WYCHAVON

Management Plan

Avon Meadows
2025-2030

WYCHAVON

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1. Introduction

Six-spot burnet moth

1. Introduction

1.1 Our Vision

Our vision for Avon Meadows Community Wetland is for it to be a place that is rich in flora and fauna, loved and cared for by the people of Pershore, who respect and value it as an accessible space to learn, explore and enjoy.

1.2 Management Aims

- Retain, restore and manage the existing high quality habitat areas of Avon Meadows
- Create additional high value habitat within the site
- Ensure Avon Meadows is valued as an outdoor learning space
- Encourage local people to take part in managing, monitoring and enjoying Avon Meadows
- Improve public access to and enjoyment of Avon Meadows
- Reduce Pershore's contribution to flooding and improve the quality of water entering the River Avon

1.3 About this plan

This management plan for Avon Meadows builds on the work which has already been carried out there. Much has changed since project work started in 2009 and this plan will help us to look forward over the next few years. By producing and sharing this plan, we hope that everyone who has an interest in Avon Meadows will understand what we are hoping to achieve, why we are managing the meadows the way that we are and enjoy the positive changes for people and wildlife that we are planning to deliver.

This management plan will help Wychavon District Council, Pershore Town Council and the Friends of Avon Meadows to understand what environmental condition, public access and community engagement should be achievable and realistic over the next five years and, most importantly, sets out how we are going to achieve those targets and monitor our progress towards them.

It is intended to be a publicly available document, but also a working document. As with any semi-natural environment, things change! The actions outlined are those needed to meet our current aims; but they may not take place exactly at the times or in the way specified, and we will need to be flexible and adaptable to meet our aims. For this reason the management plan will be reviewed and updated annually.

This page is intentionally blank, we are awaiting an updated OS map

2. About Avon Meadows

Buttercup meadow in the foreground with Pershore Abbey in the background

2. About Avon Meadows

2.1 Location and Area

Name: Avon Meadows Community Wetland and Local Nature Reserve

Location: Land between the rear of Cherry Orchard, Meadow Walk and the River Avon, Pershore.

Main car park entrance: What3words ///stub.royal.wells

Cherry Orchard House entrance: ///crawled.intrigues.reboot

OS Grid Ref. SO 950 460

Area: 24 ha

Ownership: Wychavon District Council (part), Pershore Town Council (part).

Conservation Status: Designated as a Local Nature Reserve in 2013

2.2 The history of Avon Meadows

Avon Meadows Community Wetlands sits on the banks of the River Avon and forms part of its natural floodplain. For hundreds of years, it was probably farmed and managed as a traditional floodplain meadow; now a rare and disappearing habitat in the U.K. In winter the land would flood, spreading nutrients over the soil, before being grazed in spring, cut for hay in summer and then returned to grazing before the next season's floods. The silt deposits gave the site natural fertility, so the grass and flowers grew strongly, without the need for artificial fertilisers, making them prized hay meadows.

Today, the few flood meadows left in the UK have several uses. Crucially they help with flood water storage, acting like a sponge to hold back and soak up water, filter it and prevent soil erosion. Besides providing valuable hay, their wildflowers offer nectar for pollinators like bumblebees and these beautiful meadows are part of our natural heritage, reminding us of our traditional rural landscapes.

The Avon Meadows nature reserve consists of wet meadows, reed beds, ditches, pools, a wader scrape, areas of scrub and boundary hedgerows. Public access is freely available from several points around the meadows and a series of footpaths run around and across the site.

Until 2006, the land had been managed under a Countryside Stewardship Scheme with the aim of increasing public access and enhancing biodiversity. The terrible floods of 2007 prompted a re-think about the potential role of the meadows in natural flood management and works were proposed to create water storage; holding back run-off from new developments close to the site and slowing its path to the river below. Reed beds would also provide a water purification service, removing harmful pollutants. It was one of the first sustainable urban drainage projects in the U.K and the site is regularly cited by landscape professionals and environmentalists as a good example of flood management.

Various environmental improvements have been carried out since then, including tree and shrub planting, pond and scrape creation, restoration and maintenance of the historic ditch system and enhancements to public access. These environmental and access improvements were carried out in 2009 and were funded through the Wetland Vision programme. This also led to the formation of the Friends of Avon Meadows, a voluntary group dedicated to the active management and monitoring of Avon Meadows, in partnership with Pershore Town Council and Wychavon District Council.

Following these enhancements, the site has become even more popular, particularly for dog walking and wildlife watching. Since 2009, the reed bed habitat has established itself and become a haven for wetland birds, waterfowl and invertebrates, while the reduced agricultural pressures have allowed more plant species to recover in the wet meadows.

The success of the initial works led to successful bids to the Heritage Lottery Fund (HLF) and in 2012, the funding for a three-year capital works and volunteer engagement project was secured and a project officer appointed. Through the HLF Wetlands for All project, the Friends of Avon Meadows developed both their practical conservation management skills and their biological recording abilities, supported school visits and ran public events exploring the wildlife of Avon Meadows. This work has continued and today there are excellent records for wildlife using the site, especially its bird population. Avon Meadows Community Wetland was formally designated as a Local Nature Reserve in 2013 and forms part of wider network of wetland sites along the River Avon that support significant numbers of wetland birds and waterfowl.

As the meadows have developed, the management needed to keep them in good condition has changed. A Phase 1 habitat survey was completed in spring 2014 by Focus Ecology, which provided baseline data for us to base our management objectives on. Regular grassland surveys were carried out until 2021 and the site was part of a study by the Floodplain Meadows Partnership in 2023, looking at floodplain soil carbon capture. Thanks to the Friends, we have excellent on-going biological records and can assess the health of the meadows based on the flora and fauna recorded. This helps us to inform our work going forward.

2.4 Issues facing Avon Meadows

Climate change affects us all and can lead to unpredictable consequences. Wildlife needs a permeable landscape; one that allows wildlife to move freely and easily through it to find a suitable habitat if things change, especially as the weather becomes more extreme.

For Avon Meadows, this means more unpredictable rainfall, longer periods of flooding and drier summers. We will need to make sure that we have a diverse mosaic of habitats which can provide refuge for current and future species.

Reed bed management will be one of the key issues going forward. The reeds are now so successful that they are invading large areas of open water. The decision has been taken to clear some of them to preserve the open water areas, but the quantity of reed and the amount of invasive willow scrub means that clearance needs to be mechanically tackled and that many jobs cannot be safely done by volunteers anymore. Whilst there is plenty to keep volunteers occupied increasingly practical work on site needs to be carried out by contractors. This brings with it additional expense and, because the contracts are overseen by Wychavon officers, there is the potential for a disconnect with the FoAM members, who are no longer so active in practical management.

Looking forward there may be opportunities for creating new habitat areas and possibly grants to help do this. What and where should this happen? While the opportunity to do this is very tempting it will mean that there will be more areas needing more demanding management. Wetland areas need more complicated and intensive management than the meadow areas which they would replace, although the biodiversity benefits may be huge.

Non-native invasive species are one of the biggest threats to our wildlife up and down the country. Often these introduced species have no natural predators or control methods and completely take over an existing natural ecosystem.

Key non-native invasive species that may threaten Avon Meadows are Himalayan balsam, which is endemic in the Avon Catchment and most UK waterways. Other non-native species on Avon Meadows include American mink, which are already present and thought to be responsible for the loss of juvenile water birds, and signal crayfish, in both the Avon and Piddle Brook. Signal crayfish out-compete our native white clawed crayfish and spread crayfish plague. Killer shrimp **(Dikerogammarus villosus)** have the potential to have a significant impact on freshwater invertebrates and ecosystems through predation and the spread of parasites.

The floodwater now inundating the meadow not only brings fertile silt, it also brings nutrients in the form of agricultural fertilisers, animal manure and sewage. This is not only a human health risk but is also harmful to wildlife and makes water bodies overly enriched, causing algal growth and oxygen depletion.

Increasing nutrients entering the Avon Meadows water system have allowed the exotic duckweed, Lemna minuta to flourish, particularly on the main pool. We suspect that Nuttall's water weed (Elodea nuttallii) is already established, particularly around the tilting weir, but it does not seem to be having a detrimental effect on the wider wetland system. A similar species, E. canadiensis can be much more vigorous and have a similar smothering effect. Non-native invasive species that we need to remain particularly vigilant for include New Zealand pygmy weed (crassula helmsii), and parrot's feather, (Myriophyllum aquaticum), which again smothers native plant growth in water bodies, causing obstruction and oxygen depletion.

