derby City Pond Warden Association, all these agencies should be consulted as a courtesy on this innovative project.

After the reedbed site has been excavated and constructed, the actual reed planting work could then be undertaken by volunteers. Established cuttings of common reed are readily available commercially. However, they are easy to propagate if a source is available locally. A good method of small-scale reed bed creation begins with digging up common reed rhizomes from a local source in spring when the shoots are around 10 cm tall. The rhizomes then need to be translocated immediately to where they are needed and pit planted, which might be very cold and intensive labour. A faster and easier

method of creating reed beds, is to cut stems of locally-sourced common reed, if available, which should be cut as close to the base as possible and planted by pushing the stems into the mud to a depth of around 50-60 cm. Some of the nodes (area from where the leaves grow) should be below ground, leaving 10-15cm above ground if possible. The cuttings then appear to wither and die back over the next few weeks, but new roots will grow from the buried nodes and new shoots will appear. It may be 3 years before the reeds are fully established. Some form of temporary fencing or dead hedging may be needed to protect the reedbed from disturbance while it is establishing.

Once established, the reeds are unlikely to cause problems by spreading, but this should be monitored as the course of the stream must be kept clear. The water levels, water quality and plant species present should also be monitored at least once annually to inform aftercare requirements. Maintenance mostly consists of weeding for a few years: any invasive species including scrub and saplings should be cut and removed in summer.

New Pond and Wetland - see Desired State plan for locations.

A new pond close by the main pond is proposed, The proposed site is in a hollow made by the now dry former course of a stream, that is currently short-mown grass and of no benefit to wildlife. It could be created by simply providing a dam with no further digging, and would fill by funnelling rainwater. It should not need any kind of liner. It would tie in well with the reedbed construction, as it may be possible to use the excavated material from the reedbed to create a dam or bund for the new pond.. The exact size and design is not discussed at this stage, as it will depend on the availability of funding.

Wetland in wood

There is a currently boggy area that lies next to the path through woodland 2a, the main wooded block. It would be ideal for creating a small wetland area and could be cheaply made by simply scraping with a mini-digger. The waterlogged ground could then be planted with suitable species to create a small area of tall herb fen/marshland. Annual management to keep back the bramble and blackthorn at the edges will be important, and any invasive plants should be controlled.

Flood storage

At the stage of writing the Management Plan there is no funding certainty, without which no project is possible, therefore the detailed implementation of the objectives in Section 2.3.2 will need to be designed in detail when the extent of any funding is confirmed.

Cornfield Annuals

As an optional extra, 2 new areas of cornfield annuals are proposed, one at the pond end of the main sports field at the field edge near to the play area, and the other alongside the surfaced path in Top Field, - see Desired State plan areas 3f (ii) and 3f(iii).

Cornfield annuals need to be sown into weed-free soil, and at a rate of around 2 grams per square metre. They will not establish amongst grass or other

vegetation, so firstly cultivate the soil to create a weed-free seed bed with a medium to fine firm tilth. This can be done by removing the turf (which could be used elsewhere, or sold) or spraying off the existing vegetation with a herbicide such as glyphosate, followed by rotovating. Bulk up the seed with an inert carrier such as sand or sawdust for visibility and sow by broadcasting by hand in autumn, or early spring up to mid-April.

Recommended species and proportions:

*Agrostemma githago* corncockle 50%

*Chrysanthemum segetum* corn marigold 20%

*Centaurea cyanus* cornflower 15%

*Papaver rhoeas* field poppy 10%

*Anthemis austriaca* corn chamomile 5%

A commercial mix such as Emorsgate's Standard Cornfield Mixture EC1 is suitable. Meadowmania produce a similar mix. A number of other reputable suppliers of British provenance seed provide comparable mixes. These mixes do best sown in fertile conditions. The red of the poppy, blue of the cornflower, purple/pink of the corn cockle and yellow corn marigold can look very striking. After broadcasting roll or trample the soil flat, but do not rake or cover the seed.

Aftercare: In spring the previous year's plant growth should be removed and the beds rotovated to produce an open tilth to the soil. New seed can then be broadcast directly onto the new substrate. No further maintenance should be needed. Costs of seeding could be minimised by collecting the seed from the annuals during the summer.

### **3.1.3 To encourage responsible use of the site**

Access should be maintained - all paths and desire lines need to be managed. Rubbish needs to continue to be collected regularly to reduce this eyesore and potential health hazard and so it does not become acceptable through familiarity.

Continue the valuable practice of the FOLPs meeting each month to form a working party to carry out practical conservation tasks that all are very welcome to join.

Update interpretive material such as display boards at access points and near main features such as the large pond.

Promptly mend or replace damage, whether deliberate or accidental.

Carry out regular safety checks on trees, water bodies, access infrastructure and paths, with appropriate management as necessary.

Cut a series of rides cut into woods 2c to increase sight lines and discourage anti-social behaviour.

