

Ariennir gan Lywodraeth Cymru Funded by Welsh Government









# THE WARREN NATURE RECOVERY MANAGEMENT PLAN

2021-2022









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#### **Executive Summary**

This Nature Recovery Plan is to provide a framework for the management and enhancement of The Warren for 2021-2022, with a view to a more long-term programme of delivery for the site.

The Plan includes areas referred to here as the Warren meadow, two areas of woodland, the Old Railway and Bailey Walks, Login Brook and Castle Mound. These areas include:

- Unimproved neutral grassland
- Semi-improved neutral grassland
- Riparian corridor
- Shaded woodland verges
- Woodland slopes

The Warren Nature Recovery Management Plan is part of a wider project, delivering nature recovery activities at five sites across the Brecon Beacons National Park. Each of the sites have been chosen as being of importance to local communities, and have been developed through discussion with local groups and stakeholders.

The project has been funded by the Welsh Government Local Places for Nature Fund, 2021/22, which includes creation of this Management Plan, support by the Brecon Beacons Local Nature Partnerships Coordinator and funding for capital works during the year.

#### Plan Structure and Content

The Nature Recovery Management Plan is broadly structured into the following parts:

- Part 1: Introduction outlining the purpose of the Plan, a description of the area and the key tasks identified, followed by related plans and strategies.
- Part 2: A description of the habitats, species and their connection to the wider landscape.
- Part 3: Nature Recovery Aims and actions.

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## 1. Introduction

#### 1.1 Background

Brecon Beacons Local Nature Partnership supports the delivery of nature recovery across the Brecon Beacons National Park. As part of this ambition, a partnership project, with Brecon Beacons National Park Authority as lead, has been put in place to establish five Local Nature Recovery Sites across the national park.

The project is for delivery from April 2021 to March 2022 and includes:

- site survey and creation of a Nature Recovery Management Plan (the Plan) for each site
- involvement of local community groups in development and implementation of the plan, and
- funding for delivery of capital works by the end of March, 2022.

Development of the Management Plans, with input from local stakeholders and community groups, was undertaken by Catrin Evans Consultancy. Working collaboratively, ecological assessments and identification of management requirements were carried out by Wendy Larcombe, Consultant Ecologist.

The scope of the project is to identify work to be delivered by the end of March, 2022, however this will be presented within a more long-term ambition for ongoing management of these sites, in the hope that future funding may be identified to build on the progress made during this year.

#### 1.2 Location

The plan is referred to as The Warren, however it also includes The Old Railway and Bailey Walks, Login Brook and Castle Mound. The site is in Hay on Wye, at the Northmost point of the National Park Boundary. The area is under mixed ownership, which includes the Warren Trust, Powys County Council and Hay Town Council.

The plan includes the area of land known as Castle Mound / Login Brook. At the time of writing of the Plan, discussions were ongoing to transfer this land from Powys CC to Hay Town Council.

Image 1 provides an outline of these areas, within the context of the Brecon Beacons National Park. *N.B. the boundary is indicative of area and is not an indication of ownership.* 



Image 1: Location of the Local Nature Recovery Site



#### 1.3 Partnership Working and Community Involvement

There is an established relationship between the various landowners in management of the areas within the Plan. Hay Community Woodlands is strongly involved in management activities on the site, carrying out regular volunteer days on site.

#### 1.4 Key Tasks

Part 3 of the Plan provides a detailed breakdown of the activities that are recommended to be carried out during 2021/22, guidance on how to do the work and some further information on the materials and tools that will be needed. The key targets are summarised below:

#### Removal of INNS (Invasive non native species)

- Spanish Bluebell. Activity April / May.
- Variegated Yellow Archangel. Activity June / July
- Three-cornered Leek. Activity April / May
- Himalayan Balsam. Activity June / July and repeat control as necessary
- Snowberry. Activity October to February
- Garden Strawberry. Activity ongoing
- Japanese Knotweed. Activity September.
- Giant Hogweed. Control: options include root removal / cutting (April / May), flower head removal (August / September), chemical control (April to June and again in July / August).

#### Verge Planting

Shade tolerant, woodland edge plug plants / bulbs can be planted in areas of low species diversity. Activity: Plug plants – Autumn / Spring, Bulbs – October / November Snowdrop bulbs (in leaf) – February / March

#### Grassland Management:

#### Mowing for Biodiversity Gain

The Warren is an extensive area of grassland which provides an excellent opportunity as a pollinator nectar source. Recognising that there will be weather and operational constraints which will impact on timing, as a general principle it's recommended to delay the hay cut until at least mid-July, so as to allow the flowers to set seed. If the whole area cannot be managed in this way initially, a trial area is proposed. Activity - July /August

#### Bracken control

It is likely that Bracken it is slowly encroaching onto the grassland area. Control: Bruise the fronds in mid-summer.

#### Dock control / Coarse grass

The docks will need to be cut back regularly, before they are able to flower, which could initially be done as regularly as every 6 weeks from May. In areas of more coarse grasses,

strimming / mowing in line with the meadow management, with removal of the arisings will gradually decrease the nutrient levels, and allow wildflower species to re-establish.

#### Woodland Management

- Thinning of Woodland W1, adjacent to the car park, to allow more light through and to encourage natural regeneration. Where there is opportunity to leave standing dead wood, this would provide valuable habitat for invertebrates.
- Some thinning of Woodland W2 and understorey planting. Activity October to February.

#### Creation of a new hedge

At the woodland edge (Woodland W1), adjacent to the car park, there are existing Hazel coppice stools here, with potential for layering of suitable branches, and/or interplanting with native species, for laying in the future. Additionally, there is potential to plant a hedge around the eastern side of Woodland 1 to limit access through the woodland, whilst also providing additional habitat for birds and invertebrates.