As with all sites of value to wildlife that are publicly accessible, there can be a degree of conflict between users of the site and those who manage it. Dog walking is one of the main recreational uses of Avon Meadows. Most dog walkers enjoy and respect Avon Meadows, but as with all groups, there is a tiny minority that do not. There is too much disturbance from people and dogs for waders and wildfowl (indeed most birds) to use the wet grassland. The scrape is their exclusive preserve largely because there is minimal access/intrusion.

There are a persistent number that do not pick up after their dog, and the amount of mess can be off-putting, particularly along paths. Dog bins are located at all major entrances to the wetland.

Our need to graze the meadows also causes difficulties with dog owners, who value being able to let their dogs off the lead to play. For 10 weeks a year, we aim to graze the meadows with sheep but put up warning signs to ensure that those who wish to exercise their dog are aware of the need to keep them on a lead for this period. Unfortunately there have still been incidents with dogs worrying sheep which makes attracting graziers difficult. Recently the meadows have been too wet to graze in Spring, so new ways of managing the meadows may be needed.

Many of the original members of FoAM are still active in managing and monitoring the meadows. As with all voluntary organisations, new, young volunteers would be welcome but are hard to find. Recruiting new volunteers will be key to carrying on this important work.

The accessibility of this lovely site also means that it can sometimes be a victim of its own success. Pershore is a growing town and with greater numbers of people using Avon Meadows comes the potential for more litter and damage to the site. Thankfully most people respect this environment but there are occasions when both litter and vandalism can be a problem. Recruiting more volunteers will be key to having more 'eyes and ears' on the ground.

3. Community Value

3. Community Value

Bird watchers at Avon Meadows

Community Groups and interested parties

Right from the very beginning, the people of Pershore have been involved in the planning, design, development and management of Avon Meadows community wetland and local nature reserve. This has been continued through the active involvement of the Friends of Avon Meadows (FoAM) in the day-to-day management of Avon Meadows. The Friends do much more besides simple maintenance and litter picking, tackling highly skilled management tasks such as reed management and species monitoring.

The Friends are largely drawn from the local community surrounding Avon Meadows; however some do live outside the immediate catchment area. Currently there are over 400 FoAM members. A Facebook page and website keeps interested parties up to date with activity on the site and all members receive a regular newsletter.

Volunteer roles include – Work party co-ordinator, biological surveyor (bird, butterfly, dragonfly, plant, mammal, bee, etc.) website manager, newsletter author, photographer, work party volunteer, brush cutter user, water table monitor, water quality tester, management plan contributor, habitat management research and monitoring, moth trapper, event supporter, educational visit assistant, first aider and work party leader. New volunteers are welcomed by the group. A key feature of FoAM is that there is no charge to become an associate member.

Access and interpretation

Physical access has been significantly improved in recent years with easy access available to the heart of the wetlands from the two most used entrances. A boardwalk, dipping area, new disabled path and seating have been installed and repairs made to bridges. Some of the older infrastructure urgently requires improvement and will soon need attention. Signage from town is poor, but this is not restricted to Avon Meadows, the riverside is not well publicised from the town centre, or from main roads leading into Pershore. A new retail development planned for the old market site could provide opportunities for leading people from the main street to the riverside and to Avon Meadows.

The main car park is owned and managed by Pershore Town Council and provides convenient, free parking for most of the year, but from October to April this is closed due to flooding, as this is also part of the flooding alleviation works and is often underwater. Grass paths are mown by the District Council at 6 weekly intervals, or as needed, providing informal routes through the site. Hard paths and boardwalk areas are also the responsibility of the District Council.

Each main entrance onto the meadows has an interpretation panel which features a map of the meadows. Improvements to the site signage and interpretation are planned, with an opportunity to create a trail around the site and to tell the 'story' of the site in a more accessible and creative way.

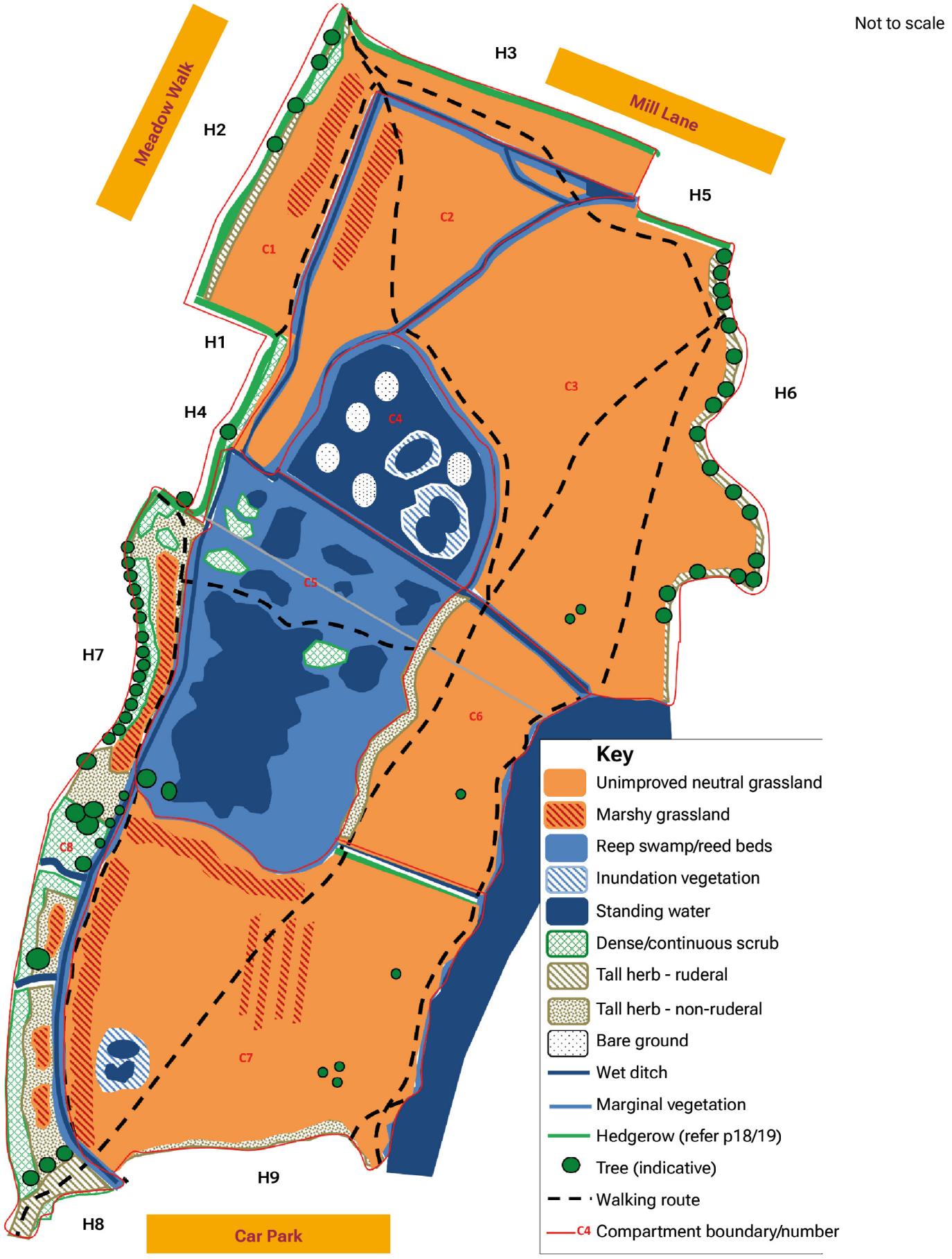
Education and learning

Avon Meadows can provide a wide range of learning opportunities outside the classroom for all ages and abilities. From formal science and geography field work studies such as river classification and habitat surveys, through to exploring art in the environment and using natural materials, Avon Meadows has proved an inspiring place for learning and training.

Schools and community groups interested in guided walks and activities can contact the Friends of Avon Meadows via Facebook or their website www.avonmeadows.org.uk or Wychavon District Council www.wychavon.gov.uk to arrange this.

4. Habitat descriptions

Avon Meadows Habitat Map



Yellow rattle in the meadow

4. Habitat Descriptions

4.1 Grassland

Neutral grassland is the largest habitat at Avon Meadows, comprising some 13 hectares. It has been cut annually for hay in mid-summer in recent years except for 2007 and 2012, due to flooding. Aftermath grazing has been used, both cattle and sheep, but this has been problematic with sheep drowning in ditches and cattle being deeply unpopular with users of the meadow; members of the public are concerned about their size and the risk of injury to themselves and their dogs.

The grassland has not been improved for over 10 years, so is considered 'unimproved neutral grassland'. It is divided into sections by ditches or hedgerows and is mostly dominated by grass species (80% or more). There are also flowering plants, sedges, and rushes in different amounts across the site, depending on the soil and water conditions.