### **3.1.4 To carry out further survey, monitor key species and assess habitat condition**

Carry out new or updated surveys for: bats, invertebrates including butterflies, moths and dragonflies; breeding birds, reptiles and mammals to fill gaps in knowledge.

Carry out regular monitoring of the enhancement works carried out, namely the establishment success of wildflower plugs in the tall grassland areas and of the re-seeded haymeadow and cornfield annual areas, the success of the

new ponds and presence of any invasive non-native plants and success of the reedbed.

Carry out annual monitoring of species and habitat condition. Pass all amphibian records to the County Amphibian Recorder. Carry out annual PSYM surveys of the main pond. Encourage local recording groups to use the site. Set up training days for interested volunteers.

Set up a central database maintained by a co-ordinator to store and update all species information.

### **3.1.5 Securing external sources of funding**

Pursue the European Regional Development Fund (ERDF) as a source of flood defence grant in aid funding, including the proposed new reedbeds and also the majority of the Biological Action Plan (BAP) habitat extension work as part of the wider project.

## **3.2 Natural and man-induced trends**

### Natural trends:

The weather extremes caused by climate change cannot confidently be predicted - high spring rainfalls could badly affect breeding birds, flooding affects all terrestrial mammals and drought can result in the death of trees. Harmful impacts of climate change can include extreme weather events like the heat wave in Derby in 2003, the severe snow experienced in 2010, or the exceptionally cold spring in 2013.

Without human intervention, the natural trend would be for wildflowers to decline as grasses take over in all currently species-rich areas of grassland. All grassland, if left unmanaged, would decline as scrub encroaches, eventually becoming locally dominant. Without being managed or dredged the main pond would begin to silt up and become shallower and eventually perhaps become willow carr. The smaller ponds would also silt up over time, with the eventual loss of all open water areas, accelerated by the increase in vegetation. All hedgerows would grow out to full natural height of trees and shrubs and become a tall line of trees with gaps beneath and any species that colonise rapidly such as blackthorn and bramble would form dense thickets alongside the hedge.

It is not possible to predict with any certainty natural trends in bird, mammal or invertebrate populations, as these would reflect changes in the habitats. Loss of habitat would result in loss of species diversity.

### Man induced trends:

The current and probable continuing use of the site looks to be having some adverse impact on the wildlife interest, including heavy trampling around the main pond, bread being fed to ducks thus encouraging rats, dogs off leads causing disturbance; littering, fire sites and some vandalism. The success of any new reedbeds will depend on them being undisturbed for the reeds to establish, and the popularity of the site with dog walkers may prevent this.

### **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 birds in the nesting season, badgers, bats and newts, - the latter will be relevant if reedbed construction and pond enlargement and creation goes ahead.

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

Planning Permission This may be needed for operations considered as engineering works such as constructing reedbeds and new ponds.

Tree Preservation Orders The law on Tree Preservation Orders is in part VIII of the Town and Country Planning Act 1990 as amended in the Town and Country Planning (Tree Preservation) (England) Regulations 2012. A group of 14 willows and 8 ash trees lining the brook adjacent to the Rosamonds Ride entrance are subject to TPO no. 37 and will need written permission from the Planning Authority before any sort of pruning can take place.

Health and Safety Most of the legislation regarding health and safety is aimed at the workplace and volunteers are not covered. It is, however, good practice to comply and consider safety in training, using equipment, tools and first aid equipment. The Management of Health and Safety at Work Regulations 1992 introduced the need for a risk assessment. Groups should therefore always undertake a risk assessment, be given appropriate training and clear safety instructions and have a first-aid certificate holder present.

3.3.2 Consultations The Environment Agency should be consulted on all works affecting a watercourse or within 50m of one, including the proposals for reed bed creation. The Environment Agency must be consulted before any work starts on a new reedbed as an environmental permit and/or abstraction licence may be needed. The relevant department of the local Planning Authority must be consulted if spoil is going to be transported off site via a public highway, or sold, or used to construct bunds.

#### **3.3.3 Cost**

Without substantial external funding, the reedbed and pond-creation work is likely to prove prohibitively expensive. The re-seeding projects are costly and also require labour.

3.3.4 Knowledge. There is a lack of up to date information about several groups of species, e.g. breeding birds; butterflies and other invertebrates; and mammals including bats. This makes comprehensive planning for wildlife difficult and key species may have been missed.

3.3.5 Disturbance. Continuous disturbance by the general public with dogs off leads is a constraint in considering several management issues,

particularly the usefulness of ponds and any new reedbeds and the surrounding terrestrial habitat as an amphibian refuge. Dogs are also a potential disturbance to shy species of nesting birds. The lighting of fires occurs occasionally and these can destroy habitats and damage soil structure.

#### 3.3.6 Practical constraints

Work such as litter clearance, raking up of grass cuttings, seed sowing, weeding and the proposed reedbed planting is very labour intensive and time specific. It may prove difficult to get the labour just when needed. Some of the tasks may be suitable for community groups and volunteers.