#### Activity (assuming bare root) – October to February

#### Creation of artificial nesting / roosting provision

Artificial nests; Erect bat boxes, Dormouse boxes, Owl boxes on suitable trees. It's recommended that a variety of options are used, including different hole sizes and open fronted for bird species. Activity – ongoing

#### Login Brook

There is potential to open this area up to provide access for school groups down to the brook, providing a good opportunity to engage local pupils in their local biodiversity. There are Elm trees and an amount of Bramble scrub that would need to be felled / cleared to enable safe access to the brook. Activity – Late August / September (avoiding bird nesting and whilst reptiles are still active).

#### Castle Mound

This small area of grassland appears to need little in the way of management, other than perhaps a light strim at the end of summer, taking care not to damage the ant hills whilst strimming. Arisings should be removed and piled on site in an undisturbed semi-shaded area (for use by reptiles). Activity – Sept/Oct

#### 1.5 Policy and Legislative Framework

The Nature Recovery Management Plan will support the implementation of a number of strategies, plans and legislation, the key ones of which are outlined below. Of particular relevance are:

# 1.5.1 A Future with Nature at its Heart, A Nature Recovery Action Plan for the Brecon Beacons National Park, 2019-2024

The Nature Recovery Action Plan (NRAP) is primarily intended to guide the work of the National Park's Local Nature Partnership, which is made up of a range of organisation and individuals who want to help improve the National Park's ecosystems. The NRAP recognises, and outlines, the concerning state of decline in biodiversity, setting an ambition to

'Help reverse the decline in biodiversity by focussing on developing resilient ecological networks (in other words "nature recovery networks") which are more diverse, greater in extent, in better ecological condition and better joined up'.

The NRAP further supports delivery of the National Park Management Plan, a key strategic document for the National Park.

The NRAP goes on to identify the following key objectives:

Objective 1: To improve our evidence, understanding and monitoring of ecological resilience within the National Park

Objective 2: To work with partners at all levels to unify local action for nature recovery and ensure integration with relevant natural resources plans and strategies.

Objective 3: To increase the resilience of our natural environment by protecting existing semi-natural habitats, restoring degraded habitats and creating new areas of habitat.

Objective 4: To identify and deliver action for key species and habitats as part of a wider, integrated nature recovery programme

Objective 5: To engage with a diversity of audiences about nature recovery; using different language and techniques to highlight nature's relevance to us all and thus build commitment and action at all levels

Implementation of The Warren Nature Recovery Management Plan will deliver across each of these objectives, with a demonstrable focus on generating action at a local community level.

#### 1.5.2 Well-being of Future Generations (Wales) Act, 2015

The Well-being of Future Generations (Wales) Act, 2015, was put in place to improve the social, economic, environmental and cultural well-being of Wales. The Act lays out seven well-being goals, which public bodies must work towards achieving, and five sustainable development principles to adopt.

The Act requires public bodies in Wales to work in a way that delivers long term benefits for the well-being of people, with the natural environment seen as a key element of achieving that aim. The Act goes on to focus on the importance of involvement of local communities in delivery, an approach very much implemented in development and implementation of this plan.

#### 1.5.3 Environment (Wales) Act, 2016

This legislation puts in place a duty for public bodies to maintain and enhance biodiversity, promoting the resilience of ecosystems, in the exercise of their functions. This duty is referred to as the Sct 6 duty. In addition, Sct. 7 of the Act sets the framework for the identification of species and habitats of principal important in Wales.

Implementation of each of the 5 Nature Recovery Management Plans will be required to ensure compliance with this legislation, whilst also serving as a demonstration of measures that are being taken to enhance biodiversity and ecosystem resilience by the Brecon Beacons National Park Authority.

#### 1.5.4 Mid Wales Area Statement

Welsh Government's Natural Resources Policy sets out the key challenges and opportunities in Wales in relation to our natural environment. Natural Resources Wales are responsible for the production of Area Statements, that specify local priorities, risks and opportunities to implement the priorities of the Natural Resources Policy. Wales has been split into seven areas and Hay on Wye falls within the Mid Wales area.

The themes of the Mid Wales Area Statement are highly relevant to deliver of this Nature Recovery Management Plan:

- Improving biodiversity responding to the nature emergency
- Sustainable land, water and air
- Reconnecting people and places improving health, well-being and the economy
- Forest resources managing timber resources effectively
- Climate emergency adaptation and mitigation across four themes

### 2. Site Assessment

Both a desk-based survey and an ecological site survey were undertaken to establish the ecological conditions on site. Details on the methodology taken are outlined in Appendix 1.

#### 2.1 Habitats

The key habitats of the site are

- Unimproved neutral grassland
- Semi-improved neutral grassland
- Riparian corridor
- Shaded woodland verges
- Woodland slopes

The Phase 1 habitat maps below outline the key habitat types, followed by the key to the maps. Features / areas of note are highlighted further in the images below.



Map 1

O TN – location of Black Oil Beetle





Map 3



Map	4
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# Key to Phase 1 Maps

	1	
Colour Code	Phase 1 Habitat Code	Description
	A3.1	Scattered Trees - Native Broadleaf
	J4	Bare Ground (gravel/shingle/earth)
	C1.1	Dense continuous Bracken
	C3.1	Tall ruderal
	B2.1	Neutral Grassland unimproved
	A1.1.1	Woodland Broadleaf, semi-natural
SI	B1.2.2	Semi-improved neutral grassland (verge)
	G2	Running Water
	J2.5	Wall
	J3	Native hedgerow

The site consists of several distinct areas which are all connected to the footpaths. These will be referred to as: The Warren Meadow, Woodland 1 W1, Woodland 2 W2, Footpaths woodland corridor, Login Brook and Castle Mound.

#### The Warren Meadow

The main meadow area of the site is approximately 8.3ha of Unimproved Neutral Grassland, managed as a Hay Meadow. There are a number of well-worn paths criss-crossing the site. See Image 2



Image 2: Main meadow, showing extent, footpaths etc

The grassland supports a good range of grasses and flowering species; grasses include Yorkshire Fog, Sheep's Fescue and Meadow Foxtail while forbs include Common Knapweed, Bulbous Buttercup, Lady's Smock, Common Daisy and Square-stemmed St. John's Wort.