The following grass species have been recorded – Yorkshire fog, meadow foxtail, creeping bent, meadow barley, tufted-hair grass, false oat grass, rough meadow grass, common couch, sweet vernal grass, tall fescue, meadow fescue, perennial rye grass, timothy, cock's foot, crested dog's tail, reed canary grass, and floating sweet grass. Species such as perennial ryegrass, which indicate agricultural enrichment, are few and mostly found along well-used paths.

Flowering plants are generally rare or occasional within the grassland but include meadow buttercup, creeping buttercup, meadow vetchling, common sorrel, cuckooflower, teasel, creeping cinquefoil, cut-leaved crane's bill, red clover, meadowsweet, hogweed, cow parsley. Less desirable species like curled dock, broad-leaved dock, clustered dock, and creeping thistle are found occasionally. Common ragwort is rare across the site.

The National Vegetation Classification (NVC) is a system used to describe plant communities. It provides a standardised system and common language for identifying them.

Most of the grassland can be given the National Vegetation Classification code (NVC) MG9 – Yorkshire fog – tufted hair grass (Holcus lanatus – Deschampsia cespitosa); however, it also occurs alongside other grassland classifications including MG1a—this grassland is mainly made up of false oat-grass (Arrhenatherum elatius) and red fescue (Festuca

Volunteers planting wildflower plugs in the meadows

Great burnet

rubra), which could also be a possible species-poor form of MG4 grassland, Great burnet – meadow foxtail traditional floodplain meadow (Holcus lanatus subcommunity Sanguisorba officinalis – Alopecurus pratensis).

MG13, creeping bent – marsh foxtail grassland (Agrostis stolonifera - Alopecurus geniculatus), is also present in small quantities, tending towards those areas that stay wetter longer into the spring.

Sedges and rushes occur in a complex mosaic across the grassland but are generally found in areas where drainage is impeded through either soil compaction or a locally high water table. Where larger concentrations of sedges and rushes occur, they can be classified as marshy grassland. Typical species here include hard rush, soft rush, jointed rush, hairy sedge, false-fox sedge, brown sedge, and black sedge.

Broader swathes of marshy grassland habitat occur to the rear of Cherry Orchard and are dominated by sedges, rushes, and broad-leaved plants, with little in the way of grasses. These areas are largely unmanaged and have a wide diversity of species, including tufted hair grass, false oat grass, cock's foot, common couch, reed sweet grass, reed canary grass, greater pond sedge, hairy sedge, false fox sedge, slender tufted sedge, black sedge, brown sedge, spiked sedge, teasel, great willowherb, meadowsweet, hogweed, marsh marigold, marsh woundwort, meadow vetchling, bramble, cleavers, cut-leaved cranesbill, common vetch, curled dock, broad-leaved dock, clustered dock, field horsetail, water figwort, silverweed, purple loosestrife, water forget-me-not, flag iris, amphibious bistort, and creeping buttercup.

Characteristic species of this habitat include: meadow vetchling, meadow and marsh foxtail, yellow rattle, marsh/fen bedstraw, great burnet, tubular water-dropwort.

Grassland management objectives

G1. Increase diversity of flowering plants in the grassland – restore to appropriate species rich community dependent on underlying hydrology – MG4, MG8, MG13

G2. Prevent further compaction and alleviate existing compaction if possible.

G3. Maintain wader scrapes for feeding waders and wildfowl

G4. Maintain rush coverage below 30% across the meadows area

Meadow foxtail pollen

Volunteers planting wildflower plugs in the meadows

Tubular water dropwort

4.2 Marginal and inundation vegetation – Ditch and riparian habitat

This habitat type covers vegetation that grows up to 5 metres around a water body, such as ditches, rivers or ponds. Anything that extends to over 5 metres is classified as swamp. Marginal vegetation is present across much of the site and is strongly associated with the network of ditches and the margins of the Piddle Brook and the River Avon.

Many of the ditches which cross the site are very overgrown and need sympathetic management to clear water channels and some ditch edges. In order to retain some edge cover the ditch banks should only be part cleared.

This is a species-rich community with a range of grasses and broadleaved plants. Larger grasses and reeds are dominant, such as reed mace, reed sweet-grass, reed canary-grass and common reed. Floating sweet-grass and fool's watercress are also present in high numbers and species including branched bur-reed, water plantain, water mint, gypsywort and water forget-me-not occur frequently.

Other species typically associated with the margins of ditches include hard rush, soft rush, jointed rush, false fox-sedge, hairy sedge, greater pond sedge, brown sedge, tufted hair grass, creeping bent, marsh foxtail, common club-rush, common spike-rush, purple loosestrife, great willowherb, water figwort, tubular water-dropwort, fen bedstraw, marsh bedstraw, meadow vetchling amphibious bistort, pink water-speedwell, silverweed, skullcap, celery-leaved buttercup, marsh woundwort and wild angelica.

The lower banks of the Avon have margins dominated by reed sweet-grass, reed canary-grass and common reed with patches of greater pond sedge, common club rush, branched bur-reed and rarely, flowering rush. Where the bank is undercut, the overlying vegetation is dominated by rough grasses, hogweed, common nettle, false oat grass, wild turnip, cow parsley and hemlock.

Inundation vegetation is found in areas with significant water table fluctuations throughout the year, creating a specialized plant community around the two original pools in the wader scrape. The grassland here is mainly covered with creeping bent, along with tufted hair grass, marsh foxtail, celery-leaved buttercup, and trifid bur-marigold

Characteristic species of this habitat include: Tubular water dropwort, trifid bur-marigold, common toad, dragonfly and damselfly species, thread-leaved water crowfoot, flowering rush

Management objectives for ditch and riparian habitat

D1. Maintain open water mosaic, with 50% open water in June

D2. Record and monitor the extent of tubular water dropwort and expand range where possible

D3. Remove reed mace and willow from ditches and berms

D4. Remove excessive plant growth and silt from ditches and spurs below tilting weir to assist in maintaining free flow of surface water from the adjoining residential area

To help tubular water-dropwort grow it is important to reduce competition from tall plants by either low-intensity grazing or cutting back vegetation. For new populations to spread, we also need to consider how water connects existing sites to new ones and ensure the new sites can be managed properly after the plants move in.

Reed swamp clearance

4.3 Reed swamp

Swamp habitats have developed on ground that is underwater for all or much of the year and mark the stage of transition between open water and dry land. Swamp at the wetlands is dominated by common reed, which forms a single species stand in many areas and was planted when the wetlands were first established in 2009. Bulrush, reed canary-grass, reed sweet grass and branched bur-reed also occur. The margins of the reed beds support occasional soft rush, hard rush, false fox sedge, flag iris, water mint, branched bur-reed, water plantain, bulrush, gypsywort, purple loosestrife, greater pond sedge, amphibious bistort, floating sweet grass, tufted hair grass, great willowherb, celery-leaved buttercup, tubular water dropwort, wild angelica, water mint meadowsweet and fool's watercress.

The reed beds have developed rapidly, playing a vital role in water purification and providing a habitat for nesting birds including reed and sedge warblers (and cuckoo), reed buntings, mallard, coot, moorhen, and mute swan. Other birdlife, including heron, little egret and little grebe, also use the reed beds, as do aquatic species. New species that have arrived as residents since the reed beds have developed are Water Rail and Cetti's Warbler.

As the reed beds mature, they must be managed to stay healthy. This includes promoting regeneration, controlling invasive weeds, grasses, and reed mace, and managing the spread of reed roots to keep open water and channels within the reed beds. This can be done by cutting above the water levels and by occasional undercutting below water.

Excessive willow sapling growth is also a significant threat to the wetlands and to reed beds, as they speed up the drying of the reed bed.

The reed planted is not suitable for commercial use like thatching, so the goal is to manage the reed beds for healthy regrowth and to create the best habitats for wildlife. To do this, the reed beds are divided into 10 areas, each cut every 5 years to encourage regrowth, with no two adjacent areas being cut in the same year. Recent fires in the reed beds have shown the need to be flexible when planning cutting – fire damaged areas will be allowed to recover before cutting resumes. A plan showing the cutting compartments is shown on page ? (Appendix)

Cutting is ideally done in autumn, outside of the bird breeding season and when water levels are low. Cut reeds and debris are then removed to reduce nutrients and dead material in the water. In winter and spring, cut areas provide feeding and nesting habitats for wildfowl (mallard, coot, and moorhen), while uncut areas provide habitats for water rail, Cetti's, reed and sedge warblers and reed buntings.

In some areas of open water there have been several metres of reed encroachment since the original planting of the reed beds and some channels are now virtually closed, preventing the flow of water and the easy passage of wildlife. Volunteers have not been able to tackle this encroachment on the scale needed and large-scale clearance by contractors is needed. If action is not taken soon, some of the smaller pools will be reduced dramatically.