### **3.4 Management and Funding Opportunities.**

There is an exciting opportunity for funding through ERDS, hopefully in the near future. This would enable most of the capital work projects to be done, including the creation of reedbeds and new flood storage areas as well as the construction of new ponds.

#### 4. 10-YEAR WORK PROGRAMME, Years 1 to 5

| Compartment                         | Management Prescription                                                                                                                        | Priority  |           | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------|--------|--------|--------|--------|
|                                     |                                                                                                                                                | Essential | Desirable |        |        |        |        |        |
| Compartment 1:<br>Ponds and wetland | Carry out annual pond PSYM surveys of the main pond                                                                                            |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | Monitor all ponds for amphibians.                                                                                                              |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | Cut back some of the overhanging branches on the north side of the main pond                                                                   | ●         |           | ✓      |        |        |        | ✓      |
|                                     | Re-profile the inflow to the main pond into a series of riffles OR re-route stream to head of pond.                                            |           | ●         |        |        | ✓      |        |        |
|                                     | All ponds: Timings as informed by monitoring - clear some of the floating and emergent vegetation in order to provide at least 50% open water. | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | If the reed bed upstream of the pond is not created, the main pond should be dredged to reduce the silt.                                       |           | ●         |        |        |        |        | ✓      |
|                                     | Enlarge main pond (and potentially other areas) for greater flood storage capacity, timing linked to funding.                                  |           | ●         |        |        | ✓      |        |        |
|                                     | In winter remove saplings and scrub from all ponds and wetland and immediate surrounds.                                                        | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | Remove all rubbish (July to February)                                                                                                          |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | Extend and deepen ponds 1c and 1d.                                                                                                             |           | ●         | ✓      |        |        |        |        |
|                                     | Dig a new pond 1e and create tall herb wetland 1f as detailed.                                                                                 |           | ●         | ✓      |        |        |        |        |
|                                     | Re-dredge ponds 1c and 1d plus new pond as necessary. Timing advisory.                                                                         |           | ●         |        |        |        |        | ✓      |
|                                     | <u>Cuttle Brook</u> : Remove all Himalayan balsam.                                                                                             | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | <u>Cuttle Brook</u> : Remove debris, fallen branches and litter.                                                                               | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                     | Create new reedbed as detailed.                                                                                                                |           | ●         |        |        | ✓      |        |        |

|                            |                                                                                                                                           |   |   |   |   |   |   |   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| Compartment 2:<br>Woodland | Leave all fallen timber and all standing dead wood, unless a safety issue - if so, stack timber into piles as habitat stacks.             |   | ● | ✓ | ✓ | ✓ | ✓ | ✓ |
|                            | Continue the pollarding regime for the crack willows in 2b, timing advisory.                                                              | ● |   |   | ✓ |   |   | ✓ |
|                            | Cut back encroaching bramble, any colonising woody species and strim the tall herb vegetation in the butterfly glade and wetland area 1f. | ● |   | ✓ | ✓ | ✓ | ✓ | ✓ |
|                            | Leave a minimum of 2 metres of woodland margins un-mown. Monitor for scrub encroachment.                                                  |   | ● | ✓ | ✓ | ✓ | ✓ | ✓ |
|                            | Top tall margins about every third year to prevent scrub from establishing.                                                               | ● |   |   | ✓ |   |   | ✓ |
|                            | Create cuts/ rides into woodland 2c as detailed.                                                                                          |   | ● | ✓ |   |   |   |   |

| Compartment              | Management Prescription                                                                                                                                                                        | Priority  |           | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------|--------|--------|--------|--------|
|                          |                                                                                                                                                                                                | Essential | Desirable |        |        |        |        |        |
| Compartment 3: Grassland | Continue the current summer mowing regime of all areas to be left as amenity grassland. Mow 'desire line' paths regularly in tall grassland.                                                   | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                          | Cut tall grasslands and remove the field-dried grass after the end of August each year. After mowing, the arisings should be removed and composted.                                            | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                          | Leave at least 2 metre un-mown margins by all the hedges, young copses and woodlands. Mow these every 2 or 3 years at the same time of year as the meadows to prevent scrub from establishing. |           | ●         | ✓      |        |        | ✓      |        |
|                          | <u>New meadow creation:</u> In late autumn and on tops of ridges only, power harrow, or use other method of breaking up the thatch of vegetation to create 50% bare ground.                    | ●         |           | ✓      |        |        |        |        |
|                          | <u>New meadow creation:</u> Strew 20 bales species-rich hay on new meadow area OR buy a wildflower-only mix as detailed at a rate of 15kg/hectare, sow autumn or spring, OR plug plant.        | ●         |           | ✓      |        |        |        |        |
|                          | Manage all the meadow areas by a single late cut (September) and remove cuttings.                                                                                                              | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                          | Alter the mowing regime on the cricket field and ridge and furrow grassland to leave more extensive edge areas un-mown.                                                                        |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                          | Plug-plant as detailed areas 3d(i), 3d(ii), 3d(iii) and 3e to enhance these tall grassland areas.                                                                                              |           | ●         | ✓      |        |        |        |        |
|                          | Monitor areas plug planted as above, keep free of scrub as required.                                                                                                                           |           | ●         |        | ✓      | ✓      | ✓      | ✓      |

