

Preliminary Ecological Appraisal

Land at Monkton Park, Chippenham

Chippenham Town Council

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Document signed off by: ______ Date:

Summary

This report is produced to present an initial assessment of the potential ecological constraints and opportunities relating to the site known as Monkton Park, Chippenham, and to inform the land owners (Chippenham Town Council) of potential future management changes.

The report is based on a desk study of designated wildlife sites and records of protected or notable species, and a field site visit for site assessment carried out in January 2020.

A full management plan will be compiled following review and feedback from the client. Additional surveys will be required before this report can provide a sufficient baseline for the site with regards to bats, otter and water vole.

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Site Information

| Site name | Monkton Park | | |
|-----------------|--|--------------------------|--|
| Address | Near Emery Gate Shopping Centre Chippenham Wiltshire SN15 3JP (Nearest) | | |
| Grid Reference | ST 925 732 (Centre) | | |
| | Name | Barry Pirie – CTC | |
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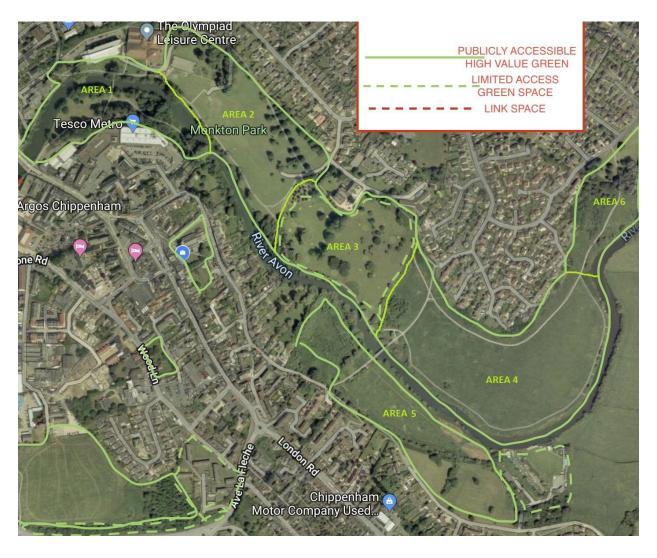


Figure 1: Satellite image of site (Google Earth)

Introduction, Terms of Reference and Scope

Wiltshire Wildlife Trust Wild Landscapes project has been contacted by Barry Pirie of Chippenham Town Council (the client) to conduct a preliminary ecological assessment of various sites in and around Chippenham. The first, and largest of the sites lies is Monkton Park which mainly lies on the north bank of the River Avon, starting at Town Bridge and ending a kilometre north-east where National Cycleway 403 crosses the River Avon.

This report presents the findings of the desk study and field site, carried out on January 20th, 2020, and then goes on to present discussion and key recommendations for each part of the site.

The whole site encompasses approximately 77 acres and, for the purpose of this report, has been arbitrarily split into six sections as shown on the map above.

- 1. Emery Gate
- 2. Main Parkland
- 3. Golf Course
- 4. Lower Riverside Meadow Corridor
- 5. Baydons Wood & Baydons Meadow
- 6. Upper Riverside Corridor & Woodland

Site Context

The site, located to the east of Chippenham town centre, primarily consists of land on the north bank of the River Avon corridor and is immediately surrounded by residential development to the north and Emery Gate shopping centre to the south. Further to the east, on the south bank of the river lie Baydons Wood and Baydons meadow, the latter of which is owned by Chippenham Borough Lands Charity. The west end of the north-bank land consists mainly of formal parkland and a golf course, whilst the land to the east is managed as a country-park.

The land to the east of the site is open agricultural fields and classified as priority habitat flood-plain grazing marsh. The land at Harden's Farm has been designated for future urban development. The whole site is bounded to the north by the line of the old Calne branch railway line, now National Cycleway route 403.

Wildlife Corridor

Monkton Park and the River Avon act as a wildlife corridor into and out of the town from the surrounding landscape, however, the movement of terrestrial animals may be impeded to a degree by the fenced embankment of cycleway 403. There is scope for improving movement into the surrounding landscape along the river bank and riparian habitat.

