

Herne Hill

Owned and Managed for the Town by Ilminster Town Council

Management Plan for 2018 to 2028 & Species Lists

Approved by the Town Council 17 July 2018



August 2018

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Introduction

This Herne Management Plan has been produced to revise the management plan approved and adopted by the Town Council on 22 March 2016. Since the Town Council approved the 2016-2026 Herne Hill Management Plan, it has resolved to seek designation of Herne Hill as a Local Nature Reserve; therefore, whilst retaining the previously agreed principles and information gathered for previous plans (dating back to at least 1995) the Management Plan has been revised to reflect the aspiration to achieve Local Nature Reserve designation.

The importance of Herne Hill to the town of Ilminster and the surrounding areas cannot be understated; it provides a valuable habitat for flora and fauna; is used by local schools for education and exercise; is used by residents and visitors for rest, relaxation, exercise and informal recreation.

Ownership & Designation Length

Herne Hill (OS Grid: ST351140) is owned and managed by Ilminster Town Council; it was gifted to the town in 1931 by Major Sir George Davies MP and Walter Trivett in perpetuity and therefore the Town Council has agreed to seek the designation of Herne Hill as a Local Nature Reserve for a minimum of 100 years to be reviewed after 100 years.

Restrictions on land use

There are a number of stipulations in the 1931 conveyance, when Herne Hill was gifted to the Town Council's predecessor, The Urban District Council of Ilminster, as to how the land could and couldn't be used.

Broadly speaking these are:

- That the land should be a public natural park and public open space
- As far as possible the land should be kept in a natural state
- That Herne Hill should be open and free to the public at all times
- That the land should be open to the sky, except for the natural growth of tree, shrubs or the like
- Restrictions on construction of buildings and structures
- No advertising
- No brick or tile making
- The land cannot be used to hold public fairs
- The land may be used for hunting
- The land may be used for preserving wild birds and animals
- That the land should be maintained and that trees and shrubs may be felled, pruned and thinned with the view and intent to preserve and maintain the natural amenity value of the land.

Site Description

The Herne Hill site covers an area of 8.25 hectares and consists of a broad range of natural vegetation species, along with a number of introduced species.

The species composition of the woodland varies throughout, with the most prevalent tree and shrub species being: ash (*Fraxinus excelsior*), pedunculate oak (*Quercus robur*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*) and holly (*Ilex aquifolium*).

The field layer within the woodland includes: bramble (*Rubus fruticosus*), bracken (*Pteridium, aquilinum*), red campion (*Silene dioica*), dog's mercury (*Mercurialis perennis*), bluebell (*Hyacinthoides non-scripta*), primrose (*Primula vulgaris*) and lords-and-ladies (*Arum maculatum*).

The ground layer within the woodland is dominated by common ivy (*Hedera helix*), lesser celandine (*Ranunculus ficaria*) along with substantial moss, liverwort, lichen and fungi communities.

The area at the hill's summit is known as the Fir-Pound and is a plantation which consists of scots pine, sweet chestnut and beech trees. Even though these species are not local to this habitat, they should remain as a significant part of the sites history and ecology.

Many parts of the woodlands shrub layer are currently sparse, consisting of mostly bramble and bracken. It is proposed a selection of these areas be managed to allow for other species, which require additional light, to germinate and thrive.

Over one hundred species of flowering plants have been recorded including two Somerset notable species. Surveys have identified forty six species of insect including two national rare species and many with local status. The grassland area, Cleeve Close, includes a number of distinctive communities. It contains a diverse flora and is one of the most important sites on Herne Hill. The area includes bramble, knapweed, primrose, nettles, cocksfoot, false oat grass, Yorkshire fog and soft rush. The entomological survey (1993-95) showed Cleeve's Close to be one of the richest on the Herne Hill site, including 2 nationally rare beetles.

The site provides a habitat for many animal species, including a large population of badgers and a substantial range of invertebrates and wild birds.

Site History

Herne Hill has a long history having appeared in the Domesday book of 1086, however the site is not classed as an ancient woodland as it has not been continuously wooded since prior to c.1600. Many of the trees within the woodland however, are veteran.

In 1982 a five year tree planting program was carried out, in which 5000 young trees were planted. In the years following this, to present, a further 2000 new trees have been planted. The initial planting program introduced new non-native species, including a large number of American Red Oak.

The site is now managed as an amenity woodland for members of the public to enjoy, while maintaining the areas valuable wildlife resource, which is reflected in the management objectives.

Reasons for Designation

The following are the principle reasons for seeking designation of Herne Hill as a Local Nature Reserve:

1. The site is important for wildlife including large populations of badgers
2. The 'Fir-Pound' area, Bluebells and woodland species (veteran trees) provide a historical value to the local area.
3. The 'Fir-Pound' area remains a significant part of the sites history and ecology
4. The site is a valuable wildlife resource to the town
5. The site has historical value to the town, having appeared in the Domesday Book of 1086
6. To protect and encourage wildlife species through the maintenance and creation of suitable habitats
7. The site provides educational opportunities through local schools, organised groups as well as to the wider community.

Management Objectives for Herne Hill

The following, which respect the covenants in the conveyance of the land to the Council, are the management objectives for Herne Hill

1. To ensure the sites natural vegetation continues to develop, in respect of ancient woodland character
2. To conserve the site and enhance the local native landscape
3. To conserve the site and enhance the local ecology, including managing habitats for species of conservation importance
4. To assist the stabilisation of the site slopes, establishing and maintaining tree cover at vulnerable points
5. To control pests and invasive species (insects, animals and/ or plants), preventing excessive damage
6. Maintain reasonable safety margins for site users and neighbouring landowners
7. To enhance access to the site visitors and educate site users on the history and ecology of Herne Hill
8. For the land to be used, accessible and for enjoyment by all

The Management Plan and its actions detailed on the following pages has been compiled to respect and reflect the conditions of the original gift of Herne Hill to Ilminster in conjunction with the current knowledge, experience and thinking regarding woodland management and encouraging biodiversity.

The Management Plan has been given a time span of 25 years but will be reviewed at 5 year intervals to make it a rolling plan and ensure best practice is followed and modern thinking applied where appropriate.

1. Biodiversity Management

The following aims reflect the Town Council's aspiration to maintain and increase the biodiversity of Herne Hill:

- a) To manage Herne Hill in a way that retains its natural state as far as possible
- b) To conserve and enhance the local ecology and manage the area for species of conservation importance
- c) To control pests and invasive species (insects, animals and/or plants), thus preventing excessive damage:
- d) Ensure the site's natural vegetation continues to develop, in respect of ancient woodland character (i.e. indigenous species planting only)
- e) Reduce areas of dense bramble and bracken to allow light for germination, thereby increase biodiversity of site and attract rare species
- f) Improve & maintain woodland boundaries and create a Billhook hedge around some enclosures
- g) An area of 2M either side of main footpaths should be kept clear of scrub and saplings to create open rides, increasing the structure of the vegetation to improve habitat for wildlife
- h) When works are planned and undertaken wildlife breeding, nesting and hibernation periods will be taken into consideration
- i) To undertake regular surveys of flora and fauna with the outputs used to assess the success of maintaining the biodiversity of the site and inform the maintenance regime for the site. Appendices 5-14 give the current species lists held and the report of a bat survey undertaken in 2015/16 (Appendix 15).

Actions / Work to be undertaken / Working Practices regarding biodiversity management

Reduce areas of dense bramble and bracken on the northern slopes and site boundaries

Large areas of the woodland floor on the Northern slope are densely covered in thickets of bramble and bracken, depriving other species of the light and space needed to germinate. By allowing more plant species to grow within the field layer, the sites biodiversity can increase, making it more desirable to rarer wildlife species.



A dense thicket of bramble on the boundary of Herne Hill

- I. Hand tools and mechanical brush cutters to be used to cut and clear down to the ground layer, taking care to only bramble and bracken and not damage other species that have growth within the gaps in the field layer.
- II. The section shown on the map at Appendix 4 between areas J and N, should also be cleared of bracken and bramble so as to allow it to return to a glade habitat
- III. The work is to be carried out in sections, to create a field layer of varying stages of development. Work should not strip back extensive areas of the woodland floor all at once, which some wildlife species depend on.
- IV. Work should be carried out after bird nesting season in October and before the start of spring in March
- V. Undertake springtime surveys to record species within the new field layer, special attention should be paid to identifying ancient woodland indicators (AWIs)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bracken /Bramble clearance												

Restorative Coppicing Of The Hazel Band

The hazel band which runs through the woodland should be coppiced on a 14 year rotation, so as to allow the hazel enough time to produce nuts, which provide a food source to dormice and other creatures. This coppicing regime will prolong the life of the hazel, encouraging new growth from the stools and allowing more light to reach the ground for field layer species to thrive.

Positively managing the hazel will also encourage wildlife, including dormice, to inhabit the site

- I. Chainsaws or hand tools should be used to carry out the work, ensuring that PPE is worn and that signs are displayed to inform site visitors of the work being carried out.

- II. Prior to making any cut, the stool must first be checked to ensure that it is not being used by hibernating dormice
- III. Cuts are to be made as low to the ground as practical. All cuts should be angled away from the centre to assist water to run off; this will help prevent infection to the stool.
- IV. The remaining brash is to be laid to cover the stool, so as to prevent browsing from herbivores.
- V. Work should only be carried out between the start of November and the end of February to avoid unnecessary disturbance to wildlife and to ensure the ongoing health of the stool by only cutting during the dormant season.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hazel Coppicing												



A hazel coppice stool, showing cuts angled away from the centre

Improving and Maintaining the Woodland Boundaries

The boundary earth bank and ditch which runs around the site has important historical value and should remain in place.

- I. Bramble and bracken is to be cleared from the boundaries to encourage new growth. Ideally 2M from the boundary and to the enclosing fence on the opposite side. Brush cutters and hand tools will be required for this task.
- II. Dead hedging is to be laid along the boundary line, using the arisings gathered from the restorative coppicing and other thinning tasks. The hedging should be laid 1m high and 1m tall to provide a useful habitat for wildlife without impeding the view from the hill.
- III. Areas of coppice within the hedge are to be cut, in line with the coppicing actions (given above)
- IV. Hawthorn planted along the northern, western and southern enclosures, when mature enough, should be laid down as per traditional methods, using a billhook.