| Compartment              | Management Prescription                                                                                                                                       | Priority |   | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|--------|--------|--------|--------|---------|
|                          | <u>Cornfield annual areas:</u> Preparation: Remove the turf or spray off the existing vegetation with a herbicide such as glyphosate, followed by rotovating. |          | ● | ✓      |        |        |        |         |
|                          | Sowing: Bulk up the seed with an inert carrier such as sand or sawdust and sow by broadcasting by hand in autumn, or early spring up to mid-April.            |          | ● | ✓      |        |        |        |         |
|                          | Collect seed from the annuals in summer for sowing later in year. Store in dry and dark conditions.                                                           |          | ● |        | ✓      | ✓      | ✓      | ✓       |
|                          | Aftercare: Each spring remove previous year's plant growth. Rake beds over to produce an open tilth. Broadcast seed.                                          |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
| Compartment 4:<br>Hedges | All hedges: Where possible, leave unmown tall strip at least 2 metres wide alongside.                                                                         |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Trim hedge 4 on a 2 or 3 year cycle.                                                                                                                          |          | ● | ✓      |        |        | ✓      |         |
|                          | Lay and gap up as necessary hedge 8.                                                                                                                          |          | ● |        | ✓      |        |        |         |
|                          | Trim hedge 11.                                                                                                                                                |          | ● | ✓      |        | ✓      |        | ✓       |
|                          | Trim hedge 12 on a 2 or 3 year cycle.                                                                                                                         |          | ● | ✓      |        |        | ✓      |         |
|                          | Trim hedge 14 against path annually.                                                                                                                          |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Maintain all other hedges as tall wide hedges, clear ditches to existing depth and clear rubbish.                                                             |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |

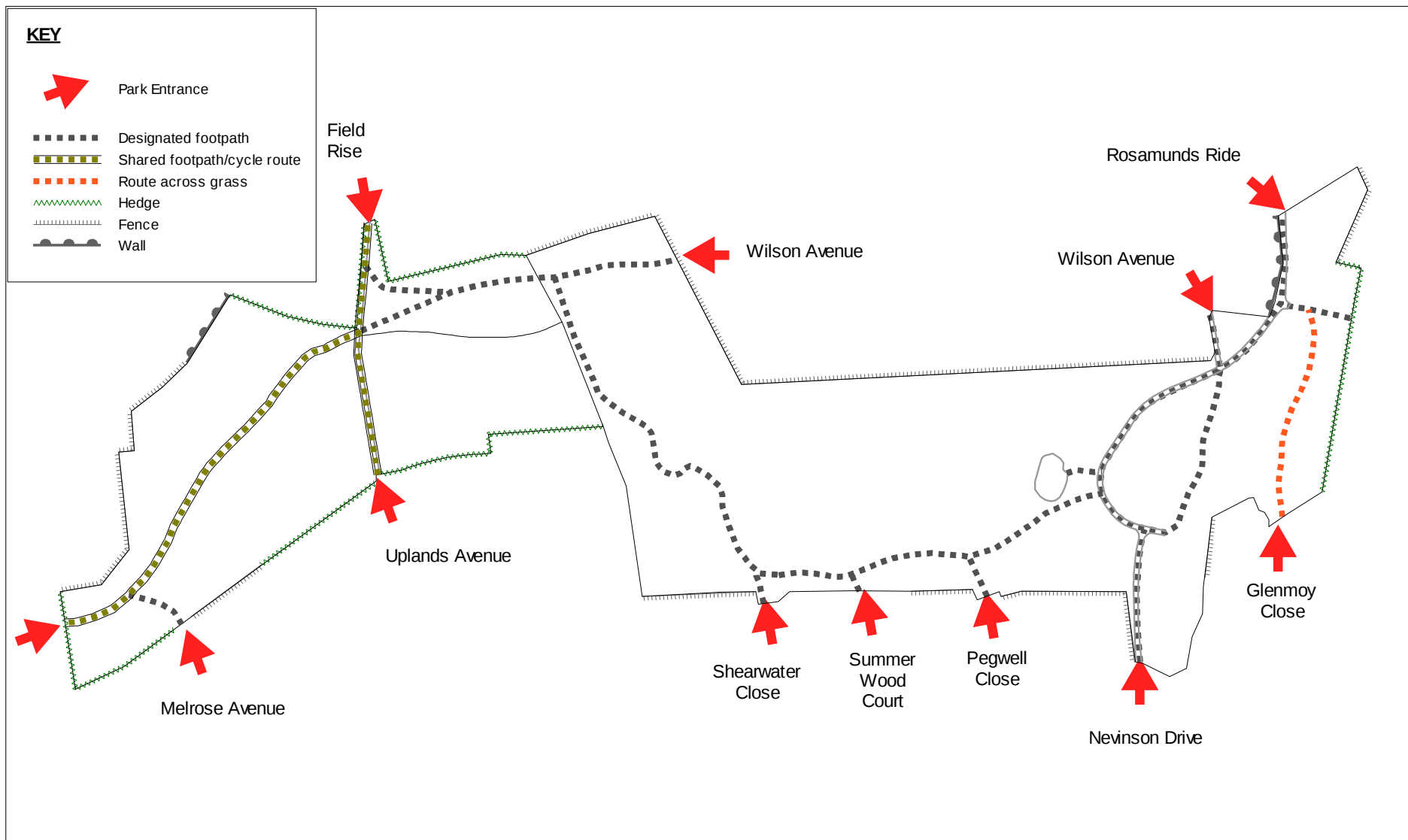
| Compartment                       | Management Prescription                                                                                                      | Priority  |           | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------|--------|--------|--------|--------|
|                                   |                                                                                                                              | Essential | Desirable |        |        |        |        |        |
| Reedbed                           | Starting one year after construction, monitoring of water condition, water levels and plant species.                         | ●         |           |        |        | ✓      | ✓      | ✓      |
|                                   | Removal of invasive species including scrub by cutting in summer.                                                            | ●         |           |        |        |        |        | ✓      |
|                                   | Cutting back of reeds on 4 to 5 year rotation (advisory)                                                                     |           | ●         |        |        |        |        | ✓      |
| Whole site, Survey and Monitoring | Survey for bats, invertebrates including butterflies, moths and dragonflies; breeding birds, reptiles and mammals.           |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                   | Carry out practical conservation tasks with public involvement                                                               |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                   | Manage all paths and desire lines                                                                                            |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                   | Monitor species and habitat condition including wildflower plugs, re-seeded haymeadow, cornfield annual areas and new ponds. | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                   | Set up and update central database for species information.                                                                  |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓      |
|                                   | Carry out safety checks on trees, ponds, access infrastructure and paths; mend as necessary. Regularly collect rubbish.      | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓      |

## 10-YEAR WORK PROGRAMME, Years 6 to 10

| Compartment                         | Management Prescription                                                                                                                        | Priority  |           | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------|--------|--------|--------|---------|
|                                     |                                                                                                                                                | Essential | Desirable |        |        |        |        |         |
| Compartment 1:<br>Ponds and wetland | Carry out annual pond PSYM surveys of the main pond.                                                                                           |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | Monitor all ponds for amphibians                                                                                                               |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | Cut back some of the overhanging branches on the north side of the main pond                                                                   |           | ●         |        |        |        | ✓      |         |
|                                     | All ponds: Timings as informed by monitoring - clear some of the floating and emergent vegetation in order to provide at least 50% open water. | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | If the reed bed upstream of the pond is not created, the main pond may need to be dredged again. Timing advisory.                              |           | ●         |        |        |        |        | ✓       |
|                                     | In winter remove saplings and scrub from all ponds and wetland and immediate surrounds.                                                        | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | Remove all rubbish (July to February)                                                                                                          |           | ●         | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | Re-dredge ponds 1c and 1d plus new pond as necessary. Timing advisory.                                                                         |           | ●         |        |        |        |        | ✓       |
|                                     | <u>Cuttle Brook</u> : Remove all Himalayan balsam.                                                                                             | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                     | <u>Cuttle Brook</u> : Remove debris, fallen branches and litter.                                                                               | ●         |           | ✓      | ✓      | ✓      | ✓      | ✓       |

| Compartment              | Management Prescription                                                                                                                                                                        | Priority |   | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|--------|--------|--------|--------|---------|
| Compartment 2: Woodland  | Leave all fallen timber and all standing dead wood, unless there is a safety issue - stack timber into habitat stacks.                                                                         |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Continue the pollarding regime for the crack willows in 2b, timing advisory                                                                                                                    | ●        |   |        | ✓      |        |        | ✓       |
|                          | Cut back encroaching bramble, any colonising woody species and strim the tall herb vegetation in the butterfly glade and wetland area 1f.                                                      | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Leave a minimum of 2 metres of woodland margins un-mown. Monitor for scrub encroachment.                                                                                                       |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Top tall margins about every third year to prevent scrub from establishing.                                                                                                                    | ●        |   |        | ✓      |        |        | ✓       |
| Compartment 3: Grassland | Continue the current fortnightly summer mowing regime of all areas to be left as amenity grassland. Mow 'desire line' paths regularly in tall grassland.                                       | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Cut tall grasslands and remove the field-dried grass after the end of August each year. After mowing, the arisings should be removed and composted.                                            | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |
|                          | Leave at least 3 metre un-mown margins by all the hedges, young copses and woodlands. Mow these every 2 or 3 years at the same time of year as the meadows to prevent scrub from establishing. |          | ● |        | ✓      |        |        | ✓       |
|                          | Monitor areas plug-planted, keep free of scrub as required.                                                                                                                                    |          | ● |        | ✓      | ✓      | ✓      | ✓       |
|                          | Manage all meadow areas by a single late cut (September) remove cuttings.                                                                                                                      | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |

| Compartment                       | Management Prescription                                                                                                                             | Priority |   | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|--------|--------|--------|--------|---------|
|                                   | Collect seed from the annuals in summer for sowing later in year. Store in dry and dark.                                                            |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Cornfield annuals aftercare: Each spring, continue to remove previous year's plant growth. Rake beds over to produce an open tilth. Broadcast seed. |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
| Compartment 4: Hedges             | All hedges: Where possible, leave un-mown tall strip at least 2 metres wide alongside.                                                              |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Trim hedge 4 on a 2 or 3 year cycle.                                                                                                                |          | ● |        | ✓      |        |        | ✓       |
|                                   | Trim hedge 11.                                                                                                                                      |          | ● |        | ✓      |        | ✓      |         |
|                                   | Trim hedge 12 on a 2 or 3 year cycle.                                                                                                               |          | ● |        | ✓      |        |        | ✓       |
|                                   | Trim hedge 14 against path annually.                                                                                                                |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Maintain all other hedges as tall wide hedges, clear rubbish.                                                                                       |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
| Reedbed                           | Monitoring of water condition, water levels and plant species                                                                                       | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Removal of invasive species including scrub by cutting in summer.                                                                                   | ●        |   |        |        | ✓      |        |         |
|                                   | Cut back reeds on 4 to 5 year rotation                                                                                                              |          | ● |        | ✓      |        |        |         |
| Whole site, Survey and Monitoring | Survey for bats, invertebrates including butterflies, moths and dragonflies; breeding birds, reptiles and mammals                                   |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Carry out practical conservation tasks with public involvement.                                                                                     |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Manage all paths and desire lines.                                                                                                                  |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Monitor species and habitat condition including wildflower plugs, re-seeded haymeadow, cornfield annual areas and new ponds.                        | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Input the central database with new species records                                                                                                 |          | ● | ✓      | ✓      | ✓      | ✓      | ✓       |
|                                   | Carry out safety checks on trees, ponds, access infrastructure and paths; mend as necessary. Regularly collect rubbish.                             | ●        |   | ✓      | ✓      | ✓      | ✓      | ✓       |



## Plan 1. Boundaries and Access

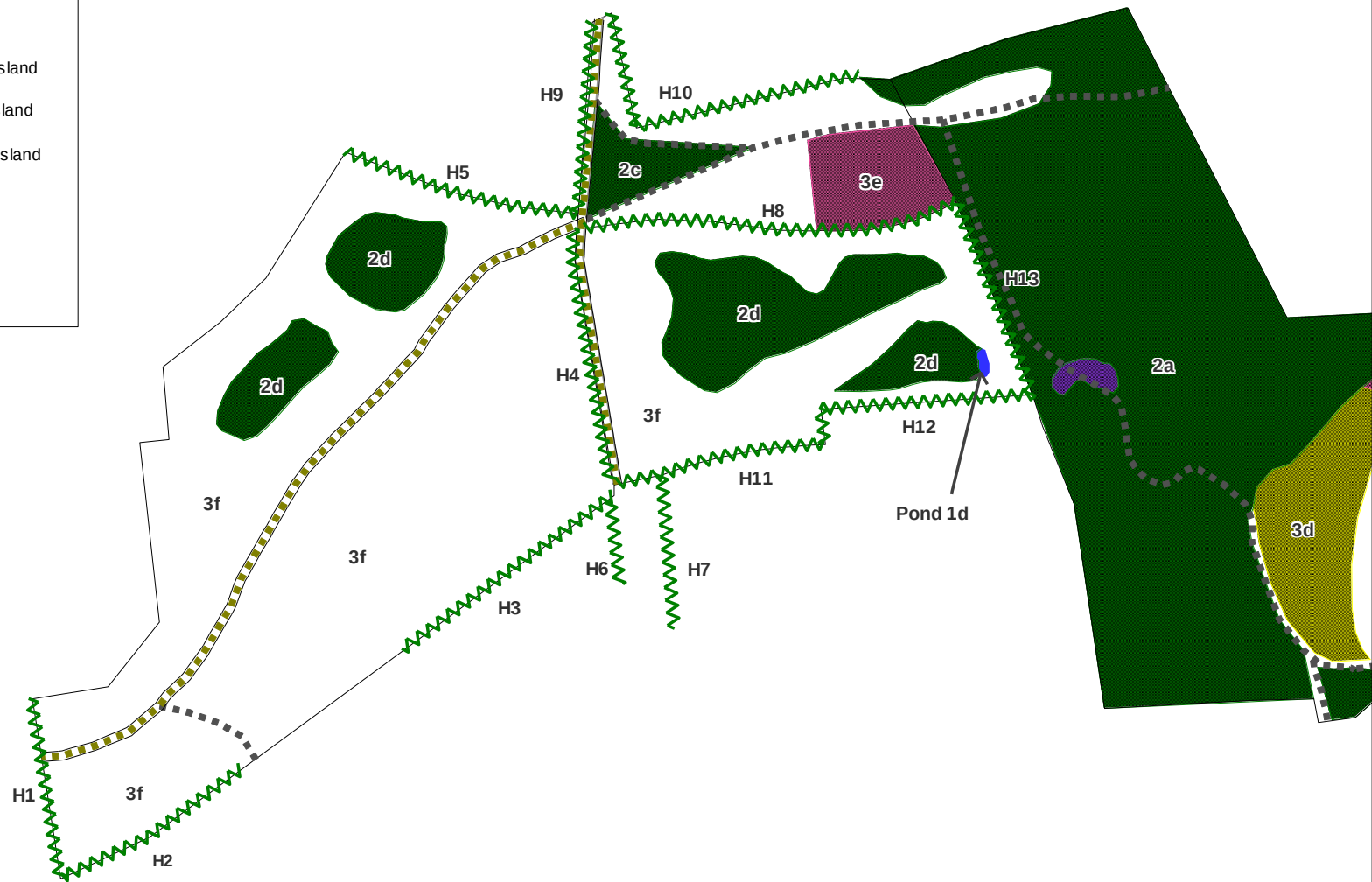
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# **KEY**