Designations

The Multi-Agency Geographic Information for the Countryside (MAGIC) database was accessed on 24th January 2020 in order to establish the presence of statutory sites such as Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Local Nature Reserves (LNR) and important habitats.

 Table 1 Statutory Designated Sites within 2km

| Site Name | Distance | Designation | Summary Interest |
|------------------|-----------|-------------|--|
| | from Site | | |
| Kellaways, River | 1.1km | Geological | "The locality includes a number of highly- |
| Avon | | SSSI | fossiliferous exposures of the famous |
| | | | 'Kellaways Rock'" |
| | | | (www.naturalengland.org.uk) |
| Mortimore's | 1.3km | LNR | "Urban fringe, habitats include woodland, |
| Wood | | | woodland edge and river bank" |
| | | | (www.naturalengland.org.uk) |



Figure 2: Geographical map of site (Magic Maps, 2020)

Table 2 MAGIC Priority Habitats On-site

| Habitat | Мар | Section | Summary Interest |
|-------------|------------|---------|--|
| | Colour | | |
| Parkland | Light | 2 | "Deliberate tree planting, often with non-native |
| | green with | | species into a designed landscape, represents a |
| | tree and | | significant component" |
| | grass | | (www.naturalengland.org.uk) |
| | symbols | | |
| Deciduous | Dark | 1, 6 | |
| Woodland | green | | |
| Low Density | Light | 1 | |
| Woodland | green | | |
| Young | Yellow | 5 | Baydons Wood |
| Woodland | | | |
| Neutral | No map | 5 | Baydons Meadow, County Wildlife Site (Non |
| Grassland | colour | | Statutory Designation), old riverside hay meadow |
| Flood-Plain | Blue | N/A | East bank of River Avon, outside of site |
| Grazing | | | |
| Marsh | | | |

Habitats

River Avon

The Bristol Avon is an extremely important natural feature and acts as an arterial route into (from the east), and out of (to the west), Chippenham town centre. The river is nationally important for its communities of dragonflies and aquatic plants.

Currently, in the formal parkland areas (1, 2 & 3) the bankside is, in the main, left un-cut except for the vicinity of a number of fishing platforms and several other areas where public access has eroded the bankside vegetation.

Fishing: Chippenham Angling Club control the rights to fishing along the north back of the river across the entire site from the Town Bridge (in the west) to Black Bridge (in the east). Many of the fishing platforms are in a state of disrepair (some are missing entirely) and most show signs of bank erosion because of a lack of formal access steps to the platform.

Although the fishing rights are due to be discussed by the council in the near future, it is felt that the council members are unlikely to agree to remove the platforms entirely. Therefore, the suggestion of this report is that all platforms be repaired, or replaced and formal access (such as steps) be installed to limit public access to, and erosion of, the bankside. Certain areas had significant bankside erosion and ground damage from footfall to the river edge where no fishing platform remained – in these cases, valuable wetland edge habitat for ground nesting birds will be impacted and these areas should be restricted access if no platform or pathway is present. Similarly, important areas such as these could be identified and restricted to limit disturbance whilst other areas are improved for safe fishing access.



Figure 3: Footfall damage to wetland edge/bank habitat, in some cases, no fishing platform present (Authors Own, 2020)

Otter: The European Otter (*Lutra lutra*) is a protected species in the UK following a crash in numbers during the 1960's. However, otters are now increasing in numbers across Wiltshire and they are an important indicator of good river health (Sussex Wildlife Trust, 2016). Six records of Otter were returned from within 250m of the site from Wiltshire & Swindon Biological Records Centre. Although the last WSBRC held record related to 2016 a member of the public provided anecdotal record of otter from 2019, confirming the continued presence of this species along the Monkton Park Avon.