Where the grassland grades into scrub and woodland edge habitat, species such as Red Campion, Greater Stitchwort and Violet species were noted. See Image 3



Image 3: Woodland edge/hedgerow ground flora

For the most part, the grassland sward is of even height and uniform species diversity. There is a small stand of Bracken on a slope at the centre of the site. See Image 4



Image 4: Bracken in the centre of the meadow

An area to the southern border is dominated by coarse grasses and Broad Leaved Dock. A Stone wall forms the boundary. See Images 5 and 6



Image 5: Stone wall forming southern

Image 6: Dock and Coarse grasses



To the South West, the field narrows to a strip of grassland on a steep gradient to the river. The site and footpath have been fenced, beyond which is a sheep grazed paddock, outside the boundary of this Plan. This steep slope of grassland supports similar species to the main field, with the addition of Potentilla sp. and Meadow Vetchling. Ant hills are also an additional feature in this area. See Image 7. Also noted are a very mature Oak tree and a dead tree stump, adding biodiversity value to this part of the site. See Images 8 and 9.



Image 8: Mature Oak





The western side of the field supports a narrow band of woodland and scrub. Species include Pedunculate Oak, Sycamore, Hawthorn with Blackthorn scrub to the periphery. A number of patches of native Bluebell and Red Campion were noted around the edge. A small stand of mature Cherry and Beech trees were noted in the eastern section (between Woodland 1 and the river).

Image 9: Tree Stump

#### Woodland 1

An area of native broadleaf woodland (approx. 0.25ha) lies immediately adjacent (SE) of the carpark at The Warren meadow. The dominant canopy species is Ash, with frequent Hazel, Pedunculate Oak and occasional Field Maple. The trees are mostly early-mature, with straight trunks and high canopies, suggesting that they were planted around the same time and unlikely to have ever been thinned out. See Images 10 and 11

Image 10: Woodland 1 (adj. Car Park)

Image 11: Alternative view from field



The understory contains high numbers of saplings of Ash, Sycamore and Hawthorn with young Cherry, Rowan, Field Maple and Elder. Several of the Ash saplings have signs of Ash Dieback disease.

Ground flora contains a suite of Ancient Woodland Indicators species including Bluebell, Pignut, Wood Avens, Dog's Mercury and Wild Garlic. See Image 12.



Image 12: Ground flora of W1

There is an old stone wall running just off centre through the woodland area. See Image13. Old coppiced Hazel stools feature at the boundary of the car park, together with a dilapidated post and rail fence. See Image 14.

Image 14: Coppiced hazel stools and

old fence adjacent to carpark



#### Image 13: Stone wall W1

#### Woodland 2

An 1ha area of woodland SE of woodland 1, connected by the Bailey Footpath. The woodland block then follows the path and river as a wooded corridor (see below).

Canopy trees are tall and straight, with very few lower branches, suggesting that they are reaching for light. Species include Beech, Field Maple, Oak, Hazel, Ash and Guelder Rose.

There is virtually no understory, save for some Bramble, occasional Hawthorn and Hazel. The ground-layer supports Wood Avens, Enchanter's Nightshade, Herb Robert and Ground Ivy. See Image15.





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#### Footpaths woodland corridor

Native Broadleaf woodland occupies both sides of the Bailey Footpath and Railway Footpath, each of which is approximately 1km long. The woodland slopes down to the riverbank on one side, and up to adjoining land/gardens on the other. There is a mostly native broadleaf canopy including Oak, Ash, Sycamore and Holly. Additionally, there is an avenue of very mature Horse Chestnut trees. See Images 16 and 17.

Image 16: Woodland either side of footpaths







#### Login Brook

This section of riparian corridor centres around Login Brook, which runs under the Railway Footpath in the SE of the Site, into the River Wye. There are numerous mature trees including Elm, some of which have been identified as having Dutch Elm disease. Shrub layer is quite dense with abundant Bramble and frequent saplings. See Image 18.



Image 18: Riparian vegetation at Login Brook

#### **Castle Mound**

This is a small mound of semi-improved grassland featuring numerous anthills. The area is approximately 0.4ha, part of which is level ground, the remaining area being a tump known as Castle Mound. The site is fenced and gated, therefore access was not gained. However, the habitat was viewed through the fence. The grassland supported an abundant population of Common Knapweed together with Common Sorrel, Ribwort Plantain, Germander Speedwell and Buttercup species. Grasses include Cock's-foot and Sheep's Fescue. See Images 19 and 20.

Image 19: Castle mound grassland

Image 20: Castle mound grassland



#### 2.2 Linkages with other habitats

The eastern section of the site is a natural tree-lined corridor, running alongside the River Wye, continuing eastwards to the periphery of the main town.

The Warren meadow is connected to grazing pasture to the south, with native hedgerows and stone walls forming commuting corridors, which also connect W1 to W2 and the riparian corridor both east and west. The sheep grazed paddock appears to have a high grazing density. If there is opportunity to reduce the grazing density, there is potential the site has a wildflower seedbank which could be managed more sympathetically. Wooded boundaries to the far west of the Warren connect with riparian habitat along the Wye towards the west, and also connect to pastureland further south via hedgerows.

The River Wye / Afon Gwy SAC (Special Area of Conservation) forms a northern boundary of the meadow, whilst sections of the River are also designated as Sites of Special Scientific Interest; identified as the Lower Wye and Upper Wye.

#### 2.3 Species Summary

The grassland areas (Warren meadow and Castle Mound) offer good potential for badger and bird foraging, and may support ground nesting birds such as Skylark, with a record for Skylark noted in 2019. A variety of vegetation structures in the grassland offered potential for

reptiles. Much of the wooded slopes were considered to offer potential for badger sett building (particularly at the tops of the slopes where they level out onto surrounding pastures).