Reed mace can be controlled by pulling, but autumn / winter cutting below the water level can also be used; this leads to drowning of the rhizomes, preventing grow back. Undercutting of the reed mace can only be carried out by contractors, using specialised machinery, which is an expensive management option, but should be part of planned management going forward.

Willow is cut in autumn by contractors, if re-growth cannot be controlled by cutting it may treated with an appropriate herbicide, taking care not to affect the surrounding vegetation or water bodies.

Characteristic species of this habitat include Reed bunting, starling – used as winter roost, water rail, cuckoo, Cetti's warbler

Future management objectives

R1. Continue the 5-year rotational cut and annual encroachment reed cutting programme

R2. Undercut reeds in agreed areas where there is encroachment

R3. Maintain levels of open water at 2013 aerial photograph levels as a minimum

R4. Control the spread of reed mace and willow scrub within the reed beds and water body margins

R5. Monitor for key species using the reed beds

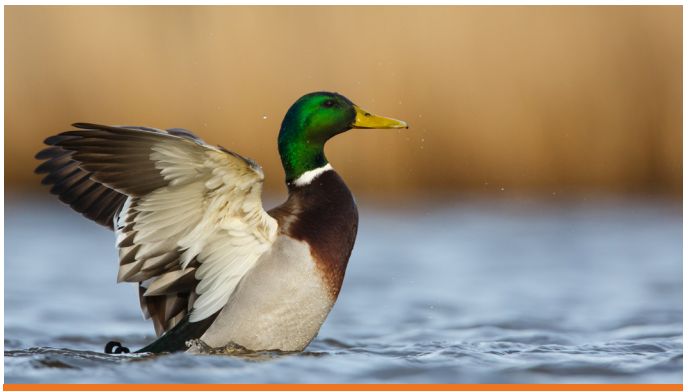
Smooth newt

4.4 Ponds and open water habitat

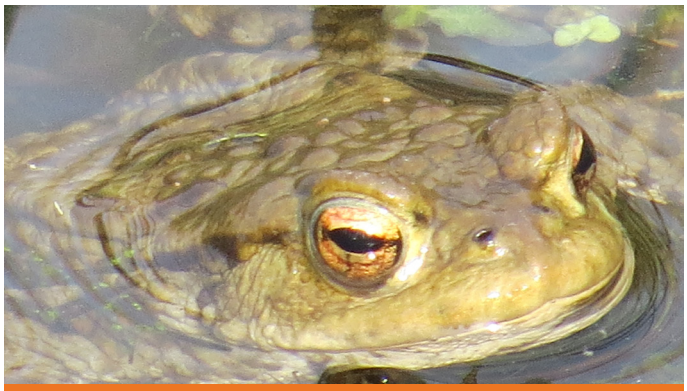
Ponds and open water form an integral part of the wetland and ditch habitat mosaic. Open water is of value to many animals and plants, including fish species, amphibians, dragonflies and aquatic mammals. Wildfowl, such as mallard and gadwall, would also be absent from wetlands without open water.

Where there is a reed/open water margin the biodiversity value is greatly enhanced. The shallow area next to wet reed roots are particularly valuable areas for wildlife but are prone to rapid colonisation by reed and infilling by accumulated detritus. The reed beds must be cleared, and preferably undercut at intervals, to prevent open water areas being lost.

Management objectives refer 4.3



Mallard duck



Frog in a pond

Blackthorn hedge

4.5 Hedgerows and boundary features

Refer to the habitat map (page?) for the hedgerow numbering key.

The hedges which border the site are a valuable habitat, capturing carbon as well as providing food, shade and shelter. Hedges also help species to move through the site, from one habitat to another. There has been very little management of hedges to date and many of them have 'grown out'. Whilst over-cutting can reduce the leaves, fruit and berries available for wildlife, the lack of management has allowed the hedges to become gappy and woody in parts and overgrown with bramble in others. Ideally the management of the hedges should be made a higher priority, going forward. Hedge management should be carried out in such a way as to allow recolonisation of species displaced by management work.

The hedges vary in size and species, as below:

Hedgerow 1. This intact hedgerow runs 66m east-west along the side of Cherry Orchard playing field. It comprises mostly blackthorn, with occasional hawthorn, dog rose, horse chestnut and cherry. The hedge is fenced on both sides, with post and wire and reaches up to 4m in height.

Management: Layering, including staking and top binding. Significant pre-work is needed.

Hedgerow 2. This hedgerow is approximately 227m in length and runs roughly north-south alongside Meadow Walk. It is composed of elder, hawthorn, blackthorn, sycamore, bramble and willow species. Occasional clumps of trees occur within the scrub and ruderal vegetation. This hedgerow includes a large piece of standing dead wood surrounded by dense bramble scrub. This hedgerow is not intact and has significant breaks.

Management: Manage as lowland dry scrub on a long rotational cutting programme.

Hedgerow 3. This hedgerow is approximately 240m in length and runs roughly east-west, following Mill Lane. It is 4-6m high and includes mature trees. Associated woody species include mature hawthorn, blackthorn, mature ash, elder, bramble, ivy and dog rose. Ground flora includes hedge bindweed, hogweed and teasel. Mammal trackways pass through this hedgerow. Eggs of the brown hairstreak butterfly have been found on blackthorn suckers along this hedge.

Management: No formal management proposed.

Hedgerow 4. This hedgerow runs to the bottom of Cherry Orchard playing field and is largely inaccessible from Avon Meadows due to the presence of a ditch. It comprises hawthorn, blackthorn, dog rose and bramble and is approximately 3m in height.

Management: Layering where possible.

Hedgerow 5. This short stretch of hedgerow separates Avon Meadows from the properties at Mill Cottage and comprises a post and wire fence with field maple and ash approximately 5m in height.

Management: No management proposed.

Hedgerow (Boundary) 6. This is a combination of post and wire fencing, chain link fencing, scattered scrub and multi-stemmed crack willow trees that runs alongside the Piddle Brook. Woody vegetation includes isolated hawthorn and dog rose shrubs, mature crack willows and tall herbaceous vegetation, including common nettle, great willowherb and teasel. Significant bat activity has been recorded along this area, including Leisler's, Brandt's/whiskered, Daubenton's, noctule, brown long eared, common, soprano and Nathusius' pipistrelle. The owl nest boxes have been used by barn owls.

Management: Manage as riparian habitat – trees to be managed individually.

Hedgerow 7. This hedgerow is approximately 178m in length, runs roughly north-south and forms part of the boundary with Cherry Orchard First School. It is an intact, unmanaged hedgerow approximately 5m in height. Woody components include elder, hawthorn, hazel, dog rose, ash and bramble. The southern section to the hedgerow forms a rough tree line with a mixture of mature and semi-mature trees with no dominant species component. Tree species in this area include horse chestnut, sycamore, cypress spp, ash and crack willow. This hedgerow has numerous bird and moth species associated with it and significant pipistrelle (common and soprano) activity

is recorded above this hedgerow. Fox activity has also been noted and there is a large active badger sett.

Management: Manage as scrub, whilst maintaining continuity of perimeter between the meadows and the school grounds.

Hedgerow 8. This hedgerow with trees is approximately 60m in length and runs along part of the southern boundary of the site. The hedgerow has a mixture of immature and semi-mature trees including sycamore, horse chestnut, ash, crack willow and hawthorn. Bramble scrub occurs frequently together with great willowherb and teasel.

Management: Manage as scrub, long rotational cutting programme.