Water Vole: In the last 30 years water vole (*Arvicola amphibious*) has declined by 90%. This has been caused by a range of factors, including habitat loss and the introduction of American mink (*Neovision vision*) (Sussex Wildlife Trust, 2013). Whilst no records of mink were returned by WSBRC, eleven records of water vole were returned from within 250m of Monkton Park. However, the latest record was dated 2006 and all eleven records were unverified. Therefore it is suggested that a further ecological survey to establish baseline presence of water vole be carried out in 2020.

Conservation of River & Bankside Habitat: Advice on instream habitat management to conserve fish, otter, water vole and other aquatic species is a specialised service outside the scope of this report. However, the Water Team at Wiltshire Wildlife Trust may be able to provide advice and practical works to improve the overall habitat quality of the River Avon at Monkton Park. Funding streams may be available to enable this work.

Although bankside vegetation is generally left uncut, this is usually only up to where the bank starts to slope away to the river. An increase of uncut vegetation of 1-2m on flat ground away from the sloping bank will provide habitat that wildlife depends on for food and shelter, protection from erosion and encourage native plants to thrive. Native trees with overhanging branches should be left in situ, unless a health and safety hazard. Dead wood in the river and on the banks is very beneficial for invertebrates and will be used by otters for shelter, as long as not interfering with water flow.



Figure 4: Examples of bankside vegetative growth seen; photo one with dense bankside scrub and photo two with low grass vegetation (Authors own, 2020)



Figure 5: An example of an area of river edge grassland which could be set-aside as an area of long growth/bankside vegetation and scrub for wildlife (Authors Own, 2020)

Pesticides are extremely hazardous to fish and other aquatic life and the use of pesticides is a major cause of invertebrate decline. Very few pesticides are approved for use within 5m of a river. Permission should be sought from the Environment Agency before using herbicide on bankside vegetation. Best practice would be to refrain from pesticide or herbicide use entirely within at least 10m of the bank, or the site in its entirety as leaching through soil layers is rarely addressed as a contraindication.

Formal Parkland & Golf Course



Figure 6: Outlined areas of 1, 2 and 3; Formal Parkland and Golf Course (Edited; Google Earth)

Areas 1, 2 and 3 (Emery Gate, Main Parkland and Golf Course) are, outside of the immediate riverside habitat, all amenity parkland areas associated with the grounds of the old Monkton House. The three areas all see high levels of public usage and will require regular tree inspection as suggested in Tree and Woodland Management at Monkton Park (Wolf, W 2019).

This report suggests that the schedule of works and timeline in the above document should be adhered to unless that document is superseded, or any further survey detects a feature that must be conserved (see below: bats). Furthermore a general adherence to the current fortnightly cutting regime is also suggested, outside of the riparian corridor and any other features suggested below.

As suggested in Tree and Woodland Management at Monkton Park (Wolf, W 2019) little recent tree planting has been noted in the formal parkland areas. Opportunities exist in area 2 (Main Parkland) to introduce new trees, both native and ornamental, to encourage a diversity of tree age, create understorey and replace some of the bank-side Sycamore. Mature and ancient woodland is of significant importance to wildlife and local ecology but as these trees inevitably become diseased or require felling, essential habitat is lost. Natural succession of younger trees through regeneration would occur in woodlands under less artificial

management. By planting young saplings and shrubs, the diversity of canopy layers and understorey could be greatly improved, providing additional nesting and feeding sites for wildlife.



Figure 7: Circled areas indicating sites for potential young tree regeneration planting (Edited; Google Maps)

In addition, opportunity also exists within area 2 for designated areas of longer grassland interplanted with bulbs and/or wildflower plug plants to offer colour and interest as well as benefit for wildlife.



Figure 8: Highlighted areas indicating potential sites for longer grassland and/or bulbs/wildflowers (Edited; Google Maps)

A post and wire fence exists between the Golf Course and the Riverside Path and along an area of this a hedgerow has been planted. This report suggests that the hedgerow be continued along the whole southern boundary of the golf course at a greater density. Native hedgerow species should be included such as Hawthorn, Blackthorn, Crab Apple, Hazel etc. This will not only provide a better boundary and privacy for the golf course but will also offer a greater food and shelter source for wildlife, connecting the woodland to a lower shrub layer. Once established this hedge should be managed on a 3 year cutting cycle and will provide a shelter-belt and continuation of the linear habitat corridor.