Image 21: Black Oil Beetle



Black Oil Beetle, a priority species for conservation, was found in the grassland area (Image 21), location as outlined in Map 1. Black Oil Beetles are found on wildflower rich sites with a succession of nectar sources throughout spring and early summer, with some areas of bare ground. They are dependent on solitary bees, which inadvertently carry the larvae back to their underground nests, where the

larvae will continue its development until it emerges as an adult Oil Beetle. Management of the grassland to maintain, and enhance, its species diversity and population of solitary bees, will be important in securing the future of this declining species at the Warren.

It can be presumed that Otters utilise the River Wye. There are records of Otter along the banks around the Warren meadow and the wooded riverbanks will offer cover for commuting and resting up sites. Some slower sections of the River Wye may have suitable banks and favoured vegetation suitable to support Water Voles, however the remainder of the site has no suitable habitat. The waterbodies on site aren't suitable for amphibians, however terrestrial phase amphibians may utilise taller vegetation either side of the footpath, and in the meadow areas (if there are suitable breeding sites such as garden ponds nearby).

The woodland canopy is suitable for Dormouse, appearing to form a continuous aerial route along the entire length of the footpath(s), as well as providing a commuting and feeding corridor for a range of bat species. There are records of Dormouse just inland of the north side riverbank, east of Warren Meadow and a number of trees exhibit features used by bats, such as dense Ivy, cavities and splits. The variety of tree species within the woodland will provide a range of food sources for birds and there is sufficient structure to the wooded riparian corridor to provide ample nesting opportunities for a suite of woodland bird species such as Woodpecker, Tawny Owl, Treecreeper and Nuthatch. Areas with less canopy cover would be suitable for reptiles.

There are numerous species of INNS (invasive non-native species) along the footpath itself, principally in the form of garden escapes. These include Japanese Knotweed, Himalayan Balsam, Giant Hogweed, Spanish Bluebell, Variegated Archangel, Three-cornered Leek and

Snowberry. There are also patches of garden Strawberry which may spread/cross with wild Strawberry.

Detailed observations of species / potential for species observed on site, and identified through the local record centre search are outlined in Appendix 2. A species list of all species identified on site is provided in Appendix 3.

#### 2.4 Current Management

Hay Community Woodland carry out general maintenance of the site, including litter picking, planting schemes and some woodland management, including the creation of log piles along the footpath route.

The Warren meadow is currently cut for hay in June.

The Wye and Usk Foundation deal with invasive species along the river and there is evidence of chemical treatment of Japanese Knotweed and Giant Hogweed. It doesn't appear that other INNS or garden escapes have been actively managed.

## 3. Nature Recovery Aims:

Although the site is already under management, there are a number of requirements that are recommended for the site, in order to increase its nature conservation value. These are:

- Reduction of INNS
- An increase of nectar provision for pollinators
- Improved habitat for birds, small mammals and reptiles
- Improved woodland structure including increase in shrub layer.

#### 3.1 Nature Recovery Tasks

The focus of this nature recovery plan is to identify measures to be taken during 2021/22, however it is strongly recommended that ongoing management is put in place to ensure that the benefits of work taken during the year are not lost, particularly in regards to removal of INNS, woodland and grassland management.

#### Removal of INNS

With exception to Spanish Bluebell, Snowberry and Garden Strawberry, the INNS that have been identified are listed under Schedule 9 of the Wildlife and Countryside Act for Wales, which means that they are classed as controlled waste if being removed from site. Removal of these invasive species are considered a priority to prevent encroachment into other areas.

Both manual and chemical means of control have been outlined, however non chemical means is considered a preferred option wherever possible, in order to minimise wider environmental impact of its use.

• Spanish Bluebell. Control: dig up plants (including the bulb) after it has flowered. If composting, leave to dry out for at least a month in the sun. Please note that there

are restrictions on digging up and removal of native bluebells; see the <u>Wildlife Trust</u> for a guide on how to differentiate between Spanish and native Bluebell. **Activity – April / May.** 

- Variegated Yellow Archangel. Control: it can be dug / pulled and left to dry out, or may be controlled by regular close mowing. If digging up, take care to remove all plant material, as the roots / runners can propagate into new colonies. If using weed killer, spray or wipe the leaves when they are in full flower. Activity June / July
- Three-cornered Leek. Control: it can be dug up, however will require follow up mowing / strimming as the seed may be present in the soil, ensuring that the plant does not have any further opportunities to flower and set seed. If using week killer, apply in the Spring before flowering, bruising the leaves prior to application. Activity April / May
- Himalayan Balsam. Control: strim or pull up the plants when they are well established but before they are able to set seed, usually in June / July. Strimming must be below the lowest node. Please note that further control before Winter will be likely, but it is important to not allow the flower to set seed. As the plant is an annual, the most important strategy is to ensure that there is no further seed dispersal. Activity – June / July and repeat control as necessary
- Snowberry. Control: uproot shrubs or if too large, cut at base, which may require chemical treatment of the stump. Activity October to February
- Garden Strawberry. Control : pull up and remove all runners, compost. Activity ongoing
- Japanese Knotweed. Manual control of Japanese Knotweed is costly and time consuming, and is best controlled by the application of a suitable herbicide. This is best done in late summer / autumn after the plant has flowered. N.B. if work is to be carried out in, or near, water, permission will be needed from Natural Resources Wales. Activity September.
- Giant Hogweed. Control: options include root removal / cutting (April / May), flower head removal (August / September), chemical control (April to June and again in July / August). See the <u>Welsh Government advisory sheet</u> for further information. N.B. the sap is toxic and can severely irritate the skin and eyes, therefore appropriate PPE must be worn when dealing with it.

It is recommended that INNS are mapped in more detail prior to clearing, in order to aid ongoing treatment and to monitor success of the control measures. The areas will need to be monitored and once deemed to be clear, they can be included in areas for planting up with native species such as Bluebell, Wild Garlic and Primrose.