-  Hedgerow
-  Woodland
-  Hay meadow grassland
-  Tall unmown grassland
-  Short amenity grassland
-  Butterfly glade
-  Stream
-  Pond

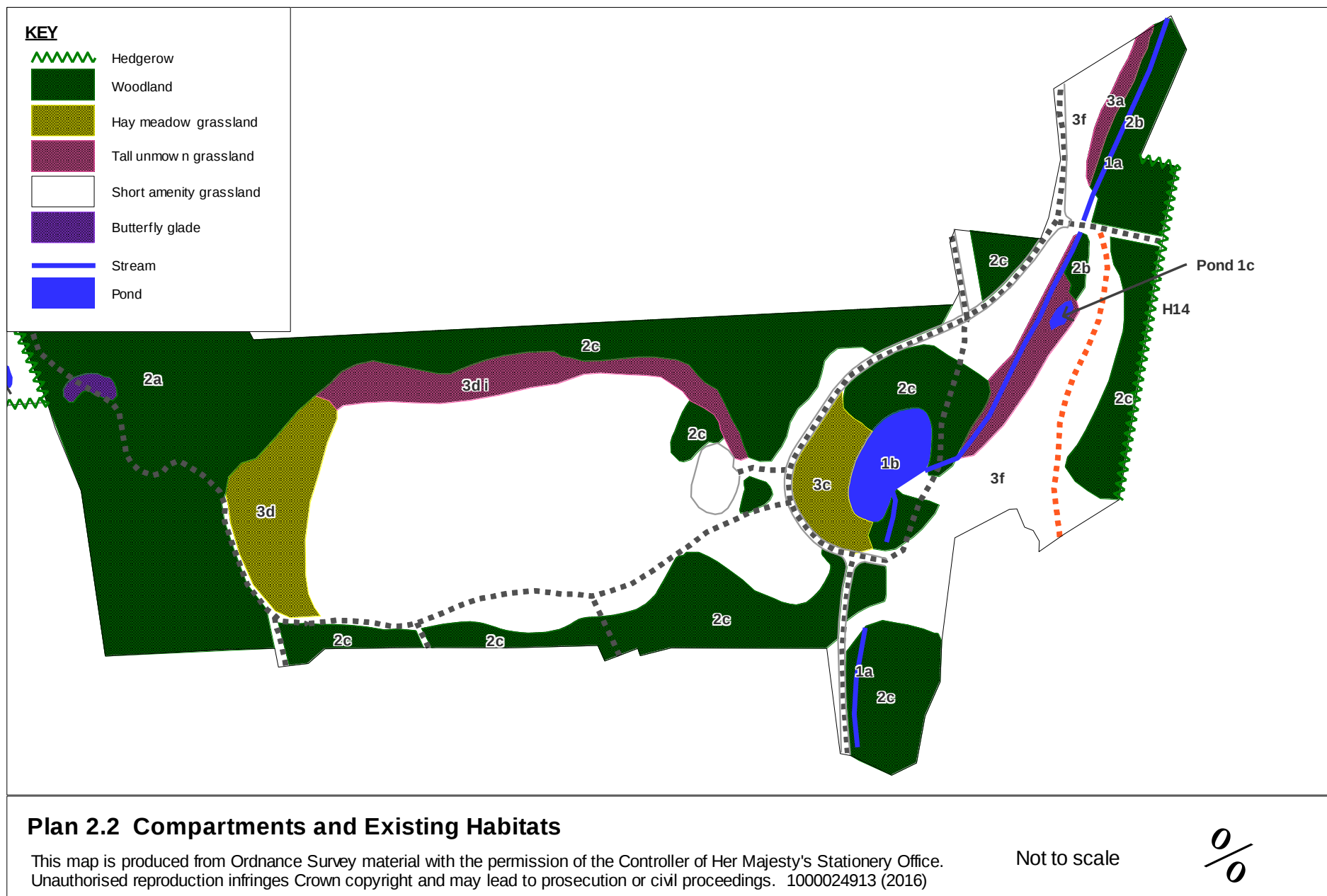