Figure 9: Existing boundary between footpath and golf course (Authors own, 2020)

Informal Parkland & Riverside Corridor



Figure 10: Areas 4 & 6 outlined on map (Edited; Google Maps)

To the south and east of the golf course, areas 4 & 6 are much less rigorously managed than the formal parkland that precedes it. The bankside of the river is wider here, with more scrubby areas and bankside trees. A number of small areas of scrub sit within the rough grassland which

is currently cut once a year, with some areas left uncut. A thicket of blackthorn scrub lies on the boundary between areas 4 and 6. The whole area has a country-park feel.

Flora records from as far back as 1888, returned from WSBRC show that historically this area had some botanical interest. In particular records of wild clary (*Salvia verbenaca*) and basilthyme (*Clinopodium acinos*) suggest that the underlying soil, at least in seams, is lime-rich or chalky.

Taking into account the flora records, current management and the country-park feel, the suggested future management would be a continuation, expansion and maintenance of a grassland/scrub/woodland habitat matrix. Small areas of scrub, maintained on a long cutting rotation should be interspersed with areas of planted woodland and natural regeneration, whilst a sequence of grassland areas should be managed to maintain botanical interest.

As seen from Figure 11, Area 4 shows the beginnings of a habitat matrix with areas of varied grass heights, some shrubs, standing dead wood etc. It is however lacking the quality and diversity needed to be truly beneficial for wildlife. This would be improved through additional planting of scrub layers and trees as well as a considered cutting regime to form better grassland matrix.



Figure 11: Grassland of Area 4 (Authors Own, 2020)

There is a small number of Blackthorn thickets which are relatively mature and dense. The edges of these thickets should be allowed to naturally succeed outwards into adjacent grassland to a certain degree, enabling fresh regeneration which is beneficial to butterflies and other invertebrates. For example, the Brown Hairstreak butterfly lays its eggs and its caterpillar thrive on young blackthorn growth.

The main thickets which are mature and dense could be improved by creating small scallop or glade clearings within each clump to allow for younger regeneration. This could be done on a 3 year rotation, essentially bringing the thickets to a more rejuvenated state over time. Clear ("scalloping") areas of mature blackthorn (*Prunus spinosa*) to make way for the younger 2-3 year old growth is hugely beneficial. By cutting crescents, or scallop shell shapes into the

hedge line, you not only create space for new growth, but also create slightly sheltered alcoves which will warm up more quickly and retain heat. This allows more herb growth and in turn benefits various insect and mammal species, as well as effectively extending the total length of the hedgerow.



Figure 12: a) Blackthorn thicket at Monktons Park (Authors own, 2020) b) Large blackthorn scallop on a similar larger site (Sutton Nature Conservation Volunteers (2020)

Scrub: A stand of scrub with varied plant species, age and structure will support a great variety of species and will provide a continued source of nectar, fruits, seeds and shelter, breeding and roosting sites. Scrub is the transitory stage between open habitats such as grassland and closed canopy woodland and as part of the habitat mosaic it will provide food and shelter for invertebrates, amphibians, reptiles, mammals and birds.

Some tall herbs, often associated with scrub edge, are vital to many grassland invertebrates that need nectar-rich shrubs to complete their lifecycles. Species such as blackthorn, hawthorn, bramble and herbs provide early pollen and nectar, as well as foraging habitat for herbivorous and predatory invertebrates in both adult and larval stages. Standing and fallen dead timber is valuable habitat for fungi and wood-boring insects.

Grassland: Permanent rough grassland is the preferred habitat for mammals such as the field vole, shrews and wood mice which are the main food sources for barn owls and birds of prey in the UK.