#### Planting

#### Verges

Shade tolerant, woodland edge plug plants can be planted in areas of low species diversity. Ensure that only native species are used, sourced from a reputable supplier, and where possible, of local provenance. They can be planted in groups of each species, anywhere along the footpath route where there is little vegetation already. Plug plants should generally be planted in autumn or spring; advice can generally be provided by the supplier. Bulbs are best planted in the autumn, whilst snowdrops should be planted 'in the green' in the spring. N.B. it is advised that Spanish bluebell is eradicated prior to planting of any native bluebell bulbs.

#### Activity: Plug plants – September / October or March / April Bulbs – October / November Snowdrop bulbs (in leaf) – February / March

If there is a need to strim the edge of the paths for access reasons, strimming of these areas need only be done annually, at the end of the growing season. If not already doing so, it's recommended to remove the arisings, which can be piled at the edge of the site in a semi-shaded undisturbed area. This will provide additional egg laying habitat for Grass Snakes. Activity – September / October.

#### Grassland Management

#### Mowing for Biodiversity Gain

The Warren is an extensive area of grassland which provides an excellent opportunity as a pollinator nectar source. It is currently managed by taking a hay cut in June, however, this is when most flower plants here are in full bloom and although there are some good grassland species present, such as Common Knapweed, it is does not provide sufficient time for most species to flower and set seed.

It is recommended that the hay cut is delayed until at least mid July, so as to allow the flowers to set seed. A later cut would also benefit the Black Oil Beetle, which relies on a healthy population of Solitary Bees foraging on the wildflowers. If there are areas which are less affected by disturbance from people / dogs, this would also accommodate ground nesting birds, such as Skylark, potentially giving them time to raise 2 broods. Following this, a further cut could be taken again in September / October provided that the ground is dry, however it is unlikely that the autumn cut will produce hay as it is unlikely to dry out. If this is done, arisings should be removed and can be piled at the edge of the site in a semi-shaded undisturbed area, which will provide egg laying habitat for Grass Snakes.

Due to weather or operational constraints, it's likely that there will be an annual variation in when it is possible to take a hay cut, however the proposed timing is recommended as a general principle. Provided the cut is delayed until at least mid July for most years, this will allow the seed bank to be replenished. If an earlier cut is carried out, leaving margins for a later cut would allow 'seed rain' from these margins to replenish the grassland.

If immediate changes to the cutting regime is unlikely due to implementation concerns, this approach could be trialled in sections as part of a long term strategy to increase the species diversity, and subsequently the nectar provision for pollinators, of the site. As support for this approach increases, the extent of area to be managed for wildflowers should be increased. An example area to be used as a trial is outlined in Image 22.



Image 22: Proposed trial area for meadow management

#### Activity - July /August

#### Bracken control

The area of Bracken in the centre of the Warren meadow is possibly being kept under check by the current mowing, however it is likely that it is slowly encroaching onto the grassland area. It is recommended that control measures are put in place to eradicate Bracken from the site in the long term. Control: Bruise the fronds before spores (which are believed to be carcinogenic) are released late Summer. This can be done by a roller (if not too steep) or as a volunteer activity with sticks in mid-summer.

#### Dock control / Coarse grass

In areas of dense dock / coarse grass there is a need to introduce a regular mowing / cutting regime in order to reduce the dominance of these species. The docks will need to be cut back regularly, before they are able to flower, which could initially be done as regularly as every 6 weeks from May. In areas of more coarse grasses, strimming / mowing in line with the meadow management, with removal of the arisings will gradually decrease the nutrient levels, and allow wildflower species to re-establish.

#### Woodland Management

Woodland W1, adjacent to the car park, would benefit from thinning to allow more light through and to encourage natural regeneration. This area also includes Ash saplings with signs of Dieback, which should be removed alongside thinning activities, adhering to local guidance on management of Ash Dieback.

A number of trees should be removed to open up the canopy enabling light to reach the ground. Choose trees that appear diseased, or are of poor structural growth/quality. Leave timber where it falls (can be cut up to manageable lengths to maintain access/ease of working in the site). Where there is opportunity to leave standing dead wood, this would provide valuable habitat for invertebrates.

Woodland W2 – this woodland has virtually no under-storey and so requires some thinning (as for woodland W1) alongside tree planting of species such as Holly, Hazel, Hawthorn and Guelder Rose to add structure to the area. Saplings can be planted in groups of 3 or more of each species, in about 2/3 of the woodland, leaving some areas towards the periphery, more open. Retention of some areas of bare ground near the woodland edge should be encouraged to accommodate Black Oil Beetle and their host species, Solitary Bees.

#### Activity – October to February.

#### Creation of a new hedge

The woodland edge (Woodland W1) within the car park is vulnerable to people walking through. There are existing Hazel coppice stools here, with potential for layering of suitable branches, and/or interplanting with native species, for laying in the future. Additionally, there is potential to plant a hedge around the eastern side of Woodland 1 to limit access through the woodland, whilst also providing additional habitat for birds and invertebrates.

Planting: clear vegetation to a minimum 1m wide strip along the length, use a biodegradable weed suppressant mat, plant native trees in a double staggered row (density depends on species chosen, advice from supplier), protect with strimmer guards. Water well in dry conditions. Container grown can be planted any time of year (avoid frosts), bare root trees are best planted in autumn through to early spring. Cut top 1/3 of each tree on planting, to make them bush up at the bottom, or as advised by supplier.

Recommended species are those that reflect native hedgerows in the locality, which are likely to include Hazel, Holly, Hawthorn, Blackthorn, Guelder Rose and Elder, the latter 2 can be left to grow as standard trees. Hedgerow planting can also be supplemented with climbers which aid structural diversity and increase value for biodiversity. Plant native Honeysuckle, Field/Dog Rose.

#### Activity (assuming bare root) – October to February

#### Creation of artificial nesting / roosting provision

Artificial nests; Erect bat boxes, Dormouse boxes, Owl boxes on suitable trees. If possible, link up with existing organisations such as the Wildlife Trust/RSPB or similar body with expertise to help choose best locations for each type of box, and for advice on ongoing maintenance.