- V. Established standards should remain along the enclosures edge. Many are classified as veteran or ancient specimens and are vital to ensuring a species-rich woodland habitat.
- VI. Boundary work should be carried out between the months of October and March to avoid bird nesting season

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Boundary Maintenance												



An example of how a dead hedging boundary should be laid

Tree Thinning

- I. The ash that has been planted within the areas marked on the map (Appendix 4) as O P and S require thinning. Initially spacing should be no less than 3M between trees, this will allow for improved development for the remaining standards and increase ground stability, as their roots are able to spread across a larger area.
- II. Any work involving climbing and / or felling should be carried out by arborists with the appropriate qualifications. Any ground work will be carried out by the Open Spaces Team
- III. Arisings remaining from this work should be used to create dead hedging or for larger pieces, stacked onto the woodland floor to create habitat for wildlife.
- IV. Dead standing trees should remain so as to increase the habitat for wildlife e.g. bats and woodpeckers, except where they pose an increased risk to the public or have been confirmed to have died through contagious disease.
- V. Thinning work should be carried out between the months of August and March to avoid bird nesting season. Visual checks must be carried out prior to work commencing to ensure no nests exist within the felling zone. It may be necessary to remove diseased trees outside of these months to avoid further infection, however expert advice must first be obtained.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tree Thinning												

Northern Foot of the Hill including Cleeve's Close

- I. The northern slope of the hill should be cleared of bramble and willow herb to create an open grassland / meadow habitat. A tractor powered flail, brushcutters and hand tools should be used for this task. Extra care must be taken due to the varying ground level.
- II. Trees and shrubs currently growing within this area should remain, but new saplings and suckers should be removed.
- III. Care should be taken when cutting around trees to avoid damaging plaques that have been left in remembrance.
- IV. With regular clearance of the scrub it is hoped that this area can return to grassland. Clearance should take place annually, with 1/3 of the slope being cleared each year to create mosaic of growth which will provide richer biodiversity.
- V. This area is currently used for the burning of arisings and it is planned that this will continue, provided that the burn area is checked for wildlife before any fire is lit.
- VI. Clearance of the bramble and willow herb should only be carried out between the months of October to March to avoid bird nesting season.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Northern Slope Maintenance												

Ecological Disposal of Arisings

- I. Arisings and brash from the coppicing regime are to be used as dead hedging to improve the site boundaries
- II. Infectious diseased trees should be removed from the woodland to Cleeve's Close and burnt to reduce the risk of infection spreading to healthy trees
- III. Wood from felled trees is to be stacked on the woodland floor to create deadwood microhabitats e.g. creation of hibernacula's for wildlife species
- IV. Larger or fallen trees may be used to produce additional seating for site users

Note: Managing Conflicting Requirements

There are a number of introduced species within the woodland, these include red oak standards on the northern slope and a small number of cypress trees at the summit. It is recommended that these remain as they provide additional structure to the hill and work to prevent erosion. New growth and suckers should be removed to ensure that native species are allowed to thrive.

2. Environmental Education

Herne Hill will act as an environmental educational facility for the local community and wider public through the following:

- a) Enhance the access for site visitors and educate site users on the history and ecology of Herne Hill.
- b) Encourage and set-up guided walks to educate users on the valuable wildlife, including hands-on activities to promote active learning.
- c) Erect information boards to inform site users on; key species within the site, a summary of the site's history and a map of the site.
- d) To consider using felled trees (only trees that have been felled as part of the management regime) as a source of income, for re-investment into Herne Hill and its management, through selling the wood.

3. Community Participation and Public Engagement

Community participation and public engagement will be encouraged by:

- a) Maintaining and enhancing the access points to Herne Hill
- b) Educating site users on the history and ecology of Herne Hill by means of information boards - permanent ones at the site entrances and temporary ones where work is in progress
- c) The provision of guided walks and organised activities
- d) Managing the site as an amenity woodland for members of the public to enjoy including the provision of benches / seats and rest areas.

Actions / Work to be undertaken / working practices regarding community participation and public engagement

The management of the site broadly aims to provide an amenity wildlife area which can be accessed and enjoyed by the public, therefore inclusion and consideration of user needs wherever possible is important.

- I. Volunteer groups should be organised to assist with woodland management tasks wherever possible, ensuring that risk assessments, PPE and tools are provided by the Town Council via the Open Spaces Team.
- II. Guided walks for groups to educate site users about the wildlife that can be found on Herne Hill; wherever possible these should include hands-on activities to enrich the quality of the session and promote active learning. All Guided walks should be carried out by the Open Spaces Team, Town Councillors or qualified volunteers.
- III. Information boards should be installed to inform site users; these may include by laws, history of the site, key species
- IV. Nature Trails / walking routes should be established and clearly marked. Access for less mobile site users must be taken into account.

- V. The active management of certain areas and the techniques required such as coppicing and scrub clearance will leave some areas open and of vastly changed appearance; this may cause members of the public concern if they are unaware of why certain tasks are being carried out. Simple, temporary signage explaining what is being done, why it is necessary and the duration of the works should be considered and displayed wherever possible.
- VI. The possibility of using arisings from coppicing to produce charcoal as a public engagement activity will be researched

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Community Participation & Public Engagement												

4. Community Access

Community access to Herne Hill is an important tenet in the management of Herne Hill, reflecting the conditions allied to the gift of the Hill to the town. Access is about both the entrance points and the ease of use of paths on the Hill for all those who wish to enjoy the site always bearing in mind that the topography of the site may present challenges and limitations.

The overarching principles regarding community access are:

- a) The stabilisation of the site's slopes, through establishing and maintaining tree cover at vulnerable points.
- b) Maintaining the 5 entrances to Herne Hill (see Appendix 4) within the network of footpaths.
- c) Establishing and maintaining the key routes / nature trails.
- d) Ensure all designated footpaths adhere to the following criteria:
 - Are at least 2 meters wide
 - Remain flat wherever the topography allows
 - Kept clear of obstacles and overhanging limbs as not to impede less mobile users
- e) An area 2 metres either side of the main designated footpaths should be kept clear of scrub and saplings, increasing the structure of the vegetation to improve habitat for wildlife.

Actions / Work to be undertaken / working practices regarding maintaining and improving access for site users

- I. Footpaths should be cut and maintained to a 2m in width and level wherever possible and on the main paths with an area of 2 metres on either side kept clear of scrub and saplings
- II. Regular maintenance is required to keep footpaths clear of obstacles and overhanging limbs., so as not to impeded less mobile members of the public.
- III. Any deadwood overhanging designated paths should be cut back and removed so as not to present a risk to site users.
- IV. In areas which are susceptible to subsidence, wooden beams or sleepers are to be set into the ground on the downhill edge of the footpath. This will increase its integrity and help prevent further erosion.
- V. In areas where landfall has created obstacles along footpaths, barriers should be constructed from natural materials and fixed into the ground to hold back the soil.
- VI. All steps, handrails, benches and other similar infrastructure must be checked regularly for signs of wear, or damage and replaced or repaired where necessary.
- VII. Some existing routes across the site can be difficult to use during the winter months due to the poor drainage of the clay-rich soils. Consideration will be given as to how footpaths could be improved so that they can be used more easily throughout the year.
- VIII. Highlight poor route access during Winter months on temporary information boards and on the Town Council's website
- IX. Access maintenance work should take place all year round, providing the work will not pose an undue threat to the site's wildlife.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Access Maintenance												

Maintenance of the Ridge Path

The Ridge Path should be maintained and kept to a high standard as it serves as the main entrance onto the site for many users.

- I. At the beginning of October the hedges which run adjacent to the Ridge Path should be cut back using hand tools and mechanical hedge cutters to a width that does not impede access.
- II. The hazel which grows on the northern edge of the ridge path should be coppiced during its dormant period on a 7 year rotation so as not to become neglected and to prolong its life.
- III. Any overhanging deadwood should be cut back and removed so as not to present a risk to site users
- IV. During the summer months the ridge path should be mown regularly to improve access.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ridge Path Maintenance												

5. Visitor Management

The following initiatives will encourage and assist visitors to Herne Hill:

- a) The erection of information boards which include the byelaws of the site for visiting tourists. Information boards may include the following:
 - A map of the site
 - A list of relevant and applicable byelaws
 - A summary of the history of the site
 - Information about key species within the site
- b) Temporary signage will be used when any site work is being conducted including information on what is being done, why the work is necessary, and the duration of the work.
- c) The establishment and maintenance key routes around the Hill with signage at points of interest.
- d) The set-up of guided walks.

Fire Plan.

The existing Fire Plan for Herne Hill will be adopted for this Management Plan.

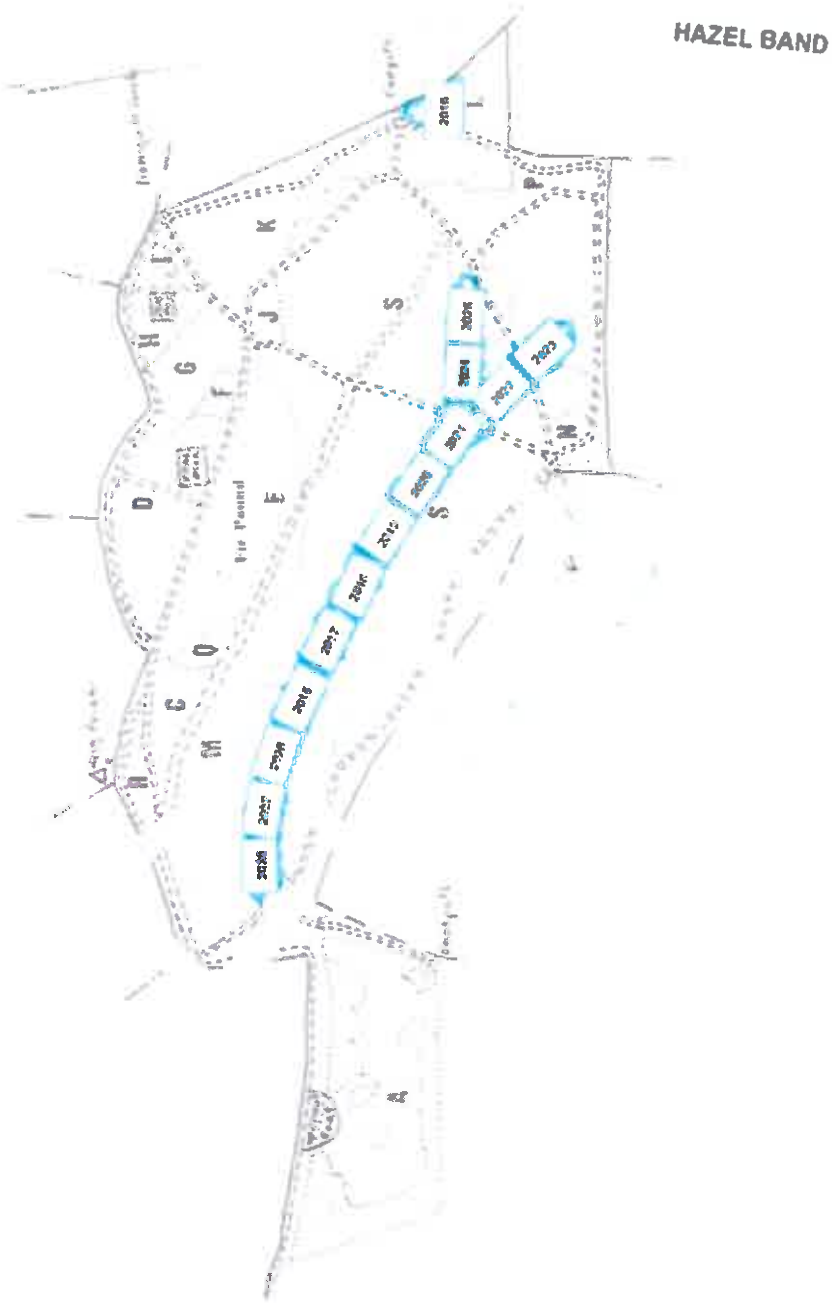
- Due to the mainly broadleaved nature of the woodlands, the risk from fire is considered to be low.
- The lighting of fires on the Herne Hill site is prohibited within the bylaws and also against the covenant agreement.
- There is not currently access to fire hydrant water-mains or an emergency water supply (EWS) on the site.
- In the event of a fire, the fire brigade is to be called immediately.
- The local fire officer has (at their request) a key to the site and practice drills are carried out.
- Should any changes take place to the site that should increase the risk of fire, or impede access onto the site by fire crews, the local fire officer must be informed.