Grassland can also support rare species such as orchids and butterflies. Invertebrates also thrive in rough grassland as the insects and their eggs are better able to overwinter within the taller grass stems.

The most important aspect of managing rough grassland is not to disturb the litter layer which is the perfect environment for mammals, reptiles and invertebrates. However, grassland that is never cut or grazed will gradually become over-grown by brambles and scrub, and eventually trees, so some form of management is essential in the long term.

One option is in late July or August to cut alternate strips across the field to a height of about 80mm. The following year, cut the other strips in the same way and so on, so each strip is cut every two years.

Areas next to hedges should be left to grow long. A number of other areas should be cut once or twice a year, with the cuttings removed. This prevents a build-up of nutrients which causes coarser weeds to out-compete the more delicate wildflowers.

Reducing the number of cuts and delaying the cut until later summer has a number of benefits for wildlife as well, allowing plants to set seed and avoiding conflict with other wildlife interests such as invertebrates and nesting birds.

Woodland: To provide the final aspect of the scrub/grassland/woodland habitat matrix small copse areas should be planted up with native species of locally sourced saplings. In the wetter areas alder, willow and silver birch should be selected, whilst in the dry areas a good mix of oak, hazel, field maple, wild cherry and rowan is suggested.

Without some form of management the deciduous woodland in area 6 will become dark, over-shaded and dominated by big mature trees without any variation in structure, age or cover. Ultimately this will reduce the amount of wildlife that can live there. This often involves a mix of approaches – some areas can be coppiced and some areas can be left to go wild. Selective thinning will ease competition, provide structural diversity and allow light to the woodland floor. This in turn will encourage the field layer and understorey. Log piles and deadhedges can be left as habitat for invertebrates.

At the north end of area 6, away from the electricity wires, there is potential for community fruit orchard project of small, local variety, apple, pear and plum trees.

*

Woodlands and Ivy: This familiar plant, seen climbing up trees and walls everywhere, is a great provider of food and shelter for many species from butterflies to bats. However, as stated in Tree and Woodland Management in Monkton Park (Wolf, W 2019), "Ivy on trees is often a point of disagreement and misunderstanding for many." The Wiltshire Wildlife Trust position on ivy broadly follows the document above in that whilst it does provide a valuable habitat, it can also hide tree defects and overwhelm an already declining tree. Management should

therefore be taken on a case-by-case basis. Ultimately in areas of high public use, where a health and safety risk is present, severing at the base can be employed as a last resort. In areas of semi-natural woodland ivy should be left to grow for its nature conservation benefits where appropriate. If a general rule were to be applied, then trees in high risk areas (near pathways, entrances etc.) could be cut when the ivy reaches two thirds of the height of the tree. Elsewhere on site, trees clad with ivy should be left as a valuable habitat resource for nesting and feeding birds and invertebrates. Trees clad with ivy will require careful health monitoring, not because ivy causes disease or death, but because signs of disease or dieback within the tree itself may be more difficult to notice through the vegetation (Tree Advice Trust, 2004).

*

Bats: Records of eight species of bats were returned from within 250m of the site from Wiltshire & Swindon Biological Records Centre. These were Lesser Horseshoe, Barbastelle, Daubenton's, Whiskered, Noctule, Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared. Of these Lesser Horseshoe and Barbastelle are classified as at least scarce.

Bats use the landscape in three ways, for foraging, for roosting and for commuting. To conserve bats provision must be made for each of these three key areas.

Bats are insectivores, so creating and enhancing features that provide a mixture of flowering plants, trees and shrubs, will attract nocturnal flying insects. Dense understorey should be retained in woodland. Standing and fallen deadwood should be left in situ unless a health hazard. Flower-rich areas and uncut grass will provide foraging opportunities in open grassland, whilst the creation of a pond complex and the retention of bankside trees should be encouraged along the river.