It's recommended that a variety of options are used, including different hole sizes and open fronted for bird species.

Boxes need to be easily cleaned and any wooden boxes must be treated with wildlife friendly wood preservative. Depending on individual preference, options such as woodcrete or recycled plastic are more durable and becoming increasingly used. There must be a schedule/rota (with volunteers or staff) to make sure the boxes are cleaned out annually and checked for condition. Please note that checking of certain boxes, such as Dormouse or bats, require licences to open up boxes.

For advice on siting boxes, see the links below: Bird boxes - <u>RSPB</u> Bat boxes – The Bat Conservation Trust <u>website</u> for guidance on installation or their guidance leaflet for more detailed advice, including licence requirements for checking.

#### Activity – ongoing

#### Login Brook

There is interest, and potential, to open this area up to provide access for school groups down to the brook, providing a good opportunity to engage local pupils in their local biodiversity. There are Elm trees and an amount of Bramble scrub that would need to be felled / cleared to enable safe access to the brook. A precautionary approach should be taken in this area, in case Otter are present. Only hand tools should be used for clearing the dense undergrowth, and if Otter (or their signs) are seen, then work must stop and advice should be sought from NRW/BBNPA ecologists.

The Elm trees will need to be assessed for use by Bats, by a licenced and suitably experienced Bat surveyor (in this case, with climbing qualification). Dead wood can be left where it falls, if it is safe to do so, or cut to manageable lengths and piled where it cannot cause a hazard (and must be secured from entering the watercourse).

# Activity – Late August / September (avoiding bird nesting and whilst reptiles are still active).

#### Castle Mound

This small area of grassland appears to need little in the way of management, other than perhaps a light strim at the end of summer, taking care not to damage the anthills whilst strimming. Arisings should be removed and piled on site in an undisturbed semi-shaded area (for use by reptiles). It is likely that this area is suitable for Common Lizard and Slow worm, therefore, work should be undertaken during the reptile active season (March- Oct. generally), and only in dry, still conditions. **Activity – Sept/Oct** 

#### 3.2 Species Protection

It should be noted that works will need to be carried out with consideration for protected species, taking note of the guidance outlined below. This will particularly be of relevance for woodland management activities and management of areas of scrub or tall vegetation.

#### Otter / Water Vole / Dormouse

If Otter/Water Vole / Dormouse or signs of either mammal are observed whilst carrying out management works, work must cease, and advice sought from Natural Resources Wales.

#### Badger

if a Badger sett, including outlier entrance, is discovered during works then any works to be undertaken within 30m of the sett must be carried out by hand.

#### Bats

If any works to the mature trees are necessary, an assessment of use by bats is required, to be undertaken by a licenced and suitably experienced bat surveyor.

#### Reptiles

Where there is considered to be a likelihood of reptiles present, Strimming or vegetation clearance/similar ground operations should be undertaken in the reptile active season (generally March – Oct) and when weather conditions are suitable to allow animals to move away from harm (warm and dry).

#### Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act of 1981. Therefore, vegetation clearance should be planned outside the nesting bird season.

#### 3.3 Resources needed

**Native plug plants** – soil testing is advised in each chosen area of planting which will indicate the most suitable species, and are likely to includes species such as Wild Garlic, Bluebell (once Spanish bluebell is eradicated), Foxglove, Primrose, Snowdrop, Wood Sorrel, Dog's Mercury, etc. Local and / or reputable suppliers will be able to provide tailored advice to the site.

Guide price:  $\pm 1 - \pm 1.50$  / plug plant or  $\pm 3.30 - \pm 4$  / plant for 9cm pots. Bulbs – from approximately  $\pm 20$  / 100 bulbs to  $\pm 3.50$  for 10 'in the green' snowdrops.

**Native hedging saplings**, use local provenance supplier, biodegradable matting, canes and tree guards. Quantity – usually min. 5 trees/linear meter.

Guide price: £93 for 30 trees (for approximately 6-10 metres), including canes and spirals.

New fencing posts and rails, if needed to temporarily protect newly planted hedging saplings, will need to be costed properly, but a guide price is  $\pm 10-12$  / metre.

#### Tools

General gardening hand tools for INNS removal and planting activities. Guide price - £300

#### Contractors

Woodland management activities will need to be carried out by suitably qualified arborists, informed by advice from a licenced bat worker. It is recommended that additional input is sought for this element of work.

#### Boxes

Dormouse – wooden. Guide price - £200 for 15 (PTES) Bat boxes – 'woodcrete' or recycled plastic. Guide price – ranging from £30 to £100 each. Bird boxes. Variable, up to approximately £170 for an Owl box.

#### 3.4 Long term goals and recommendations for ongoing delivery.

Many of the activities outlined in this plan will require ongoing delivery, and there is likely to be a need for further investment in the site to ensure that the benefits of this work are fully realised. These will include:

- Continuation of INNS control
- Increased shrub layer in Woodland W1 and W2 to increase quality of habitat, particularly where woodland thinning has been carried out during this year
- Additional planting of wildflower species, taking a phased approach to enhancement at both sites.
- Appropriate management of grassland areas, ensuring that arisings are removed to promote wildflower growth
- Management of the new hedge by W1 laying it when sufficiently established.

# Appendix 1: Methodology

Both a desk-based survey and an ecological site survey were undertaken to establish the ecological conditions on site.

A field botanical survey was carried out of the Warren on 18<sup>th</sup> May 2021, using survey methods that were based on standard Phase 1 Habitat survey techniques. The CIEEM (Chartered Institute of Ecology and Environmental Management) <u>Guidelines for Preliminary</u> <u>Ecological Appraisal</u> were also followed and adhered to.

A data search was requested from the Biodiversity Information Service for Powys and Brecon for the Warren and surrounding area of up to 2km. The species information was provided on 29<sup>th</sup> May, 2021.