## **Plan 2.1 Compartments and Existing Habitats**

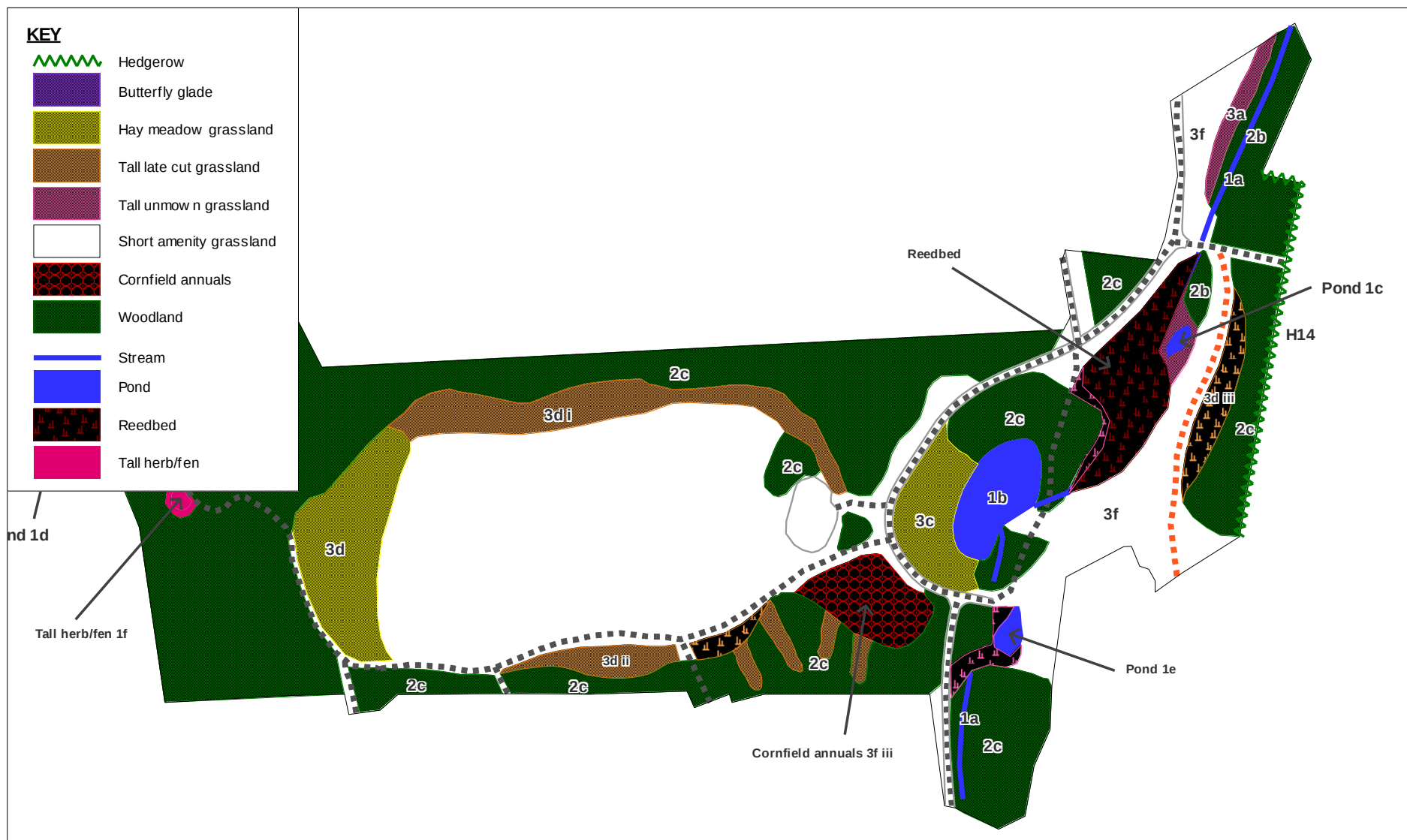
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### Plan 3.2 Optimal State

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