All bat roosts are protected by law. Some species rely on holes and cracks in veteran trees, whilst others will use buildings. Because of the rare species listed above a further specific bat survey is recommended to be carried out to detect the presence of roost sites. The results of this survey will inform the decision on carrying out the work specified in Tree and Woodland Management at Monkton Park (Wolf, W 2019)

Commuting between the roost and foraging area is an essential requirement for bats. All known bat commuting routes should be retained and enhanced. Routes usually follow linear features, in the case the river itself will be the main route, but hedgerows, gardens and woodland edges are also used.

Baydons Wood & Baydons Meadow

Baydons Wood: On the south bank of the River Avon to the west of area 5 lies Baydons Wood, a new millennium woodland, planted in 2000 that was transferred to Chippenham Town Council ownership from Woodland Trust after 2015. The underlying geology is Kellaways clay with fine alluvial topsoil. To the south west an area bordering Baydons Lane is now fenced off from the wood and under development.

At the time of the site visit in January 2020, a CTC employee was using a tractor mounted flail attachment to cut the pathways through and around the wood. This has led to very wide, muddy pathways and woodland edges, with a lack of scrub, understorey and field layers. It is also a relatively destructive method for maintaining woodland habitats for the benefit of wildlife. The use of such large machinery in this small woodland is also negatively impacting on ground flora and soil structure, leading to compaction and lack of biodiversity.



Figure 13: Baydons Wood damage from flailing woodland pathways/edges (Authors own, 2020)

The key to managing pathways, rides and glades for wildlife is to maintain open conditions without compromising a structurally diverse, shrubby woodland edge. A ride or glade needs to be wide enough to allow sunlight to reach the central area as well as the south-facing shrubby edge. The south-facing edge of a pathway will be warm in the summer sunshine, whilst the north facing edge will be cooler and damper. Both aspects are important for insects; the sunny edge supporting basking insects and the shady edge more attractive to feeding insect larvae.

It is important not to lose valuable habitat such as a scrubby woodland edge as the edges where one habitat transcends into another (woodland to grassland) can actually be the most biodiverse and beneficial areas for wildlife, offering regeneration of young saplings, increased ground flora and herbs. Pathways must be managed to prevent scrub growth developing into woodland, and to maintain the diversity and quality of the habitat mosaic.

Timing and frequency of cutting sections of a pathway should be varied to increase their value for wildlife. The central zone of a path should be mown once or twice a year to maintain the

short turf. Cut up to 25% of the tall herb zone on rotation each year, to create a mosaic of tall herbs of at least four different ages. Ideally, you should undertake this in late July or August to maintain a species-rich sward. Providing the paths are mown in rotation, and only a small area is cut each year, then insect populations in the area as a whole should not be harmed. The cuttings from this will rot down if left, effectively creating a nutrient-rich compost which would encourage rank and weedy vegetation, such as nettles and grasses, while suppressing more desirable species. These should be removed, or at least stacked in one place.

The shrubby woodland edge should also be cut, but at less regular intervals, or it will grow up into high forest. Lengths should be cut or coppiced every 8–20 years, to create a mosaic of structural diversity along the edge with panels of different aged shrubs and coppiced trees. This should ideally be carried out by hand, aiming to leave healthy cuts and strong branches/limbs. Ideally the rotation period should match the point at which an area of scrub has reached the maximum size and density required. This work should be undertaken outside the bird nesting season and ideally overwinter between November and the end of February. These methods will eliminate the need for flailing within the woodland. Some brash may be retained in localised piles along the woodland edge in the cut areas, as a source of deadwood.

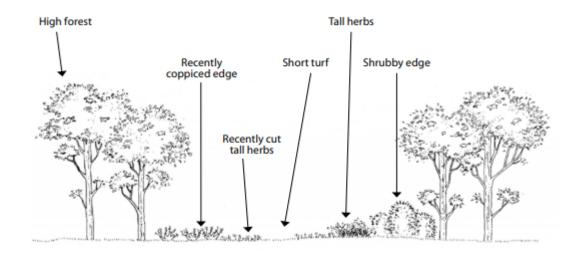


Figure 14: Profile of a three-zone path cutting system (Woodlands.co.uk, 2010)

Baydons Meadow: This 5.5 Acre hay meadow County Wildlife Site is situated on the south bank of the River Avon in area 5. The land here is owned by Chippenham Borough Land Charity and is managed by Baydons Meadow Wildlife Group (BMWG), which was set up with help from Wiltshire Wildlife Trust (WWT) in 2005. At that time a management plan was set up by WWT to formalise management of the meadow over a 5 year time period.