#### Badgers

The site was assessed for its suitability for Badgers (habitat suitable for sett building and feeding resources). Incidental signs of Badgers were recorded if they were encountered, which includes the presence of setts, well-worn paths and runs, snagged hair, latrines, footprints and evidence of foraging.

#### Otters

The site, and surrounding habitat, was assessed for its suitability to support Otters. Where safely accessible, any watercourses directly adjacent (and potentially impacted by proposed works) were searched for Otter field signs such as spraint marking, slides, hovers or footprints.

#### Dormouse

The habitats on site, particularly any hedgerows, dense scrub and woodland were assessed for their suitability to support dormice.

#### Birds

The habitats on site were assessed for their suitability for breeding birds, including trees, scrub and grassland.

#### Bats

Habitats on site were assessed for their suitability to support bats, particularly any trees on site that could have bat roosting potential or opportunities. Potential flight lines and feeding areas were noted.

#### Reptiles

The habitats on site were assessed for their suitability to support reptiles; vegetation cover, feeding resources and basking opportunities.

#### Amphibians

The habitats on site were assessed for their suitability to support amphibians, both in terms of breeding habitat and vegetation cover for terrestrial phase amphibians.

#### Water Voles

The site and surrounding habitats were assessed for their suitability to support Water Voles.

#### **Marsh Fritillary**

The site and surrounding habitats were assessed for their suitability to support Marsh Fritillary butterfly and their food plant Devil's bit Scabious (*Succisa pratensis*).

#### **Non-Native Invasive Species**

Any pernicious weeds under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 (as amended) were also noted and mapped (where feasible) during the site survey. These species include Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*).

# Appendix 2: Species observations and records

Site based observations

#### Badgers

The grassland areas (Warren meadow and Castle Mound) were considered good resources for foraging as they are likely to contain an abundance of earth worms, roots and berries. However much of the wooded slopes were considered to offer potential for sett building (particularly at the tops of the slopes where they level out onto surrounding pastures). No setts or pathways were observed but foraging signs were seen at the bottom of the narrow grassland slope in the SW of the site, where the anthills could be seen to have been scratched (see Image 19).

#### Otters

Much of the site lies adjacent to the River Wye and it can be presumed that Otters utilise the whole of this stretch of watercourse and there are records of Otter along the banks around the Warren meadow. The wooded riverbanks will offer cover for commuting and resting up sites. The whole area is busy with visitors, both on the water and using the footpaths alongside the river, as well as those that cross The Warren meadow.

#### Dormouse

The woodland canopy appears to form a continuous aerial route along the entire length of the footpath(s), which connects to the wider pockets of woodland (W1 and W2). The woodlands themselves offer less suitable habitat for Dormice principally due to a lack of understory shrubs, particularly in the case of W2. Levels of disturbance along the river corridor are moderately high due to the number of visitors to the area. The closest records for Dormice are found to be in a cluster just inland of the north side riverbank, east of Warren Meadow.

#### Birds

The habitats on site were assessed for their suitability for breeding birds, including trees, scrub and grassland; the large areas of grassland will provide insect forage for a range of birds including thrush species and may support ground nesting birds such as Skylark. The closest record for Skylark shows that they have been recorded at The Warren (Grid Ref.SO220426) in 2019 (200m from site centre search area). The record does not specify whether it was actually nesting, but singing is mentioned in the Notes section, indicating that the bird was marking its territory.

The variety of tree species within the woodland will provide a range of food sources for birds and although the understory is not developed in some areas, there is sufficient structure to the wooded riparian corridor to provide ample nesting opportunities for a suite of woodland bird species such as Woodpecker, Tawny Owl, Treecreeper and Nuthatch. The woodland on either side of the footpaths provides a commuting and feeding corridor for a range of bat species. A number of trees were noted which exhibit features used by bats such as dense Ivy, cavities and splits, however due to weather constraints the woodlands were not inspected thoroughly for suitable trees.

#### Reptiles

The habitats on site were assessed for their suitability to support reptiles; the grassland meadows have a variety of vegetation structures, open areas were considered to be suitable for feeding and where these grade to taller vegetation cover, (such as tall ruderals, bramble scrub and shrubs), this will provide refuge. Much of the habitat along the woodland path is too shady to provide basking opportunities, but some short sections where there is less canopy cover may still be suitable.

#### Amphibians

The habitats on site were assessed for their suitability to support amphibians, both in terms of breeding habitat and vegetation cover for terrestrial phase amphibians. There are no still or slow flowing waterbodies suitable for breeding amphibians on the site, however terrestrial phase amphibians may utilise taller vegetation either side of the footpath, and in the meadow areas (if there are suitable breeding sites such as garden ponds near by).

#### Water Voles

Some slower sections of the River Wye may have suitable banks and favoured vegetation suitable to support Water Voles, however the remainder of site has no suitable habitat.

#### **Marsh Fritillary**

The site and surrounding habitats were assessed for their suitability to support Marsh Fritillary butterfly and their food plant Devil's bit Scabious (*Succisa pratensis*). There is no suitable Marshy Grassland habitat on any of the sites and aerial images of the surrounding landscape reflect a lack of such habitat here also.

#### **Invasive Non-Native Species (INNS)**

Any pernicious weeds under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 (as amended) were also noted during the site survey. These species include Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*).

There are numerous species of INNS along the footpath itself, principally in the form of garden escapes. These include Spanish Bluebell, Variegated Archangel, Three-cornered Leek, Snowberry and Bamboo. There are also patches of garden Strawberry which may spread/cross with wild strawberry.

Japanese Knotweed and Giant Hogweed have been treated at the eastern end of the footpath and Himalayan Balsam is present near the carpark north of the B4351 crossing point.

#### Local Record Centre Results

Over 10,000 records of protected and notable species were returned within 2km of the site centre. The records will not be listed here, but the most significant, those which are considered to potentially be affected by work to be carried out at the site, will be briefly summarised. Only the most threatened (Category 1) species within 1km are considered here as proposed works are unlikely to negatively impact anything beyond the localised area of works.