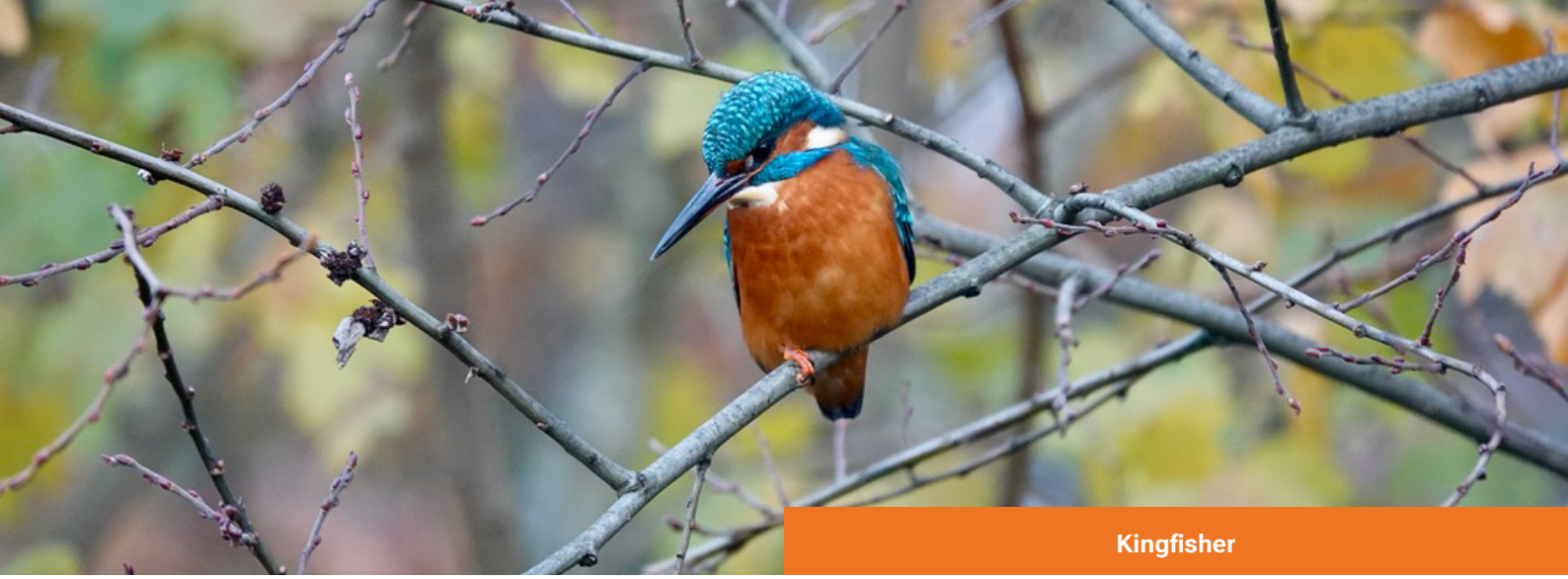
Hedgerow 9. This is essentially the southern continuation of hedgerow 8, alongside the car park, comprising post and mesh fencing with off-site trees and shrubs overhanging the fence. Associated trees and woody vegetation include crack willow, hawthorn, silver birch and blackthorn. Tall herbs include curled dock, great willowherb and common nettle.

Manage as scrub and tall herb.

Hedgerow 10. A gappy, relict hedgerow, layered (2014) in an attempt to rejuvenate it. It is approximately 130m in length and overshadows an adjacent ditch to the immediate north. The hedgerow is composed of hawthorn, blackthorn, dog rose, ash and elder. The blackthorn has been allowed to sucker freely and now encroaches some 4m from the main hedge line. Mistletoe grows in several hawthorn bushes and other associated species include common nettle, great willowherb, bramble, curled dock false oat-grass and cock's foot.

The taller hawthorns are popular perches for birds, including reed bunting, stonechat, green finch, chaffinch and visiting grasshopper warbler.

Management: trim lightly if needed.



Kingfisher

4.6 Running water

There are two water bodies with natural flow that form the northeast and eastern boundaries of Avon Meadows, the Piddle Brook and the River Avon. The River Avon is a wide, low, meandering river as it passes through Pershore and much of its level at this point is controlled by the weir a few hundred metres down stream of Avon Meadows.

The River Avon is classed by the Environment Agency as a heavily modified water body which means that, rather than being assessed for its ecological and chemical condition, it is assessed for its ecological potential. Under the Water Framework Directive monitoring, the Avon at Pershore is classed as being at Moderate Potential, which means that it is failing under the Water Framework Directive.

The Water Framework Directive works on the basis that if a water body fails one element of the test, then the whole test is failed. The reasons for the River Avon failing to meet good ecological and chemical potential are the amount of phosphate in the water and the lack of natural morphology (shape and flow) of the river, as it has been extensively managed by dredging, straightening and impounding with weirs.

Unfortunately, the impacts on the river are largely beyond the control of this plan. Our boundary section of the Piddle Brook and its confluence with the Avon is so heavily influenced by the condition and water level of the main river that it is mapped as such on the Environment Agency website. Upstream, the Piddle Brook is classed as being in Good Ecological condition, but it deteriorates before it reaches Avon Meadows, shortly before passing under the A44 at Lower Moor/Wyre Piddle. The Piddle Brook that runs through Avon Meadows is both straight and sinuous in places, with concrete culverts and foot bridges and the appearance of an over-steep bank which suggests that this section has been modified over time from its natural morphology.

Both water bodies flood extensively, with flooding occurring most winters, and Avon Meadows falls entirely within the natural floodplain of both water bodies. Water quality monitoring is currently being undertaken by Severn Trent, who have installed upstream and downstream monitors, www.stwater.co.uk and several community environmental groups are contributing to citizen science, using trained volunteers to monitor and report water quality.

There are also non-native species that could have a negative impact on this environment such as mink, signal crayfish and killer shrimp and Himalayan balsam, which is rife in other parts of the catchment.

Characteristic species of the Piddle Brook and River Avon include common yellow waterlily, banded and beautiful demoiselle. Fish species present in the main Avon River include pike, barbel, perch and common eel. Kingfishers are often to be seen on the river.

Current management - The River Avon is managed by Avon Navigation Trust, who are concerned with maintaining the navigability of the river for craft and public enjoyment. Their management has included dredging, repairing and stabilising banks as well as clearing vegetation. The Environment Agency also have a responsibility for main rivers and undertake water quality monitoring at set points along the river and have statutory responsibility for rivers and flooding. The Friends of Avon Meadows have not undertaken management in the channel of either water body other than to remove Himalayan Balsam from the banks within Avon Meadows.

Management objectives for running water

W1. Monitor and report water quality issues

W2. Monitor for non-native invasive species and eradicate where possible

Bumble bee on a bramble flower

4.7 Scrub

For many years, scrub was not valued as a habitat type. At Avon Meadows, the conservation value of our scrub comes not from its species floristic diversity, but the other species that it supports by providing food, shelter and nesting sites. There is a diverse and important range of birds and invertebrates associated with it, notably breeding house sparrows, starlings, Cetti's warbler, dunnock and reed bunting.

Dry lowland scrub is found almost continuously along the western boundary of the meadows. Dominated by bramble, it forms dense banks, over 3m high in places. Rarely, hawthorn, dog rose and elder are present and this marginal habitat grades into the tall herb communities. This scrub community (NCV W24 Bramble – Yorkshire fog) is typical of abandoned management, waste and disturbed ground.

In some areas the bramble gives way to more open habitat which is dominated in summer by great willowherb. In early spring there is a colony of marsh marigold which is being nurtured.

Wet lowland scrub is a feature of the reed beds and areas to the east of Cherry Orchard school boundary, below the dry, bramble scrub. Here, willow species are dominant, including grey, goat, crack and osier willow. It is important to recognise that wet scrub has considerable conservation value and management should aim to maintain a balance of scrub and other priority wetland habitats.

Willow dominated scrub can be highly invasive and damaging, as nutrient rich litter accumulates, and soils become drier. Management is then needed to control the scrub expansion. In established wet scrub, management needs to focus on maintaining a mosaic and preventing succession to woodland or encroachment into priority open habitats. This willow scrub may become a problem at Avon Meadows if not properly managed.

4.7.1 Management objectives for lowland dry scrub

S1. Enhance diversity of age, species and physical structure

S2. Reduce amount and enhance quality of scrub

S3. Prevent further encroachment onto priority habitat (marshy grassland)

Management objectives for lowland wet scrub

S4. Reduce amount of new willow scrub

S5. Retain existing mature stands of willow

S6. Coppice small sections of mature willow scrub annually

Ragged robin

4.8 Tall herb community

The tall herb community found at Avon Meadows is often looked at as messy and not of much botanical interest, but it supports a wide range of invertebrates, mammals and birds and acts as a gradational habitat between scrub or hedgerows and grassland. Typical plant species include teasel, great willowherb, cleavers, cow parsley, nettles, creeping thistle, hogweed and meadow buttercup.

Tall grasses are also frequent here, including cock's foot, tufted-hair grass, common couch, timothy, Yorkshire fog and false-oat grass.

Many of the flowering plants are important nectar sources for invertebrates, which later become seed sources for birds and small mammals. The dense layer of litter that builds up can be important shelter and feeding grounds for small mammals, invertebrates and reptiles.