Costs & Funding

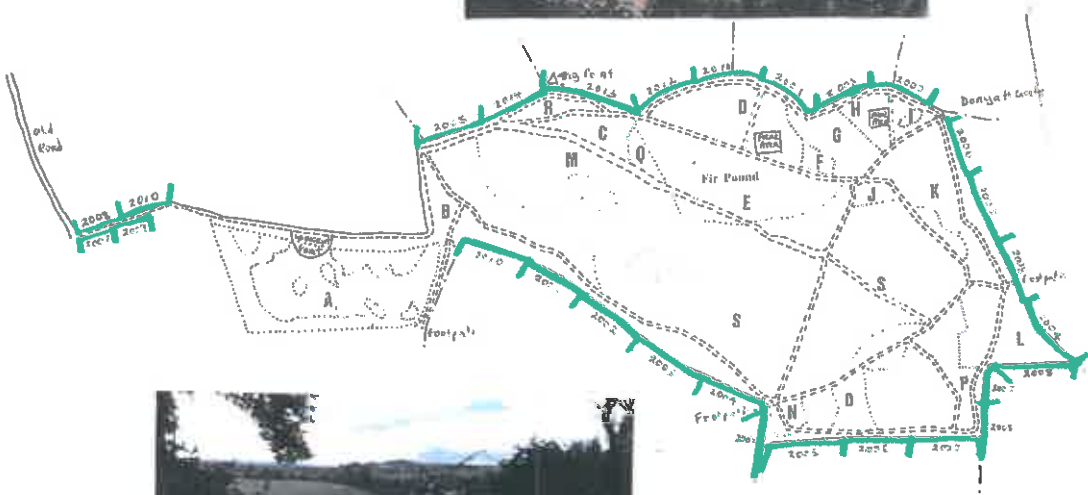
In 2018/19 there is a £200.00 budget specifically for revenue expenditure for Herne Hill; this is in addition to money earmarked for 3 information boards which will be part funded by South Somerset District Council. Staff time and equipment are part of the overall budget and are not accounted for separately.

Proposed Herne Hill Local Nature Reserve (shaded in green)



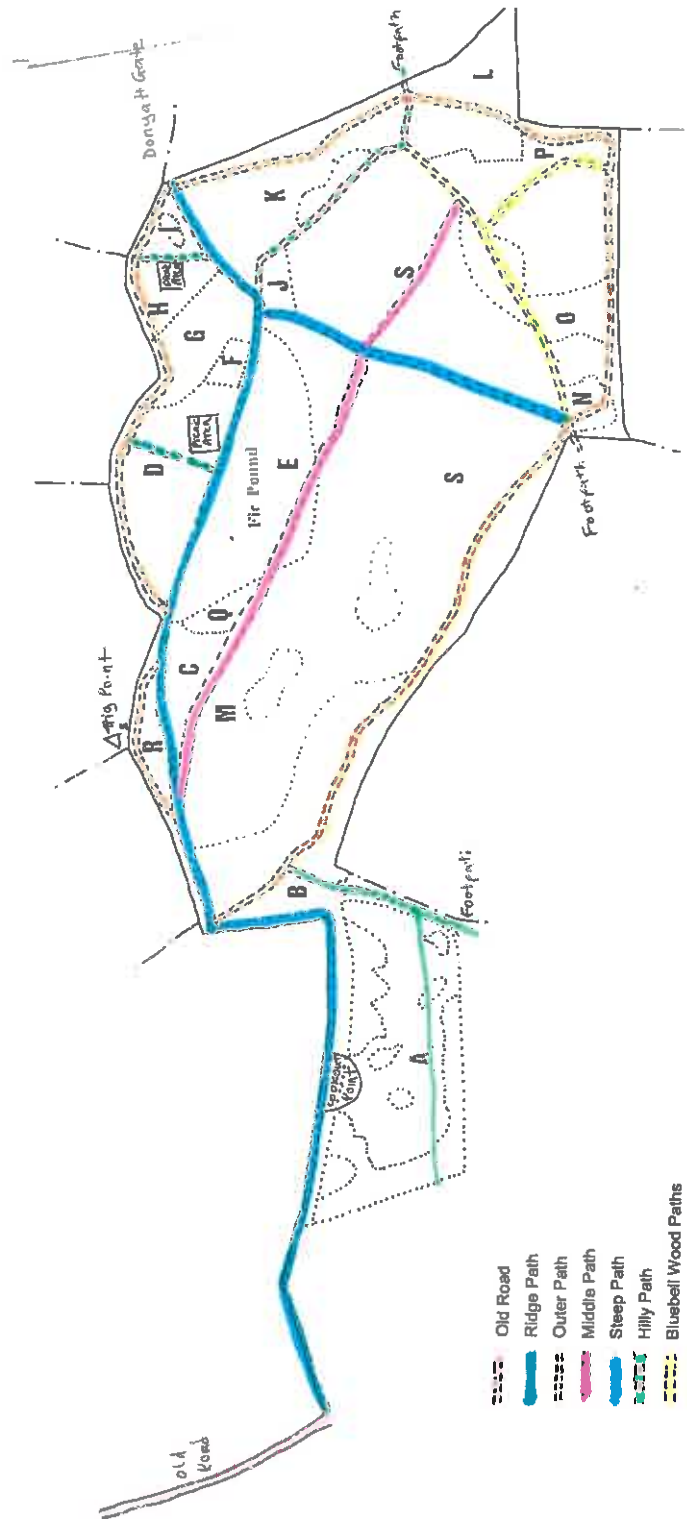


Hedge Band



Footpaths & Sections

Herne Hill Footpaths and Sections



Herne Hill Tree Species

The information from 1987 is from field notes taken by Mrs Nash-Smith

The information from 1993 and 1995 are from surveys for the 1995 Herne Hill History, Ecology and Management produced by A Goverd and A May

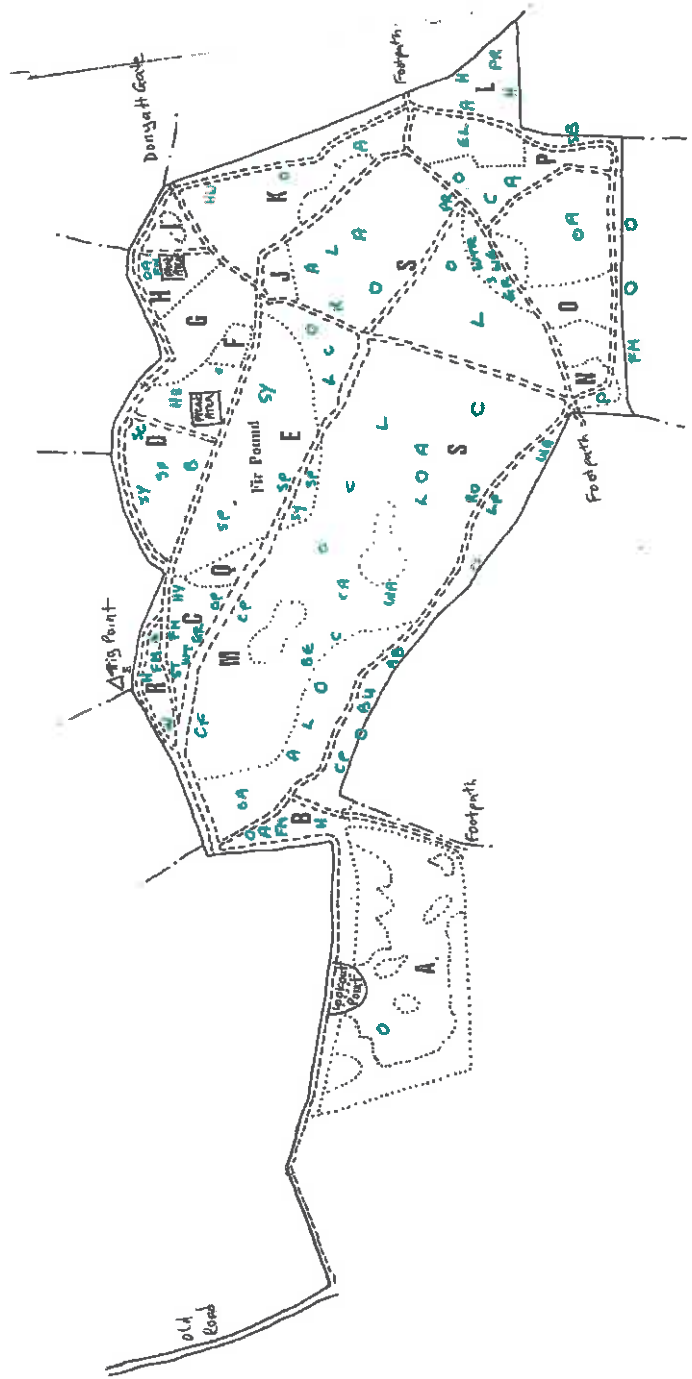
Key: Y = present; *= probably present but overlooked; N = not present ,
blank is no information recorded