Hay meadow management, as suggested in the 2005 plan, is based on ancient traditional farming methods which were once prevalent in the clay vales of North Wiltshire. Traditionally wildflower grasslands were managed either for making hay with aftermath grazing or as pasture with low-level grazing throughout the year.

After World War 2 the widespread use of fertilizers and intensive management of grassland for silage has brought about a rapid decline in unimproved hay meadows and the wildlife that they support. Therefore in this low-productivity area of derelict grassland bringing back the old system has improved local biodiversity and created an area that can be used for education and to improve public health and wellbeing in the locality.

As a stakeholder in the site BMWG were contacted by WWT to inform them of this assessment of their land. The group are currently engaged in updating the management plan and intend to bring this into use during the 2020 summer season. Further to this, the group leaders have expressed an interest in a closer working partnership with Chippenham Town Council.

Key Recommendations

• River Avon

- Survey current number and quality of fishing platforms. Start phased maintenance schedule of repair and replace, including access steps or pathways
- Commission ecological survey to provide base line data on water vole population
- Seek advice on instream habitat management works from Wiltshire Wildlife Trust
 Water Team
- Implement new cutting regime to increase width of bankside vegetation by 1 2m

Formal Parkland & Golf Course

- o Continue regular yearly tree inspections
- Continue with current tree management schedule of works unless specific trees are detected in ecological surveys
- o Continue current fortnightly grass cutting regime
- Implement new tree planting in areas specified in forthcoming management plan
- o Implement new wildflower area as specified in forthcoming management plan
- o Phase in plant-up of new golf course hedgerow

• Informal Parkland & Riverside Corridor

- Expand and maintain and create grassland / scrub / woodland habitat matrix as per management plan
- o Manage existing woodland as per management plan
- o Plant new woodland as per management
- o Implement community orchard project
- Monitor health of ivy clad trees
- o Commission ecological survey to provide base line data on bat population

• Baydons Wood & Baydons Meadow

- Baydons Wood
 - Change path management regime to a more sympathetic 3-zone cutting system
 - Cut centre zone of pathways 2 or 3 times a year over summer
 - Cut no more than 25% of tall herb zone per year July September
 - Cut no more than 10% of shrubby edge zone per year November –
 February
 - Engage with public on how management is changing to improve habitat for wildlife
- o Baydons Meadow
 - Initiate contact with BMWG to establish a closer working partnership

List of references

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Figure 1: Annotated Geographical map of the site [online], Google Earth, Jan 2020

< https://www.google.co.uk/intl/en_uk/earth/>

Figure 2: Geographical map of the site [online], MAGIC, DEFRA Jan 2020

https://magic.defra.gov.uk/home.htm

Figure 3: Authors own, 2020

Figure 4: Authors own, 2020

Figure 5: Authors own, 2020

Figure 6: Annotated Geographical map of the site [online], Google Earth, Jan 2020

Figure 7: Annotated Geographical map of the site [online], Google Earth, Jan 2020

Figure 8: Annotated Geographical map of the site [online], Google Earth, Jan 2020

Figure 9: Authors own, 2020

Figure 10: Annotated Geographical map of the site [online], Google Earth, Jan 2020

Figure 11: Authors own, 2020

Figure 12: Authors own, 2020

Figure 13: Authors own, 2020

Figure 14: Profile of a three-zone path cutting system (Woodlands.co.uk, 2010)

Table 1: Statutory designated sites within 1km, MAGIC, DEFRA Jan 2020

Table 2: Priority habitats on-site, MAGIC, DEFRA Jan 2020