4.8.1 Management objectives for tall herb community

TH1. Retain tall herb communities where they transition from scrub or hedgerows to grassland

TH2. Scallop edges of tall herb community where it adjoins grassland to maximise edge habitat

TH3. Allow tall herb community plants to set seed and retain seed heads through autumn and winter

TH4. Regenerate tall herb community by cutting and scrub removal

4.9 Trees

Avon Meadows supports a variety of mature tree species, mainly concentrated around the boundaries of the nature reserve, with isolated individual trees or small clusters within the wetlands and meadows themselves. Crack willows are the dominant mature tree, with purple willow and white willow also present. Pollarded willows are found along the boundary with the Piddle Brook, with some of these almost certainly fulfilling veteran criteria in terms of girth (3.5m at chest height), fungal growth, damage, rot and dead wood. Veteran trees support a wide range of wildlife.

Pollarded willows are a characteristic feature of the Severn and Avon Vales landscape; however pollarding will not be suitable for all mature trees and could cause harm, rather than regeneration. Advice from a professional tree surgeon with experience of mature willows is needed before any new pollarding takes place.

Where there are mature willow trees these should be retained and managed, as above. However, where young willows are proliferating and impacting on the ecological health of the ditch environments these should be removed.

Standing deadwood is a vital habitat, often overlooked. Avon Meadows is blessed with a variety of standing deadwood, thanks in some part to raised water levels. Standing deadwood is left in situ where it poses little risk to people and removed where it poses a significant risk to users.

To the rear of Cherry Orchard School there are four dead black poplar hybrids that failed to thrive after pollarding some years ago. These trees have numerous woodpecker holes, bark fissures and sections of lost bark which are ideal bat roosting sites.

Bird and bat boxes have been placed in some trees with modest success.

Characteristic species of this habitat include: mistletoe, brown long-eared bat, common and soprano pipistrelle bat, tawny and barn owls, great spotted woodpecker.

Management objectives for trees

VT1. Retain veteran trees and standing deadwood where safe to do so

VT2. Inspect all trees for safety on a 3-yearly basis

VT3. Tree works should be carried out only where H&S risk is not acceptable/access cannot be altered, or to create additional dead wood habitat/ prevent catastrophic failure of a veteran tree

VT4. Assess feasibility of reinstating pollarding on younger bankside willows without veteran features

VT5. Control and/or remove willow in ditches and reedbeds where appropriate

VT6. Provide more bird boxes and bat boxes, clean and monitor boxes

Wader scrape

4.10 Wader Scrape

The wader scrape was constructed in Spring 2015 and the surrounding ditches joined to enclose the area, with management and survey access achieved by a gated bridge. This area of the site has no public access so is largely undisturbed. The wader scrape was designed to retain winter flood and rainwater and to dry out slowly through the summer. It has several raised islets to create safe resting places for wading birds and possible future breeding sites, with scalloped and graded edges to provide plenty of muddy margins for feeding. Green and common sandpipers, little ringed plovers, lapwing and yellowhammers are rare visitors to this area of the site.

The scrape covers approx. 1ha and includes two species-rich pools that were retained during construction to act as restocking reservoirs for the new wet areas both for plant species, amphibians and invertebrates.

These pools have suffered from drying out so keeping areas of clear water and damp ground must be a priority for the birds that use this area. Areas of scrub have also encroached and will need to be cleared. The islands are now too high above the water level and future management of this area should include their re-profiling to soften edges.

It has been suggested that the scrape area is extended but current maintenance issues need to be resolved before this could happen.

Future plans may include exploring the erection of a predator proof fence, which would help protect against predation by foxes and disturbance by dogs. This would not provide protection against corvids but may improve the chances of nesting birds to breed and hatch young successfully.

Characteristic species of this habitat include: Trifid bur marigold, water mint, oystercatcher, jack and common snipe, pied wagtail

Wader scrape management objectives

WS1. Exclude all but essential access for maintenance and species monitoring

WS2. Keep islets free from tall vegetation

WS3. Reduce the level of the existing islets and re- gravel on 2 or 3 islets to attract species that prefer bare ground

WS4. Ensure that no willow, typha or tall upright plant species becomes established in the boundary ditches

WS5. Monitor for evidence of breeding waders and wildfowl

WS6. Investigate the possibility of erecting a predator fence around the scrape area or part of it

WS7. Explore ways to help the scrape retain water for longer

WS8. Consider extending the scrape into the north meadow

5. Activity Plans

5. Activity plan					
Aim 1. Retain, restore and manage the existing areas of high quality habitat of Avon meadows					
Ref	**Action**	**Frequency**	**Who**	**How will this be delivered?**	**Monitoring and evidence for activity**
5.1.1	Reed management – Reed bed cutting (above water)	Annually September to February	Contractor, instructed by WDC, with guidance from FoAM	The reed bed compartment has been divided into 10 sections. 2 non-adjacent sections are to be cut each year (total area 3Ha) Arisings and litter to be raked from the reed bed and cuttings flayed and removed off site, with some material left at the edges of the cut areas.	Number of bird species recorded using reed bed. Evidence of breeding birds. Records of areas cut and photographs of cut areas.
5.1.2	Control reed encroachment into open water and channels (undercutting below water)	Annually September to February	Contractor, instructed by WDC, with guidance from FoAM	This is an expensive task – encroachment to be monitored and undercutting to be done where and when needed, as budgets allow. To be done at the same time as the main reed cutting programme to take advantage of lower water levels. Contractors will cut off stems of common reed, typhus and other fast spreading emergent aquatic plants below water level. Cut material will be removed from the water and disposed of in agreed locations on site. Only the sections of reeds adjacent to the areas being cut in 5.1.1 should be cut.	Channels remain visible and ponds retain open character Records of areas cut and photographs of cut areas.
5.1.3	Dipping pool – Clearance of reeds	As needed September to February	Contractor, instructed by WDC, with guidance from FoAM	To be done at the same time as the main reed cutting programme to take advantage of lower water levels. This is a deep-water area, contractors will cut off stems of common reed, typhus and other fast spreading emergent aquatic plants below water level. Cut material will be removed from the water and disposed of in agreed locations on site.	Pond is visible and accessible for dipping activities.
5.1.4	Dipping pool - Removal of invasive Canadian pond weed	As needed	Contractor under WDC instruction	Mechanical removal to be carried out by contractors when clearing reeds. Pond weed to be removed off site or taken away from open water and ditch areas.	As far as possible, pond is clear of Canadian Pondweed.
5.1.5	Ditch management – Remove all encroaching willow scrub and willow stump re-growth from ditch edges. Control Reed mace and emergent vegetation. Encourage suitable habitat for Tubular water dropwort – target species.	Annually September to February	Contractor instructed by WDC	Most of our ditches contain Tubular water-dropwort, willow should be removed by hand and herbicides should be used only as a last resort. Encourage Tubular water dropwort by opening up ditches to sunlight and cutting vegetation to create openings for new plants. Always leave one bank or section of the ditch unmanaged, as a refuge for plants and invertebrates. Control and manage invasive alien species, if present.	Stump regrowth and typha emergence is limited. Photographs of the work. Details of operations including associated invoices.

5. Activity plan					
Aim 1. Retain, restore and manage the existing areas of high quality habitat of Avon meadows					
5.1.6	Enhance quality of scrub, seeking to move from single species dominated to a more varied species mix.	Ideally annually Jan/Feb	Contractor, instructed by WDC. Small areas can be cleared by volunteers	Cut 2 non-adjacent sections of bramble scrub after berries have been eaten, but before bird nesting (Jan/ Feb) Arisings should be removed and disposed of.	Scrub regenerates and has greater diversity of species. No reduction in numbers of bird species using scrub areas.
5.1.7	Maintain mosaic of wet willow scrub in the reed beds at 2013 extent.	Annually between September to February (reed bed areas)	Contractor instructed by WDC	Cut back hard in agreed areas and leave 10% untreated to allow regrowth.	Aerial photography monitoring.
5.1.8	Undertake tree safety survey	Every two years.	Qualified arboricultural expert – WDC Parks & Greenspace		Tree safety report
5.1.09	Veteran trees.Manage existing veterans to prevent catastrophic failure.	Annually or as needed.	External contractor /specialist tree surgeon –– WDC Parks & Greenspace	Manage existing veteran trees at times agreed with WDC to avoid bird nesting etc. Leave cut material from veteran trees as close to the tree as possible	Photography Receipts and invoices. New veteran trees created New willow pollards created.
5.1.10	Allow regeneration of some willow saplings to become future pollards along Piddle Brook.	As needed	FoAM	Monitor regeneration of willow and mark young willows with potential for pollarding.	Monitor regeneration and marked saplings
5.1.11	Hay meadow management	June/July	External contractor/ local farmer – Instructed by WDC FoAM to cut receptor areas	Mow annually. Do not cut or top before mid-July unless there are high growth rates of grass in early summer. Swath must be turned and wilted for at least 24hrs. Leave small islands uncut as wildlife refuge and useful foggage for overwintering insects etc. All cuttings must be removed. Graze the aftermath or carry out extra mechanical scarification/ cutting to create new bare earth areas following hay cut in areas which will receive seeds or plant plugs, ideally to give 50% bare soil.	Keep a record of all stock grazing the parcels. Keep records of flora and fauna in meadow.