Common Name Species (in alphabetical order)		Code on map	1987	1993	1995	2011
Alder		AB				Y
Buckthorne						
Ash		A				Y
Beech		B				Y
Bird Cherry		BC				Y
Cherry		C				Y
Cherry Plum		CP				Y
Common Ash	Fraxinus Excelsior		*	Y	Y	
Common Beech	Fagus Sylvatica		*	Y	Y	
Common Oak	Quercus Robur		*	Y	Y	
Crab Plum		CA				Y
Elder		EL				Y
Elm		E				Y
English Elm	Ulmus Procera		*	Y	Y	
Field Maple	Acer Camestres	FM	*	Y	Y	Y
Guelder Rose		GR				Y
Hazel		H				Y
Hornbeam	Carpinus Betulus	HB	*	Y	Y	Y
Hawthorn	Crataegus Monogyna	HW	*	Y	Y	Y
Holly		HL				Y
London Plane		LP				Y
Noble Fir	Abies Procera		N	Y	Y	
Oak		O				Y
Poplar		P				Y
Pear		PR				Y
Rowan		R				Y
Red Oak	Quercus Rubra	RO	*	Y	Y	Y
Silver Birch		SB				Y
Sweet Chestnut		Sc	*	Y	Y	Y
Scotts Pine	Pinus Sylvestris	SP	*	Y	Y	Y
Spindle	Euonymus Europaeus	SPI		Y	Y	Y

Herne Hill Tree Species List cont

Service Tree		ST				Y
Sycamore	Acer Pseudoplatanus	SY	*	Y	Y	Y
White Beam	Sorbus Torminalis	W	*	Y	Y	Y
Walnut		WA				Y
Wych Elm		WE				Y
Wayfarer Tree	Viburnum Lantana	WT	N	Y	Y	Y
Wild Cherry	Prunus Avium		*	Y	Y	

Herne Hill Tree Species Location Map (2011)



Fungi Species List

	Common Name	Recorded in 1993	Reported in 2009 by Helen and Edward Wells	Reported in 2013 by Helen and Edward Wells
Agaricus Silvicola var. Silvicola	Wood Mushroom		Y	
Amanita Rubescens var Rubescens	Blusher			Y
Armillaria Mellea	Honey Fungus	Y	Y	
Auricularia Auricula -Judae	Jew's Ear / Jelly Ear	Y	Y	
Bjerkandera Adjusta	Smoky Bracket		Y	
Bolbitus Lacteus			Y	
Bolbitus Titubans var Titubans	Yellow Field Cap			Y
Calocera Viscosa	Yellow Stag Horn		Y	
Clitocybe Nebularis	Clouded Funnel		Y	
Coriolus Versicolor	Many Zoned Polypore	Y		
Cylindrobasidium Laeve	Tear Dropper		Y	
Daedaliopsis Confragosa	Blushing Bracket	Y		
Daldinia Concentria	Cramp Ball	Y	Y	
Entoloma Lucidum	Pinkgills		Y	
Entoloma Nitidum	Pine Pinkgill		Y	
Exidia Nucleate	Crystal Brain			Y
Ganoderma Adpersum	Bracket Fungi	Y		
Gymnopus Confluens	Clustered Toughshank		Y	
Gymnopus Erythropus	Redley Toughshank		Y	
Gymnopus Peronatus	Wood Woolly-Foot		Y	Y
Hebeloma Sacchariolens	Sweet Poison Pie		Y	
Hypholoma Fasciculare	Sulphur Tuft	Y	Y	

Fungi Species List cont

	Common Name	Recorded in 1993	Reported in 2009 by Helen and Edward Wells	Reported in 2013 by Helen and Edward Wells
Hypochnicium Ericsonii			Y	
Hypoxylon Fragiforme	Beech Woodwort		Y	
Inocybe Geophylla Geophylla	White Fibrecap		Y	
Inocybe Geophylla Lilacina	Lilac Fibrecap		Y	
Inocybe Geophylla var Geophylla				Y
Inocybe Margaritispora			Y	
Ischnoderma Resinosum	Benzoin Backet		Y	
Lactarius Blennius	Beech Milkcap		Y	
Lactarius Circellatus				Y
Lepista Flaccida	Tawny Funnel		Y	
Lepista Nuda	Wood Blewit		Y	
Lycogala Terestre	Wolf's Milk		Y	
Lycoperdon Pyriforme	Stump Puffball			Y
Mycena Filopes	Iodine Bonnet		Y	
Mycena Flavoalba	Ivory Bonnet		Y	
Mycena Polygramma	Grooved Bonnet		Y	
Mycena Psuedocorticola			Y	
Mycena Pura	Lilac Bonnet		Y	
Mycena Stylobates	Bulbous Bonnet		Y	
Nectria Cinnabarina	Conal Spot		Y	Y
Parasola Leiocephala	Pleated inkcap		Y	
Peniophora Quercina	Oak Crust		Y	

Fungi Species List cont

	Common Name	Recorded in 1993	Reported in 2009 by Helen and Edward Wells	Reported in 2013 by Helen and Edward Wells
Phallus Impudicus	Stinkhorn	Y	Y	
Pluteus Phelbophorus	Weinkled Shield		Y	
Polyporus Squamosus	Dryad's Saddle		Y	
Psathrella Corrugis	Red Edge Brittlestem		Y	
Postia Subcaesia	Blueing Bracket			Y
Psathyella Marcesabilis			Y	
Pysisporinus Sangulinolentus	Bleeding Porecrust			Y
Ramaria Stricta	Upright Coral		Y	
Rhopoglyphus Filicinus	Braken Map			Y
Rugosomyces Ionides	Violet Domecap			Y
Schizopora Paradoxa	Split Porecrust			Y
Scleroderma Citrinum	Common Earthball		Y	
Skelotocutis Nivea	Hazel Bracket Fungus		Y	
Stereum Gausapatum	Bleeding Oakcrust			Y
Stereum Hirstum	Hairy Stereum / Curtain crust	Y	Y	
Trametes Ochracea	Ochre Bracket		Y	
Trametes Versicolor	Turkeytail		Y	Y
Xylaria Hypoxylon	Candlesnuff Fungus		Y	Y
Xylaria Polymorpha	Dead Man's Fingers		Y	Y

Lichen Species List

	Common Name	Reported in February 2012 by Helen and Edward Wells
Evernia Prunastri	Oakmoss	Y
Hypotrachyna Laevigata		Y
Hypotrachyna revolute		Y
Lecanora Chlarotera	Rim Lichen	Y
Lecidella Elaeochroma		Y
Opegrapha Atra	Scribble Lichen	Y
Parmotrema Chinense	Scatter Reg Lichen	Y
Parmelia Sp	Lead Lichen	Y
Physcia Adscendens	Rosette Lichen	Y
Ramaline Farinacea	Cartilage Lichen	Y
Ramaline Fastigiata		Y
Xanthoria Parietina	Orange / yellow Scald / Shore / Maritime Sunburst Lichen	Y

Mosses and Liverworts (Bryophytes) Species List

Mosses	Common Name	Reported in February 2011 by Helen and Edward Wells
Amblystegium Serpens	Creeping Feather Moss	Y
Atrichum Undulatum	Common Smooth Cap	Y
Brachythecium Rutabulum	Rough-Stalked Feather Moss	Y
Dicranoweissia Cirrata	Common Pincushion	Y
Fissidens Taxifolius	Common Pocket Moss	Y
Hypnum Cupressiforme	Cypress-leaved Plait Moss	Y
Hypnum Resupinatum	Supine Plait-Moss	Y
Kinbergia Praelonga	Common Feather-moss	Y
Mnium Hornum	Swan's Neck Thyme Moss	Y
Orthotrichum Affine	Wood Bristle Moss	Y
Pseudotaxiphyllum Elegans	Elegant Silk-Moss	Y
Rhynchostegiella Pumila	Dwarf Feather-Moss	Y
Rhynchostegium Confertum	Clustered Feather-Moss	Y
Zygodon Sp.	Yoke Moss	Y

LIVERWORTS	Common Name	Reported in February 2011 by Helen and Edward Wells
Frullania Dilatata	Dilated Scalewort	Y
Lophocolea Bidentata	Bifid Crestwort	Y
Metzgeria Furcata	Forked veilwort	Y

Higher Plants (excluding Trees) Species List

The information from 1987 is from field notes taken by Mrs Nash-Smith
 The information from 1993 and 1995 are from surveys for the 1995 Herne Hill History,
 Ecology and Management produced by A Goverd and A May

Key: Y = present; *= probably present but overlooked; N = not present,
 blank is no information recorded

	Common Name	1987	1993	1995
Achillea Millefolium	Yarrow	*	Y	Y
Adoxa Moschatellina	Moschatel	Y	Y	Y
Ajuga Reptans	Bugle	N	Y	Y
Alliaria Petilata	Jack By The Hedge	Y	Y	Y
Allium Ursinum	Ramsons	Y	N	N
Alopecurus Pratensis	Meadow Foxtail	Y	Y	Y
Anthoxanthum	Sweet Vernal Grass	Y	Y	Y
Arctium Lappa	Greater Burdock	*	Y	Y
Arctium Minus	Burdock	Y	Y	Y
Arrhenatherum Elatius	False Oat Grass	Y	Y	Y
Arum Maculatum	Lords-and-Ladies	Y	Y	Y
Bellis Perennis	Daisy	*	Y	Y
Bromus Hordeaceus	Soft Brome	Y	Y	Y
Bryonia Cretica	White Byrony	*	Y	Y
Calystegia Sepium	Hedge Bindweed	*	Y	y
Calystegia Sylvatica	Large Bindwood	*	Y	Y
Capsella Bursa-Pastoris	Shepherd's Purse	Y	Y	Y
Carex Remota	Remote Sedge	*	Y	Y
Cardamine Flexuosa	Hairy Bitter Cress	Y	Y	Y
Carduus Acanthoides	Wetted Thistle	*	Y	Y
Centaurea Nigra	Black Knapweed	*	Y	Y