The closest record to the site centre for CAT 1 species is for Horseshoe Bats

#### **Principal Mammal species**

Otter recorded at 100m (33 records ranging from 100m – over 2km) along the River Wye and tributaries Badger (200m) north side of the Wye Lesser Horseshoe (224m) just outside the site boundary Dormouse has been recorded on numerous occasions as part of the PTES National Dormouse Monitoring Scheme, in woodland on the north bank of the Wye, opposite W1

#### **Plant species**

Native Bluebell recorded at the Warren (115m)

#### Insects

Many moth records, the closest is at 617m for Shaded Broad-bar, other species within 1km include Small Phoenix and Dusky Thorn. Oil Beetle (*Meloe* sp.) was recorded in March 2021 on the Warren meadow and a Black Oil Beetle (*Meloe proscarabaeus*) was recorded during the site visit with the NPA on 18<sup>th</sup> May, subsequently identified by the VC invertebrate recorder.

#### Birds

Spotted Flycatcher at 120m Song Thrush (141m) Kingfisher (143) Barn owl (361m) Skylark (200m) Warren meadow

Lower Plants – no recent records of CAT 1

Bony Fish - unlikely to be affected by proposed management

Reptiles - Slow worm closest is 531m off Gypsy Castle Lane

Amphibians - Toad, closest is 453m (near canoe hire adjacent The Warren meadow)

Common Name	Binomial	DAFOR Abundance		
NEUTRAL UNIMPROVED GRASSLAND (main Warren meadow inc. woodland edge)				
Bent spp.	Agrostis spp.	0		
Bracken	Pteridium aquilinum	LD		
Broad-leaved Plantain	Plantago major	F		
Bulbous Buttercup	Ranunculus bulbosus	А		
Cock's-foot	Dactylis glomerata	0		
Common Daisy	Bellis perennis	LF		
Common Knapweed	Centaurea nigra	F		
Common sorrel	Rumex acetosa	F		
Dandelion	Taraxacum agg.	F		
Early Dog Violet	Viola reichenbachiana	LF		
Field Wood-rush	Luzula campestris	LF		
Greater Stitchwort	Stellaria holostea	F		
Hawkbit	Leontodon sp.	0		
Lady's smock	Cardamine pratensis	0		
Lesser Bird's-foot Trefoil	Lotus corniculatus	F		
Lesser Celandine	Ranunculus ficaria	LF		
Meadow Buttercup	Ranunculus acris	F		
Meadow buttercup	Ranunculus acris	F		
Meadow Foxtail	Alopecurus pratensis	F		
Meadow grass	Poa sp.	F		
Meadow Vetchling	Lathyrus pratensis	R		
Oxeye Daisy	Leucanthemum vulgare	R		
Pignut	Conopodium majus	F		
Red Campion	Silene dioica	LF		
Red Clover	Trifolium pratennse	F		
Ribwort Plantain	Plantago lanceolata	A		
Sheep's fescue	Festuca ovina	F		

# Appendix 3: Representative Species List for Key habitats

Soft Brome	Bromus hordeaceus	F
Square-stemmed St. John'swort	Hypericum tetrapteram	0
Tormentil	Potentilla erecta	LF
Yarrow	Achillea millefolium	LA
Yorkshire Fog	Holcus lanatus	A
WOODLAND & SCATTERED TRE	ES W1 & FP Bailey	1
Ash	Fraxinus excelsior	D
Blackthorn	Prunus spinosa	R
Bramble	Rubus fruticosus agg.	А
Cherry sp.	Prunus sp.	0
Elder	Sambucus nigra	R
Elm sp.	Ulmus sp.	0
Field Maple	Acer campestris	0
Hazel	Corylus avellana	F
Holly	llex aquifolium	0
Horse Chestnut	Aesculus hippocastanum	LF (avenue)
Lime sp.	Tilia sp.	R
P. Oak	Quercus robur	F
Sycamore	Acer pseudoplatanus	R
Ground Layer		
Bluebell	Hyacinthoides non-scriptus	LF
Common Nettle	Urtica dioica	F
Cuckoo-pint	Arum maculatum	0
Deadnettle sp.	Lamium sp.	R
Dog's Mercury	Mercurialis perennis	LA FP
Garlic Mustard	Alliaria petiolata	F
Ground Ivy	Glechoma hederacea	0
Herb Robert	Geranium robertianum	F
Hogweed	Heracleum sphondylium	0

Lesser celandine	Ficaria verna	F	
Pendulous sedge	Carex pendula	LF FP	
Pignut	Conopodium majus	0	
Speedwell sp.	Veronica sp.	LA	
Wild Garlic	Allium ursinum	LF	
Willowherb spp.	Epilobium spp.	F	
Wood Avens	Geum urbanum	F	
Wood dock	Rumex sanguineus	F	
Yellow Archangel	Lamiastrum galeobdolon	R FP	
WOODLAND W2			
Ash	Fraxinus excelsior	F	
Beech	Fagus sylvatica	F	
Field Maple	Acer campestris	0	
Guelder Rose	Viburnum opulus	R	
Hawthorn	Crataegus monogyna	0	
Hazel	Corylus avellana	F	
Oak sp.	Quercus sp.	0	
Willow spp.	Salix spp.	0	
Ground Layer			
Enchanter's Nightshade	Ciraea lutetiana	F	
Ground Ivy	Glechoma hederacea	LF	
Herb Robert	Geranium robertianum	А	
Wild Rose	Rosa canina/arvensis	0	
Wood Avens	Geum urbanum	F	
Wood dock	Rumex sanguineus	F	
INNS			
Bamboo sp.	Bambusa sp.	R	
Snowberry	Symphoricarpos albus laevigatus	R	

DAFOR: D=dominant, A=abundant, F=frequent, O=occaisional, R=rare L = locally abundant/frequent

NB. FP is only found along the Foot Path