5. Activity plan					
Aim 1. Retain, restore and manage the existing areas of high quality habitat of Avon meadows					
5.1.12	Diversify meadow flora – areas to be decided following survey work	Annually, Autumn and Spring	FoAM	Use locally appropriate wildflower seed on pre-prepared areas of 50% bare ground. **or** Plant wildflower plugs into small areas of bare ground and keep these areas clear of grasses until plants are growing well.	Monitor introduced species
5.1.13	Graze aftermath with either sheep or cattle (cattle ideal) **or** Take a second cut in Spring	Annually from September to December. Meadows shut up for hay from Mid-March	External contractor / farmer – instructed by WDC	Stocking densities based on 13ha of grazeable land. Consider a spring bite if ground conditions permit (MG8 benefit) Monitor ground conditions closely and exclude livestock if poaching becomes excessive. Provide signs advising walkers of grazing stock. Farmer to take second cut if needed.	Keep a record of all stock grazing and mechanical cuts.
5.1.14	Cut back excessive willow growth. Retain existing mature stands of willow scrub .	1st September to 1st March annually	FoAM/ Contractor – instructed by WDC	Coppice sections of mature willow scrub annually to prevent excessive growth but retain pockets of willow scrub for nesting and perching habitat.	
5.1.15	Cut back, trim or lay hedges	As needed.	FoAM / contractor under WDC instruction	Cut back or lay hedges to avoid them becoming woody and gappy and to maintain a thick dense hedge. Outside of bird nesting or berry feeding seasons Do not cut all sections or sides of a hedge at once, stagger cutting to retain food and shelter for insects, fauna and flora.	Photos and records
5.1.16	Strim reeds and tall vegetation from scrape area	Annually. September/ October	FoAM	Strim tall vegetation on and around islands and pool areas. Remove from scrape area if possible. Weather and ground conditions will dictate timing	Photos and records

Aim 2 Create additional high value habitat within the site					
Ref	**Action**	**Frequency**	**Who**	**How will this be delivered?**	**Monitoring and evidence for activity**
5.2.1	Create new wetland habitat - Work with Environment Agency / WCC to extend the areas of open water/wetland zones or create new areas for natural flood management	To be agreed, work planned for '25 – '26	Contractor under WDC instruction	Possible new scrapes for water holding at Mill End area of the site. To be discussed and funding identified. Contractor build organised and directed by WCC Natural Flood Management team.	Contract / invoices
5.2.2	Use external expertise to maximise return from grants and allow more flexible/ creative management	A.S.A. P	WDC liaising with FWAG	Investigate replacing current CS agreements with new 'Making space for water' CS payments, to increase payment rates for site management	New agreements drawn up if appropriate.
5.2.3	Investigate extending the original scrape into the North Meadow		WDC / Foam		Feasibility study
5.2.4	Improve the scrape area		FoAM / WDC	Re-profile Island areas and add gravel to some for birds which prefer this surface for nesting.	Photos
5.2.5	Seek ways to extend the period the scrape stays wet to encourage water birds		FoAM/ WDC	Investigate how this might be done. If possible then carry out the work needed.	Photos and monitoring

Aim 3. Ensure Avon Meadows is valued as an outdoor learning space					
Ref	**Action**	**When**	**Who**	**How will this be delivered?**	**Monitoring and evidence for activity**
5.3.1	Support and encourage groups and individuals from schools, colleges, Uni's carrying out survey work	As required	FoAM / WDC staff	Maintain contact between WDC and groups	Retain records, take photos
5.3.1	Support community groups/ organisations carrying out water quality sampling and reporting	As required	FoAM / WDC staff	Maintain contact between WDC and groups	Analysis of reports received, look for anomalous readings esp. BOD
5.3.2	Engage with local community groups - offer tours and talks	As required	FoAM/WDC staff	Maintain contact between WDC and groups	Retain records, take photos
5.3.3	Offer supported school visits, publicise school activity packs	All year round	WDC staff	Promote supported and self-guided visits to schools. Promote school info/activity packs accessed from website	Retain records, take photos

Aim 4. Encourage local people to take part in managing, monitoring and enjoying Avon Meadows					
	Action	**Frequency**	**Who**	**How will this be delivered?**	**Monitoring and evidence for activity**
5.4.1	Run regular volunteer work parties open to all	Seasonal	FoAM and WDC	FoAM / WDC will arrange	None required. Volunteer Co-ordinator monitors attendance.
5.4.2	Community events – guided walks	Run 2 or 3 per year	FoAM and WDC	FoAM / WDC	None required but record attendance
5.4.3	Training and inclusion for surveys	As needed	Field Studies Council – WDC to arrange as requested		Attendance records
5.4.4	Maintain contact between other conservation groups	As needed	FoAM and WDC		Report at FoAM meetings
5.4.5	Community events – wildlife monitoring events	1 per yr	FoAM and WDC		Attendance records / photos

Aim 5. Improve public access to and enjoyment of Avon Meadows					
	Action	**Frequency**	**By whom?**	**How will this be delivered?**	**Monitoring and evidence for activity**
5.5.1	Maintain informal paths on bunds around compartments	As needed	WDC Parks & Greenspace	Mow and put down woodchip as needed.	
5.5.2	Boardwalk and platform safety inspection and maintenance	Bi-monthly or after flood event	WDC (Parks)	Parks and WDC Heritage officers to do walk round.	Keep inspection record
5.5.3	Investigate replacing perimeter boardwalk	A.s.a.p	WDC	WDC to fund and construct when funds available	New boardwalk
5.5.4	Inspect gravelled path for signs of wear, repair as necessary	Quarterly or after flood event	WDC (Parks)	Parks and WDC Heritage officers to do walk round.	Keep inspection record
5.5.5	Keep entrances and interpretation panels clear of overhanging vegetation	Spring and summer	WDC (Parks) / FoAM and volunteers	As needed	N/A
5.5.6	Refresh and update Interpretation panels – monitor for damage and clean	Autumn '24 – complete April '25	WDC, liaising with FoAM	MDC to produce new panels and Parks to install in existing frames. Cleaning to be carried out by FoAM vols	New and improved signage
5.5.7	Monitor site for graffiti and vandalism	On-going	All	Informal monitoring of site	Report at FoAM meeting
5.5.8	Repair hide	When funds available	WDC, liaising with FoAM	Investigate grant possibilities	Improved hide

Aim 6 Reduce Pershore's contribution to flooding and improve the quality of water entering the River Avon					
Ref	Action	Frequency	By whom	How will this be done?	Monitoring and evidence for activity
5.6.1	Carry out water sampling regularly to determine nutrient levels for on-site water	Fortnightly	FoAM vols	Trained vols will use water testing kits to carry out standard tests and log results	Sampling results
5.6.2	Inspect settling pond for silt build up and desilt as needed.	Ideally annually in autumn/winter	WDC staff/ FoAM	Splash pad and immediate area should remain free from silt build up, silt to be removed mechanically.	Silt depth to water depth ratio
5.6.3	Check operation of tilting weir and drop board sluice	Annually, in September/ October	FoAM	Visually and manually check that weir is operating correctly.	Water levels can be reasonably expected to top up through the winter.
5.6.4	Prevent pollution of the River Avon by identifying incidents when they occur.	At all times	WDC staff, FoAM volunteers and members of the public	Monitor STW and other unrecognised outfalls for signs of pollution Take details of the location and nature of the pollution event. Photograph if possible. Fish deaths should be reported immediately to the Environment Agency. Other pollution incidents should be reported to WDC initially for investigation.	Identification of pollution sources is enabled and recorded/reported.

Monitoring timetable					
Ref	**Action**	**When**	**By whom**	**Details**	**Purpose**
M1	Undertake grassland plant survey	Annually, May, June, July – before hay cut	WDC (using ecology consultants) and FoAM	1m x 1m quadrats are fixed off the locations of the dipwells. Quadrat survey is done by identifying species present in each quadrat, estimating percentage of cover of each species and bare ground. 5 quadrats at each dipwell, data then fed into MAVIS (grassland community assessment spreadsheet)	To determine if there anything in the survey that suggests that management or environmental change has had a positive or negative impact on the diversity of Avon Meadows.
M2	Monitor water quality for P and N levels at Cherry Orchard outfall and other points around the wetlands.	Fortnightly	FoAM	Monitor for BOD, pH, heavy metals and phosphate	To see what pollutants are entering the site and whether the vegetation is screening them out.
M3	Carry out regular soil analysis	After hay cut and grazing, when nutrient levels are at their lowest.	FoAM and laboratory sampling		To make sure management practices are keeping soil nutrient levels low.
M4	Carry out regular bird survey work. monitoring species present and numbers of individuals and whether breeding has been successful	Weekly	FoAM	Monitoring species present and numbers of individuals and whether breeding has been successful. Look for patterns following management work or environmental events and assess the longer-term impacts based on previous monitoring results.	To determine if there is anything that suggests that management has impacted on the diversity of Avon Meadows.