Higher Plants (excluding trees) Species List Cont

Cerastium Holosteides	Common Mouse-Ear	*	Y	Y
Cerastium Glomeratum	Sticky Mouse Ear	*	Y	Y
Cirsium Arvense	Creeping Thistle	*	Y	Y
Cirsium Palustre	Marsh Thistle	*	Y	Y
Circaea Luteiana	Enchater's Nightshade	Y	Y	Y
Conopodium Majus	Pignut	Y	Y	Y
Convolvulus Arvensis	Field Bindweed	*	Y	Y
Corylus Avellana	Hazel	*	Y	Y
Cynosurus Cristatus	Crested Dog's Tail	Y	Y	Y
Dactylis Glomerata	Cocksfoot	Y	Y	Y
Digitalis Purpurea	Foxglove	Y	Y	Y
Dipsacus Fullonum	Teasel	*	Y	Y
Dryopteris Filix- Mas	Male Fern	*	Y	Y
Epilobium Angustiolium	Rosebay Willowherb	Y	Y	Y
Epilobium Tetragonum	Square Stalked Willowherb	Y	N	N
Filago Germanica	Common Cudweed	*	Y	Y
Galeopsis Tetrahit	Hemp Nettle	Y	Y	Y
Galium Aparine	Goosegrass	Y	Y	Y
Geranium Dissectum	Cut-Leaved Cranesbill	Y	Y	Y
Geranium Robertianum	Herb-Robert	*	Y	Y
Geum Urbanum	Wood Avens	Y	Y	Y
Glechoma Hederacea	Ground Ivy	Y	Y	Y
Hedera Helix	Ivy	Y	Y	Y
Heracleum Sphondylium	Hogweed	Y	Y	Y
Holcus Lanatus	Yorkshire Fog	Y	Y	Y
Holcus Mollis	Creeping Soft Grass	*	Y	Y

Higher Plants (excluding trees) Species List Cont

Hyacinthoides Non-Scripta	Bluebell	Y	Y	Y
Ilex Aquifolium	Holly	*	Y	Y
Iris Foetidissima	Stinking Iris	Y	Y	Y
Juglas Regia	Walnut	*	Y	Y
Juncus Bifonius	Toad Rush	Y	Y	Y
Juncus Effusus	Soft Rush	Y	Y	Y
Lamium Purpureum	Red Dead Nettle	Y	Y	Y
Lamium Album	White Dead Nettle	*	Y	Y
Lolium Perenne	Perennial Rye Grass	Y	Y	Y
Lonicera Periclymenum	Honeysuckle	*	Y	Y
Matricacia Matricarioides	Pineapple Weed	*	Y	Y
Mercurialis Perennis	Dog's Mercury	Y	Y	Y
Myosotis Arvensis	Forget-Me- Knot	Y	Y	Y
Plantago Major	Greater PLantain	Y	Y	Y
Poa Annua	Annual Poa	Y	Y	Y
Poa trivialis	Rough Stalked Meadow Grass	Y	N	N
Polygonum Aviculare	Knotgrass	*	Y	Y
Polypodium Vulgare	Commin Polypody	*	Y	Y
Prunella Vulgaris	Selfheal	*	Y	Y
Primula Vulgaris	Primrose	Y	Y	Y
Prunus Spinosa	Blackthorn	Y	Y	Y
Pteridium Aquilnum	Bracken	*	Y	Y
Ranunculus Ficaria	Lesser Celandine	Y	Y	Y
Ranunculus Repens	Creeping Buttercup	Y	Y	Y
Rhamnus Catharticus	Buckthorn	*	Y	Y
Rosa Canina Agg.	Dog Rose	*	Y	Y
Rubus Fruiticosus Agg	Bramble	Y	Y	Y
Rubus Idaeus	Raspberry	*	Y	Y

Higher Plants (excluding trees) Species List Cont

Rumex Acetosa	Common Sorrel	Y	Y	Y
Rumex Obtusifolius	Broad-Leaved Dock	*	Y	Y
Trifolium Repens	White Clover	*	Y	Y
Salix Caprea	Goat Willow	*	Y	Y
Sambucus Nigra	Elder	*	Y	Y
Senecio Jacobaea	Ragwort	N	N	Y
Senecio Vulgaris	Grounsel	Y	Y	Y
Silene Diocia	Red Campion	Y	Y	Y
Solanum Dulcamara	Bittersweet	Y	Y	Y
Sonchus Asper	Prickly Sow Thistle	*	Y	Y
Stachys Sylvatica	Hedge Woundwort	Y	Y	Y
Stellaria Holostea	Great Stichwort	Y	Y	Y
Stellaria Media	Common Chickweed	Y	Y	Y
Stellaria Graminea	Lesser Stichwort	Y	Y	Y
Stellaria Media	Chickweed	Y	Y	Y
Tamus Communis	Black Byrony	*	Y	Y
Taraxacum Officinale Agg.	Dandelion	Y	Y	Y
Thelycrania Sanguinea	Dogwood	N	Y	Y
Tilia X Europaea	Common Lime	*	Y	Y
Tilia Plattphyllos	Large Leaved Lime	*	Y	Y
Ulex Europaeus	Gorse	Y	Y	Y
Urtica Dioica	Common Nettle	Y	Y	Y
Viburnum Opulus	Guelder Rose	N	Y	Y
Vicia Sativa	Common Vetch	Y	Y	Y
Viola Odorata	Sweet Violet	Y	Y	Y
Viola Riviniana	Common Dog Violet	Y	Y	

Invertebrate Species List

The Insects were recorded on Herne Hill in 1993 and 1995

Individual Invertebrate species are graded according to their rarity.

The status given for individual beetle species is taken from English Nature recorder database whilst the status of the bugs (sub order Heteroptera) is from work carried out by Groves (1986) of the London area as a means of assessing their status.

Chinery (1986) has been used to determine the status of grasshoppers and butterflies.

Ball (1986) has also identified uncommon invertebrate species, which are classed as Nationally Notable (or nationally scarce). This category is subdivided into Notable A (Na) and Notable Bb (Nb) based upon a species know distribution.

Beetles	Common Name	Status
<i>Adalia-10-punctata</i>	10 Spotted Ladybird	Common
<i>Anatis Ocellata</i>	Eyed Ladybug	Common
<i>Apion Frumentarium</i>		Local
<i>Badister Bipustulatus</i>		Common
<i>Bruchus Loti</i>	Seed Beetle	Common
<i>Cassida Rubignosa</i>	Thistle Tortoise beetle	Common
<i>Catops Grandicollis</i>		Common
<i>Ceuthorrhynchus Assimilis</i>	Cabbage Shoot Weevil	Common
<i>Coccidula Rufa</i>		Common
<i>Coeliodes Erythroleucus</i>		Notable /Nb
<i>Cryptocephalus Pusillus</i>		Local
<i>Cylindronotus Laevioctostriatus</i>	Dankling Beetle	Common
<i>Dromius Linearis</i>		Common
<i>Haltica Sp.</i>		-
<i>Lema Cyanella</i>		Local
<i>Ligria Hirta</i>		Common
<i>Oedemera Lurida</i>		Local
<i>Oedemera Nobilis</i>	False Oil Beetle	Common
<i>Oulema Melanopa</i>	Cereal Leaf Beetle	Common
<i>Phyllobias Virideaeris</i>	Nettle Weevil	Common
<i>Platycis Minuta</i>		Notable/ Nb
<i>Polydrusus Viridaearis</i>		Common
<i>Propylea 14-Punctata</i>	14 spotted Ladybird	Common
<i>Rhagonycha Fulva</i>	Red Soldier Beetle	Common
<i>Rhizobius Litura</i>		Common
<i>Sciaphilus Asperatus</i>	Strawberry Root Weevil	Common
<i>Sitonia Lineatus</i>	Pea-leaf Weevil	Common
<i>Sphaeroderma Testaceus</i>	Artichoke Beetle	Common

Invertebrate Species List Cont

Bugs	Common Name	Status
Calocoris Norvegicus		Common
Kleidocerys Resedae	Birch Catkin Bug	Frequent
Leptopterna Dolobrata	Meadow Plant Bug	Abundant
Liocoris Tripustulatus	Common Nettle Bug	Abundant
Lopus Decolor		Frequent
Nabacula Limbata		Abundant
Nabis Rugosus	Common Damsel Bug	Abundant
Notostira Elongata		Common
Pantilius Tunicatus		Occasional
Philaenus Spumarius	Common Froghopper	N/A
Stenodema Laevigatum	Grass Bug	Common
Stenotus Binotatus	Two Spotted Grass Bug	Common
Tingis Ampliata		Common

Grasshoppers	Common Name	Status
Leptophyes Punctatissima	Speckled Bush-Cricket	Common

Butterflies	CommonName	Status
Anthocharis Cardamines	Orange Tip	Common
Artogeia Rapae	Cabbage White	Common
Gonepteryx Rhamni	Brimstone	Common
Maniola Jurtina	Meadow Brown	Common
Pararge Aegeria	Speckled Wood	Common

Bird Species List

Birds recorded on Herne Hill or surrounding area during the period from 1993 to 1995

	Common Name
Accipter Nisus	Sparrowhawk
Aegithalos Caudatus	Long-tailed Tit
Buteo Buteo	Buzzard
Carduelis Carduelis	Goldfinch
Corvus Frugilegus	Rook
C. corone	Carrion Crow
Certhia Familiaris	Treecreeper
Columba Palumbus	Woodpigeon
Corvus Frugilegus	Rook
Dendrocopos Major	Great Spotted Woodpecker
Erithacus Rubecula	Robin
Falco Tinnunculus	Kestrel
Fringilla Coelebs	Chaffinch
Garrulus Glandarius	Jay
Hirundo Rustica	Swallow
Motacilla Alba Yarrellii	Pied Wagtail
Parus Ater	Coal Tit
Parus Caeruleus	Blue Tit
Parus Major	Great Tit
Passer Domesticus	House Sparrow
Phylloscopus Collybita	Chiffchaff
Pica Pica	Magpie
Picus Viridis	Green Woodpecker
Pyrrhula Pyrrhula	Bullfinch
Regulus Regulus	Goldcrest
Sitta Europaea	Nuthatch
Sternus Vulgaris	Starling
Sylvia Atricapilla	Blackcap
Troglodytes Troglodytes	Wren
Turdus Merula	Blackbird
Turdus Philomelos	Song Thrush

Mammal Species List

Mammals present on Herne Hill during 1993 and 1995

*Evidence from gnawed nuts during 1993 survey

	Common Name
Apodemus Sylvaticus	Woodmouse
Capreolus Capreolus	Roe Deer
Clethrionomys Glareolus	Bank Vole
Meles meles	Badger
Muscardinus Avellanarius	Doormouse*
Oryctolagus Cuniculus	Rabbit
Pipisrellus Pipistrellus	Pipistrelle Bat
Sciurus Carolinensis	Grey Squirrel
Sorex Araneus	Common Shrew
Talpa Europaeus	Mole
Vulpes Vulpes	Fox

Bat Survey of Ilminster Sports Ground, Ilminster, Somerset

Client Ilminster Town Council

Reference I1103.001

Issue One

Date 13 October 2016



Crossman

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Non-technical Summary

Background

In August 2015, Crossman Associates was commissioned by Ilminster Town Council to undertake a bat survey in relation to a planning proposal at Ilminster Town Football Club. The planning proposal includes the installation of six floodlights to illuminate a new playing field.

Methods

Methods followed best practice guidance published by the Bat Conservation Trust (2016) and were undertaken by licenced and experience personnel and full members of the Chartered Institute of Ecology and Environmental Management.

Results

Ten species of bat were recorded on site. There was significant activity by common and soprano pipistrelle in close proximity to the proposed floodlight area. Other species were less frequently recorded.

Significant habitat features being used by bats include boundary hedgerow and an adjacent pond.

Recommendations

It is recommended that the following be undertaken as part of the proposals;

- Installation of floodlights that have cowls and louvers to reduce light spill
- Planting of new hedgerow species to fill gaps in defunct hedgerows
- Monitoring to assess mitigation and inform reactive mitigation strategy

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1. Introduction

1.1. In August 2015, Crossman Associates was commissioned by Ilminster Town Council to undertake a bat survey in relation to a planning proposal at Ilminster Town Football Club. The planning proposal includes the installation of six floodlights to illuminate a new playing field.

1.2. The objectives of the survey were to:

- Map the existing habitats on site
- Establish which species of bat are using the site and map the areas of usage
- Identify any planning policy or legislative constraints relevant to the proposals
- Provide recommendations for further studies, mitigation or compensation, as appropriate

Legislation

1.3. All British species of bat are protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. It is an offence to intentionally injure or disturb a bat or to damage or obstruct access to a place used for shelter or protection by bats.

1.4. As a signatory of the Bonn Convention, the UK is obliged to protect sites that are important for bats and to identify and protect important feeding areas for bats from damage or disturbance. It is an offence to intentionally injure or disturb a bat or to damage or obstruct access to a place used for shelter or protection by bats.

1.5. Bats must be a material consideration as part National Planning Policy Framework (NPPF) (2012), which sets out the Government's vision for conserving and enhancing biological diversity in England. It includes the broad aim that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible.

Proposals

1.6. The site has recently been upgraded with new car parking and pavilion. The sports ground is subject to proposals for the laying out of one main standard size football pitch, three smaller football pitches and a cricket pitch. The main football pitch will be orientated in a north south direction and will include six 15 m floodlights that will be installed along the eastern and western edge of the pitch (refer to Figure 1, Appendix I).

Site Description

1.7. Ilminster Town Football Club is a large area of parkland on the south-eastern edge of the town of Ilminster, Somerset (central Ordnance Survey grid reference ST 355 141). The site is predominantly a flat area of amenity grassland that rises steeply at the southern end where there are areas of unmanaged grassland. At the edges of the site, particularly towards the eastern boundary are bands of dense ruderal vegetation.

1.8. The north and west boundary is defined by a hedgerow and a line of regularly spaced planted trees. The eastern boundary at the northern end of the site is defined by a dense line of native trees and scrub, and at the southern end of the site is scrub and ruderals. The southern boundary is lines of trees and tall unmanaged grassland.

1.9. The site is adjoined to north and south by arable fields with a network boundary hedgerows. To the south-west is an area of scrubland and an area of broadleaved woodland that rises to the peak of Herne Hill. Adjoining the east at the northern end of the site is a remnant section of canal, which is essentially a

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long, narrow pond; beyond the canal is further playing fields. Adjoining the east at the southern end is dense residential housing of mostly terrace housing with small gardens.

1.10. The wider landscape is rural to west, with mostly arable fields and networks of hedgerows and with the exception of the adjacent woodland, other areas of woodland are absent in the area. To landscape to the east is urban, comprising the town of Ilminster.



2. Methodology

Desk Study

- 2.1. The MAGIC website was used to gain information on any statutory sites within 4 km of the site that are designated for bat species.
- 2.2. Somerset Environmental Records Centre was contacted for existing records of bat species and roosts within 5 km and any non-statutory within 2 km that are designated for bats.

Field Survey

- 2.3. Methodologies followed guidance set out within the Bat Conservation Trust Survey Guidelines (2012), Bat Surveys for Professional Ecologists (Collins, 2016). Aspects of the survey also follow established best practice guidance detailed within the Bat Mitigation Guidelines (English Nature 2004), the Bat Workers' Manual (JNCC 2004).

Daytime Assessment

- 2.4. Alex Crossman, an experienced ecological consultant, full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and licenced bat worker, undertook a habitat assessment in August 2015 and conditions were checked again in September 2016. The proposed floodlight locations, nearby buildings and all trees that may be subject to increased lighting, were assessed whether they support roosting bats. Habitat features including woodland, trees, hedgerows and watercourses were mapped and assessed for their suitability to support foraging and commuting bats (Figure 2, Appendix I). Herne Hill, which is a Local Wildlife Site that adjoins the south-west corner of the site, was included within the survey.
-



2.5. Buildings and trees were also assessed for their suitability to support roosting bats by considering several factors including whether bats can access internal and external voids within the building or tree and whether these voids provide adequate protection and shelter for roosting bats. If the building or tree is not confirmed as a roost, it is assessed from High to Negligible Suitability as follows;

- **High Suitability** – many roosting opportunities. Buildings tend to be old, large and rural
- **Moderate Suitability** – some roosting opportunities. Building tend to be old, rural with some recent maintenance
- **Low Suitability** – few roosting opportunities. Buildings tend to be modern, urban and well maintained
- **Negligible Suitability** – insignificant roosting opportunities. Buildings tend to be small, modern, urban and very well maintained

Manual Activity Surveys

2.6. Manual activity surveys were undertaken in August and October 2015 and May 2016 and followed two pre-determined transect routes (Figure 3, Appendix I). The transect route commenced near to the semi-mature trees to the north of the proposed turbine location in order to record any emerging bats.

2.7. The activity surveys commenced at sunset and continued for two hours on warm nights above 10°C with little or no wind. Details of temperature and weather conditions during the surveys were noted. The transect was walked and detailed notes of any bats were taken. After each approximately 50 m of the survey, the surveyor stopped and scanned for bat activity for a period of 5 minutes. This was repeated for the whole route. The surveys concentrated on the areas with suitable foraging habitat for bats, including hedgerows, tree lines and pasture. These areas were identified during daylight, previous to the commencement of the first activity survey.



- 2.8. Bat species were identified using a frequency division "Bat Box Duet" bat detector connected to a MP3 recorder or an Anabat. All bat echolocations were recorded and analysed using dedicated software Analook and Kaleidescope. The location of all recordings were marked on a map, as well any other observations, such as bats using a particular area or linear feature for foraging or commuting.
- 2.9. Additional survey assistance was provided by Fairbrass Knowles MCIEEM.

Automated Activity Surveys

- 2.10. Automated devices were placed in three locations, two near to the proposed flood lighting and a third on the edge of woodland at Herne Hill (refer to Figure 3, Appendix I).
- 2.11. Anabat technology was used with three detectors being mounted at approximately 2 m above the ground and pointing along the feature of interest. The detectors were set to record between sunset and sunrise and the data was later analysed using Analook and Kaleidescope computer software and bat activity and passes tallied.
- 2.12. The temperature during the automated survey was recorded using an Elitech RT4 data logger. Any recorded hours after a dusk temperature of 10°C were discounted until there was a temperature rise above this figure.

Assessment Methodology

- 2.13. The assessment and terminology that follows is based on guidelines set out by the Institute of Ecology and Environmental Management (CIEEM 2016).
- 2.14. The proposals and the results of the bat surveys undertaken in 2014 have been used to carry out this assessment. Impacts have been considered in the short term (construction phase) and long term (operational phase) in relation to bats. All assessments are based on unmitigated proposals.
-



Significance of Effects

Magnitude of Impact

2.15. The CIEEM guidelines state that where possible, the magnitude should be quantified, by for example, the number of animals killed by a given activity or a percentage of an area disturbed or destroyed. When defined in qualified terms, the impact magnitude categories and criteria are as follows:

- Major negative impact – that which has a negative impact on the integrity of the population of a wildlife species, and will be either long lasting or irreversible;
- Intermediate negative impact – that which has a negative impact on the integrity of the population of a wildlife species, but will be either temporary or reversible;
- Minor negative impact – that which has a negative impact not affecting the population integrity of a wildlife species;
- Neutral impact – that which has no predictable impact;
- Positive impact – that which has a net positive impact on a wildlife species.

Impact Probability

2.16. The likelihood that an impact will occur is categorised to be as follows:

- Certain – probability of occurrence at 95% chance or higher
 - Probable – probability of occurrence estimated between 50% and 95%;
 - Unlikely – probability of occurrence estimated between 5% and 50%;
 - Extremely unlikely – probability of occurrence estimated at less than 5%;
-

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Geographical Scale of Impact Significance

2.17. The special extent of and impact is categorised following definitions given by the CIEEM.

- International
 - National
 - County
 - District
 - Local
 - Site – within the immediate zone of influence
-



3. Results

Desk Study

- 3.1. The Magic website informed that there are no statutory site designations within 10 km that are designated for bat species.
- 3.2. SERC responded with information of non-statutory sites and records of bat species within 2 km of the site; none of the local non-statutory sites are designated for bats. Herne Hill Local Wildlife Site (LWS) adjoins the south-west corner of the site and is designated for ancient woodland with semi-natural broadleaved, conifer, and broadleaved plantation stands, supporting important fauna.
- 3.3. SERC also informed of records of the following bat species within 4 km of the site;
- Common pipistrelle *Pipistrellus pipistrellus*
 - Soprano pipistrelle *Pipistrellus pygmaeus*
 - Brown long-eared *Plecotus auritus* – including one dead bat found at the site 2012
 - Daubenton's bat – *Myotis dabentonii*
 - Whiskered bat – *Myotis mystacinus*
 - Natterer's bat – *Myotis nattereri*
 - Serotine – *Eptesicus serotinus*
 - Noctule – *Nyctala noctula*
 - Lesser horseshoe – *Rhinolophus hipposideros*
-



Field Survey

Daytime survey

Habitat description

- 3.4. Habitats on site and boundary features are described in the paragraphs, features of interest are shown on Figure 1, Appendix I) and photographic reference can be found in Appendix II).
- 3.5. The proposed floodlit area is an existing playing field/recreation ground that is occupied by heavily managed amenity grassland that has a sward height of approximately 20 – 50 mm and is species poor. Grass species are perennial rye grass *Lolium perenne* and fescues *Festuca* sp. with herb species including plantains *Plantago* spp. clovers *Trifolium* spp. and daisy *Bellis perennis*.
- 3.6. The north and west boundary of the site is defined by a recently unmanaged blackthorn *Prunus spinosa*, hazel *Corylus avellana*, English elm *Ulmus minor*, and hawthorn *Crataegus monogyna* hedgerow that throughout the survey period was approximately 3-4 m tall and 3 m wide. At the north-west corner of the site, approximately 30 m from the floodlight area is a defunct section of hedgerow, where woody species have died back and the resultant gap had been encroached by a band of dense bramble *Rubus fruticosus* agg; this section of hedgerow is approximately 1 – 1.5 m in height.
- 3.7. The northern section of the eastern boundary of the site is defined by a band of dense unmanaged vegetation with groups of semi-mature trees and occasional mature standard trees (see table below). The boundary runs parallel to the floodlight area and is approximately 10 m away at its closest point. The band of vegetation is dominated by hawthorn, sycamore and willow *Salix* sp. with occasional holly *Ilex aquifolium*, ash and pedunculate oak *Quercus robur*. The band of vegetation divides the site from an adjacent linear pond and is managed on the site side, but not on the canal side. The vegetation is generally 5 m tall and 10 m wide.
-



3.8. The southern boundary of the site is approximately 200 m from the floodlight area, and rises approximately 25 m above the height of the proposed playing field and therefore, approximately 10 m above the top of the floodlights. This boundary is a line of dense unmanaged vegetation and mature trees.