Monitoring timetable					
Ref	**Action**	**When**	**By whom**	**Details**	**Purpose**
M5	Butterfly transects	Weekly, Apr to Sep	FoAM – led by experienced volunteer	Continue transect work from previous years.	Butterfly species and population counts.
M6	Dragonfly transects	Weekly, Apr to Sep	FoAM – led by experienced volunteer	Continue transect work from previous years.	Dragonfly species and population counts.
M7	Moth trapping	At regular intervals	FoAM – led by experienced volunteers (2 minimum)	Continue trapping work from previous years	Moth species and population counts.
M8	Carry out seasonal terrestrial and freshwater invertebrate surveys monitoring species present and numbers of individuals	At least twice-yearly during spring and summer.	FoAM	Note: Transects for butterflies, birds and dragonflies, together with moth trapping, are established. (See M 5-7) More training may be required for other invertebrate groups. Record all data and pass to FoAM representative of Worcestershire Biological Recorders. Data submitted to WBRC for inclusion on public records.	To look for patterns following management work or environmental events and assess the longer-term impacts based on previous monitoring results. If NNIS are found, report to Environment Agency.
M9	Undertake seasonal small mammal surveys	Occasional	Trained volunteers from FoAM with support from Worcs mammal group.	Training only to be carried out in appropriate weather conditions. Record all data and pass to FoAM representative of Worcestershire Biological Recorders. Data submitted to WBRC for inclusion on public records.	To determine if there is anything that suggests that management has impacted on the diversity of Avon Meadows.
M10	Undertake monitoring for herpetofauna	Occasional	Existing trained volunteers with FoAM	Torch survey and egg searching only, due to presence of water shrew (no bottle trapping. Have regard to possible presence of Great Crested Newts. If found, cease survey Record all data and pass to FoAM representative of Worcestershire Biological Recorders. Data submitted to WBRC for inclusion on public records.	To determine if there is anything that suggests that management has impacted on the diversity of Avon Meadows.
M11	Monitor water bodies and riverbanks for non-native invasive plant and animal species. Visual inspection of site boundaries, ditches, pools and access points.	All year	FoAM volunteers, WDC staff, visitors.	Ensure that identification is confirmed before taking eradication action.	If NNIS are discovered or suspected, confirm identification and report if necessary
M12	Tree health survey – monitor	Every three years as standard.	Qualified arboricultural expert/ WDC Parks	All trees will have a heath check at least every three years, with recommendations for action to make safe where needed.	Individual trees may be highlighted for more frequent inspection due to age and condition.

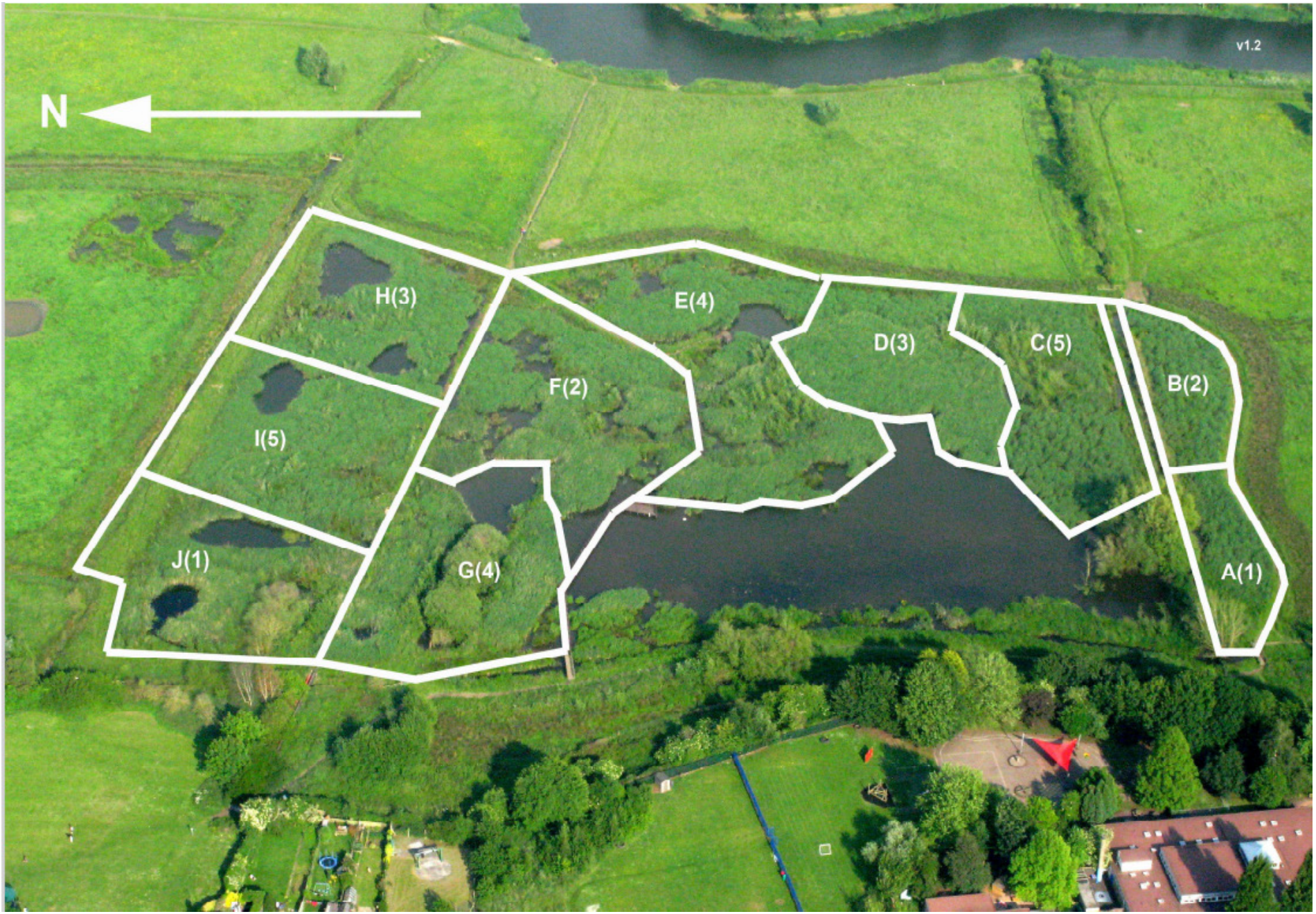
Monitoring timetable					
Ref	**Action**	**When**	**By whom**	**Details**	**Purpose**
M13	Review management plan actions for the upcoming year and adjust based on environmental conditions or findings from survey work.	August annually	FoAM and WDC staff	Management plans are living documents and will grow and evolve over time.	Is the management plan working and are the activities having the outcomes we expect? If not, is it down to the management or external environmental factors?
M14	Drone survey of whole site	Bi-annually or after weather events/ major works	WDC / specialist contractor	Provide an aerial view of entire site	To allow yearly comparisons

TIMETABLE FOR ACTIVITIES			
Sept-Nov	**Dec- Feb**	**Mar-May**	**Jun-August**
Monitor Water quality	Monitor Water quality	Monitor Water quality	Monitor Water quality
Bird survey	Bird survey	Bird survey	Bird survey
Clear wader scrape	Collate annual survey data	Moth survey	Moth survey
		Butterfly survey	Butterfly survey
			Dragonfly survey
Ditch management – cut Willow and pull Typha	Scrub management – Willow and Bramble cutting	Path maintenance and entrance clearance	Path maintenance and entrance clearance
Cut Reed beds	Cut Reed beds	Top ditch edges	Cut MG8 Meadow
Cut and treat Willow scrub	Ditch management – cut Willow and pull Typha		Hay cut
Livestock grazing	Livestock grazing	Second cut & collect if no grazing	
	Hedgerow layering and trimming		
Monitor silt quality		Freshwater invertebrate survey	Freshwater invertebrate survey
Review management plan		Small mammal survey	
		Amphibian survey	

Key

Contractors
Wychavon District Council/Consultants
Friends of Avon Meadows

Appendix 1 – reed cutting areas



With thanks to the Friends of Avon Meadows and to staff at Wychavon District Council for allowing the use of their photographs.

WYCHAVON