3.9. Herne Hill lies adjacent to the south-west boundary of the site and rises further to a maximum height of approximately 75 m above the proposed playing field. Herne Hill is covered by an area of natural and semi-natural broadleaved woodland. Canopy trees are dominated by pedunculated oak and ash with an understorey of hazel, hawthorn, elder, and holly. The field layer includes red campion *Silene dioica*, dog's mercury *Mercurialis perennis*, bluebell *Hyacinthoides non-scripta*, primrose *Primula vulgaris* and lords-and-ladies *Arum maculatum*.

Structures and trees

3.10. Structures and trees that may provide roosting opportunities for bats within close proximity (up to 100 m) of the floodlights were assessed for their suitability to support roosting bats.

Table 1; location, description and distance of feature from proposed floodlighting area.

Location	Distance	Description	Roosting Suitability	Rationale
1	<5 m north	New pavilion building	Negligible	New pavilion building completed in the summer of 2016. Building had just been completed and is completely sealed.
2	20 m north-east	Group of 5 semi-mature ash and sycamore trees	Negligible	Good condition with no features.
3	10 m east	Mature ash	Low	Good condition. Small knots in canopy.
4	10 m east	Mature ash	Negligible	Good condition, with no significant features.
5	10 m east	Mature pedunculate oak	Medium	Balanced crown but some minor dead wood in the canopy and split limbs.
6	10 m east	Group of 3	Negligible	Good condition with no features.

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Location	Distance	Description	Roosting Suitability	Rationale
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sycamore and ash

7	10 m east	Mature ash	Low	Mature ash with reduced crown, so possible cavities. Also some dead wood.
8	10 m east	Mature pedunculate oak	Medium	A large, mature tree with balanced crown with some dead wood at the end of some branches. One of the main limbs that comes from the trunk has snapped creating cracks at the break.

9	30 m west and running south-west	A line of young and semi-mature trees including hazel, rowan, ash and field maple	Negligible	All trees are young or semi-mature and in good condition with no significant features.
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Manual Bat Activity Survey

- 3.11. The transect route and significant areas of bat activity are mapped on Figure 3, Appendix I. For ease of interpretation, the map is divided into a grid.
- 3.12. Bat activity transects were started adjacent to trees on the eastern boundary to check for bats emerging from the trees. No bats were observed emerging and there was no bat activity to suggest that these trees are functioning as a roost site.
- 3.13. The bat activity is summarised within the following table, which compares the bat activity index (BAI) between the species. BAI is a measure of bat activity per unit time and is calculated using the following equation; $BAI = \text{bat passes} / \text{unit time (hours)}$, which was 2.5 hours for each survey.



Table 2; bat activity indices for manual activity surveys

Species	Survey 1 (15/8/2015) Sunset time: 20:50 Start time: 20:40 End time: 23:10 Cool, dry, slight breeze. 13°C	Survey 1 (15/10/2015) Sunset time: 18:10 Start time: 18:00 End time: 20:30 Cool, dry, slight breeze. 13°C	Survey 3 (12/5/2016) Sunset time: 20:50 Start time: 20:40 End time: 23:10 Cool, dry, slight breeze. 13°C
Common pipistrelle	2.5	2.1	3.6
Soprano pipistrelle	0.4	0.9	4.0
Long-eared	-	-	0.2
Serotine	-	1.0	0.6
Noctule	-	0.2	0.2



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Lesser Horseshoe			
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Greater
horseshoe

Myotis sp. - - - - -

0.7

3.14. Common and soprano pipistrelles were widespread and were recorded regularly on each survey visit. Long-eared bat, serotine, noctule, lesser horseshoe and Myotis sp. were recorded infrequently or rarely.

3.15. Bat activity was highest along the northern end of the eastern boundary of the site, along the vegetated corridor, which at its closest is 10 m from the floodlight area (J3, J4, J5). Common pipistrelles and soprano pipistrelles were regularly recorded commuting along the western side of this feature and were occasionally recorded foraging along this features and foraging under the canopy of mature trees; however, most activity was recorded on the other side of the vegetation, and was associated with bats foraging over the linear pond (remnant canal) (J3, J4). Common and soprano pipistrelle bats were recorded foraging over the pond regularly during all visits and on one occasion there was a Myotis sp.

3.16. The north and east boundary hedgerow which runs within 30 m of the floodlight area, was used less frequently by bats (H3, H4). Common and soprano pipistrelle were occasionally recorded commuting along this feature and on one occasion a lesser horseshoe bat was recorded at the southern end, near Herne Hill (H5).

3.17. Other species recorded included noctule, serotine, Myotis sp, long-eared and greater horseshoe. These species were recorded commuting (or flying over) the southern boundaries of the site (H6, J7), or within, or on the edge of Herne Hill woodland (F6). Common pipistrelle were consistently recorded foraging on the edge of Herne Hill woodland (A6, G7) and within the area of rough grassland/scrubland adjacent to the south of the site (I6).

Automated Bat Activity Survey

3.18. Automated bat activity surveys were conducted in August and October 2015 and May 2016.

3.19. The bat activity is summarised within the following table, which compares the bat activity index (BAI) between the species. BAI is a measure of bat activity per

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unit time and is calculated using the following equation; $BAI = \text{bat passes} / \text{unit time (hours)}$.

3.20. The table shows the BAI (and the number of passes in brackets) for each survey location (A, B and C).

Table 3: BAI (and bat passes) for automated activity surveys

	A	B	C	A	B	C	A	B	C
Location									
Common pass	5.0 (350)	2.0 (140)	3.2 (225)	2.3 (212)	0.6 (55)	0.5 (43)	8.0 (512)	1.4 (89)	1.8 (115)

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Daubenton's	<0.1	0	<0.1	0	0	0	0	0	0	0	0	0
	(4)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Natterer's bat	0	<0.1	0.2	0	0.1	0	<0.1	0	<0.1	0	0	0
	(0)	(1)	(12)	(0)	(5)	(0)	(1)	(0)	(1)	(0)	(0)	(0)
Myotis sp.	<0.1	0	<0.1	0	0	0	0	0	0	0	0	0
	(2)	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Long-eared	<0.1	0	0.3	<0.1	<0.1	0.1	0	0.1	0	0	0	0
	(3)	(0)	(19)	(1)	(1)	(10)	(0)	(0)	(0)	(0)	(0)	(0)
Serotine	0.1	0	0.4	<0.1	0.1	<0.1	0	<0.1	0	0	0.3	0.3
	(8)	(0)	(25)	(2)	(2)	(4)	(0)	(0)	(0)	(0)	(16)	(16)

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Leisler's	0 (0)	0 (0)	0.2 (12)	0 (0)	<0.1 (1)	0 (0)	0 (0)	<0.1 (1)	0 (0)
Noctule	0.6 (45)	0.5 (38)	0.4 (25)	0.2 (12)	0.2 (12)	0.2 (15)	0.6 (51)	0.5 (45)	0.5 (50)
Lesser horseshoe	0 (0)	0.1 (8)	0 (0)	0 (0)	0.1 (10)	<0.1 (4)	0 (0)	0 (0)	0 (0)
Greater horseshoe	0 (0)	0 (0)	<0.1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)



3.21. The automated survey recorded 10 different species; common pipistrelle, soprano pipistrelle, Daubenton's, Naterrer's, long-eared, serotine, Leisler's, noctule, lesser horseshoe and greater horseshoe.

3.22. Common pipistrelle and soprano pipistrelle were recorded frequently at all position. Other species were recorded less frequently or rarely.

3.23. A Myotis sp. bat, which could not be identified to species level was also recorded.

Impact Assessment

3.24. Key activities of possible ecological and biophysical significance to bats, associated with the proposals are given below.

Construction Phase

Vegetation clearance

3.25. A small area of grassland will be cleared to make way for the floodlighting foundations and related infrastructure. This may remove a small area of bat foraging habitat for bats. The associated impact is considered to be minor negative and unlikely at the site level.

Noise

3.26. The installation of the floodlighting and construction of the related infrastructure will create a temporary increase in noise and lighting, depending on the time of year of construction. This will last a matter of weeks and will generally be focused on the proposed floodlight locations, which is away from hedgerows where the majority of bat activity is concentrated. The associated impact is considered to be minor negative and unlikely at the site level.

Operational Phase

Increased lighting

3.27. The proposed football pitch will include new floodlighting which will include six 15 m floodlights positions around the pitch, as shown on Figure 1, Appendix I. the timing of the lighting has not been finalised, but for the purpose of this study it is assumed that the lights will be used up until 21:00, when evening light levels require. It is therefore expected that lighting will be utilized during all months, with the exception of mid-May to August when evenings are light. It is also assumed that lighting will not be used between 21:00 and dawn throughout the year.

3.28. There is no projected lux lighting map for the proposals so it is unclear how the floodlights will illuminate the area and to what extent the floodlights will illuminate the surrounding area; however, it can be surmised that the floodlights will illuminate the eastern and western boundary hedgerows/vegetation that face the floodlights. With the exception of short, defunct sections, these hedgerows are tall and dense providing dark corridors on the side of the hedgerows, facing away from the lighting. The southern boundary of the site and Herne Hill are considered to be too far away from the floodlight area (>200 m) and away from the orientation of the floodlights, to be directly affected by the floodlights, but bats using these areas could be directly or indirectly affected and are considered below. All hedgerows on site are linked to hedgerow in the wider hedgerow network (refer to Figure 2), which suggests that there would be alternative commuting routes through the local countryside.

3.29. Artificial lighting in certain circumstances can disturb bats by causing barriers to bat movement. In general, fast flying bats may be more tolerant to lighting, whereas slow-flying bats may feel more vulnerable in illuminated areas and will therefore avoid them. All species of bat recorded in close proximity to the floodlight area, but all bat species recorded at the south of the site and at Herne Hill are considered in the paragraphs below.

Common and soprano pipistrelle

3.30. Common and soprano pipistrelles are both common and widespread species and were recorded frequently in all areas, including the hedgerows/vegetation near to the proposed floodlight location. Both pipistrelle species were recorded commuting and foraging along hedgerows and foraging above the adjacent linear pond (former canal); both species are known to forage along hedgerow and over ponds and lakes (Vaughan et al., 1997). There was high levels of activity from these two species, but visual observations from the manual activity surveys would suggest that small numbers of bats are doing multiple passes, rather than large numbers of bats doing few passes.

3.31. The most significant feature for these two species is the linear pond (former canal) which is located adjacent to the site, beyond a dense are of vegetation. This vegetation is dense and thick and will provide a significant buffer and shading from the floodlights. However, there may be an impact on foraging and commuting bats in the spring when bats are active and when leaf cover is still at a minimum (during April and early May). During this part of the season, it is likely that the floodlights will cause illumination of the watercourse, particularly the northern end and may cause disturbance. The pond is long and the southern end is further away from the lighting, which is likely to allow for a more secluded foraging area. It should also be considered that both species of pipistrelle are a fast-flying species and are fairly tolerant of lighting, and are known to forage for insects that are attracted to light sources. These two species were frequently, but not consistently, recorded at the watercourse which would suggest that there are other foraging resources in the area. Impacts from the lighting are therefore likely to be limited to the evenings in the spring. Overall the impact is considered to be probable minor negative, significant at a local level.

Daubenton's

3.32. This species tends to emerge late suggesting they prefer to commute and forage in darkness and are known to prefer to forage in wooded areas and over water (Parsons and Jones, 2003). The linear pond (former canal) provides suitable habitat for this species and indeed small numbers were recorded in this area during the summer automated survey. This would indicate that this species only occasionally uses this area as a foraging resource in combination with other features in the wider landscape. If this feature is only used in the summer, then this would not be adversely impacted by the floodlighting.

3.33. The impact on these species by the proposals is considered extremely unlikely.

Natterer's bat

3.34. This species has similar behaviour and ecology to Daubenton's bat (above).

3.35. Due to very small number of bats recorded, the impact on this species by the proposals is considered extremely unlikely.

Serotine

3.36. Small numbers of serotine were recorded, mostly on Herne Hill, but also from the automated recorder positions A and B, near to the floodlight area. This species regularly flies at a height of up to 30m above ground level (Hutson 1991) which is above the floodlights and away from possible disturbance, but this species also more generally forages between 0-5m (Russ 1999), within areas of open habitats, rivers and lakes. Considering this behaviour and with such small number of bats recorded, the impact on this species by the proposals is considered minor negative and unlikely at a local level.

Noctule

3.37. This species flies high and fast and is not a very agile flier so hence flies over open habitat, above tree lines and other features (Rydell et al. 2010).

3.38. Considering this behaviour and with small number of bats recorded, the impact on this species by the proposals is considered to be negligible.

Leisler's

3.39. This species flies and forages at height, although foraging activity tends to be near to trees (Russ et al. 1999) and water (Vaughan, 1997). This bat is rare in the UK with an estimated population of 10,000). Small numbers were recorded on site and the 12 passes recorded at automated recorder location C are likely to be due to one, or a small number of bats, doing multiple foraging passes at that location. A single bat pass was recorded at automated recorder location B on two occasion.

3.40. With such a small number of bats recorded using the site, the impact on this species by the proposals is considered minor negative and unlikely.

Long-eared

- 3.41. Small number of long-eared bats were recorded throughout the survey period, with most records from automated recorder location C, at Herne Hill. Small numbers were also recorded along boundary features. There are two species of long-eared bat in the UK; the brown long-eared bat is common and widespread and the grey long-eared *Plecotus austriacus* is rare and limited to the southern counties of the UK. A dead brown long-eared bat has historically been recorded on site, so this species is present but there is no way to tell from the data which species was recorded during the surveys. Both species are very quiet, and are not always easy to record, so actual numbers may be higher.
- 3.42. Long-eared bats are slow-flying and emerge from roosts well after sunset suggesting that it prefers to fly, commute and forage when it is very dark. Its habitats are deciduous, coniferous and parkland and garden habitats which is characteristic of the site. It is therefore considered that the proposed floodlighting may impact on this species; however, this impact is likely to be reduced by the small number of bats, and the presence of dense hedgerows, which would allow the bats to fly behind vegetation in the shade. Because this bat species emerges late, the impacts from artificial lighting that is only on in the evening, will be reduced.
- 3.43. With small numbers of bats recorded using the site, the impact on this species by the proposals is considered minor negative and unlikely.

Horseshoe bats

- 3.44. Greater and lesser horseshoe bats were only recorded occasionally and only lesser horseshoe was recorded along the boundary hedgerows/vegetation near to the floodlight areas. The low number of recordings would suggest that these features represent an occasional commuting route and are not used regularly.
- 3.45. Greater horseshoe bats prefer to forage on cattle-grazed pastureland (Duvergé and Jones 1994) whereas lesser horseshoe bats mainly forage in broadleaf woodland as well as in other woodlands and areas of high habitat diversity (Bontadina et al. 2002); these habitats are not characteristic of the habitats in

close proximity of the floodlight areas and instead are more characteristic of farmland in the wider countryside and woodland on Herne Hill.

- 3.46. The illumination of the eastern and western boundary hedgerows may discourage horseshoe bats from these features. However, this disturbance is very small due to the low level of bat activity and it should also be considered that for the majority of the bat active period, the hedgerows will be in leaf and bats can commute along the shaded side.
- 3.47. The impact on these species by the proposals is considered extremely unlikely.

Summary

- 3.48. The lighting has the potential to impact on bats, but the lighting will be used during the winter months when bats are not active or activity is very limited.
- 3.49. The eastern and western boundary features are being used by foraging and commuting bats and will be illuminated by the proposed floodlights. These boundary features are tall, dense hedgerows and therefore will provide cover and shade on the side away from the floodlighting. Similarly, the hedgerow/vegetation on the eastern boundary will buffer and shade the lighting, allowing for bats to forage over the pond. Hedgerows and boundaries link to a wider hedgerow network providing alternative foraging and commuting corridors.
- 3.50. There is no evidence from the survey data that any of the boundary features or adjacent areas, that may be affected by the floodlighting, are a significant or essential commuting or foraging resource to local bat populations.

4. Recommendations

- 4.1. The recommendations in the paragraphs below should be followed to help ensure that bat populations and important ecological features are protected during the course of works. Recommendations also set out mitigation measures to minimise harm where this cannot be avoided and provide compensation measures to allow the proposals to meet current legislative and planning policy objectives.
- 4.2. Under the Government's National Planning Policy Framework (NPPF) opportunities to incorporate biodiversity in and around developments should be encouraged.

Lighting specification

- 4.3. It is recommended that light spill and intensity is reduced as much as possible within the proposals. The choice of floodlighting is important to minimising light spill and it is recommended that the lighting is fitted with louvers or cowls, so that lighting is focused downwards towards the pitch and so that light spill is reduced as much as possible. The use of narrow spectrum bulbs will reduce the frequency of emitted light and may reduce the range of bat species impacted by the lighting.
- 4.4. It is recommended that a lighting protocol is implemented as part of the proposals so that there is responsibility to reduce the usage of the lighting as much as possible. For example, lighting should be turned off immediately at the end of sports sessions when participants leave the pitch rather than when the last person leaves the site.

Landscape planting

- 4.5. The boundaries of the site are being used by foraging and commuting bats. The eastern boundary hedgerow is tall and dense and will provide a valuable buffer

to the lighting, allowing bats to forage over the adjacent pond in shade when the lighting is switched on. This feature should be maintained in its current state to maximize its integrity as a vegetative buffer.

- 4.6. The western boundary is similarly tall and dense and should be managed to maintain its current status. At the northern end of the hedgerow, is a short, defunct section that has lost woody species that have been replaced with bramble scrub. This section of hedgerow is near the floodlight area, and when lights are on, may create a barrier to bat movement along this section of hedgerow due to lack of shade and cover. It is therefore recommended that this gap is cleared of scrub and planted with a double-row of new hedgerow planting to increase the integrity of the hedgerow and improve shading. Hedgerow species should include those that are present in the remainder of the hedgerow, including blackthorn, hazel and hawthorn.

Monitoring

- 4.7. It is recommended that post development monitoring will take place so that the effectiveness of the mitigation measures detailed within this report can be adequately assessed and relevant authorities, including Natural England and the Bat Conservation Trust (BCT), can be informed. The monitoring may also inform the design of a 'reactive' mitigation scheme in response to any significant changes in bat activity.

5. References

- Altringham, J.D. (2003)** British Bats. The New Naturalist, Harper Collins
- Bontadina, F., Schofield, H. & Naef-Daenzer, B. (2002)** Radio-tracking reveals that lesser horseshoe bats (*Rhinolophus hipposideros*) forage in woodland. *Journal of Zoology*, **258**, 281-290
- Collins, J. (ed.) (2016)** Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) The Bat Conservation Trust, London.
- Duvergé, L. & Jones, G. (1994)** Greater Horseshoe Bats – Activity, foraging behaviour and habitat use. *British Wildlife*, **6**, 69-77
- Google Maps** at maps.google.co.uk
- HMSO (1981)** Wildlife and Countryside Act 1981 (and subsequent amendments). HMSO
- Ketzenberg, C., Exo, K.-M., Reichenbach, M., & Castor, M. (2002)** Einfluss von Windkraftanlagen auf brütende Wiesenvögel. *Natur und Landschaft* **77**: 144-153
- Mitchell-Jones, A.J. (2004)** Bat Mitigation Guidelines English Nature
- Mitchell-Jones, A.J. & McLeish A.P. (2004)** The Bat Workers' Manual (3rd Edition) Joint Nature Conservancy Committee
- NBN Gateway** at <http://data.nbn.org.uk/>
- The Bat Conservation Trust (2016)** Bat Surveys – Good Practice Guidelines Bat Conservation Trust, London
- TSO (2006)** Natural Environment and Rural Communities Act TSO
- Rodrigues, L., Bach, L., Dubourg-Savage, M. J., Goodwin, J. & Harbusch, Russ, J. (1999)** The bats of Britain and Ireland – Echolocation Calls, Sound Analysis and Species Identification. Alana Books

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Schober, W. and Grimmberger, E. (1993) Bats of Britain and Europe.

Hamlyn

Stace, C. (1997) New Flora of the British Isles 2nd Edition. Cambridge University Press

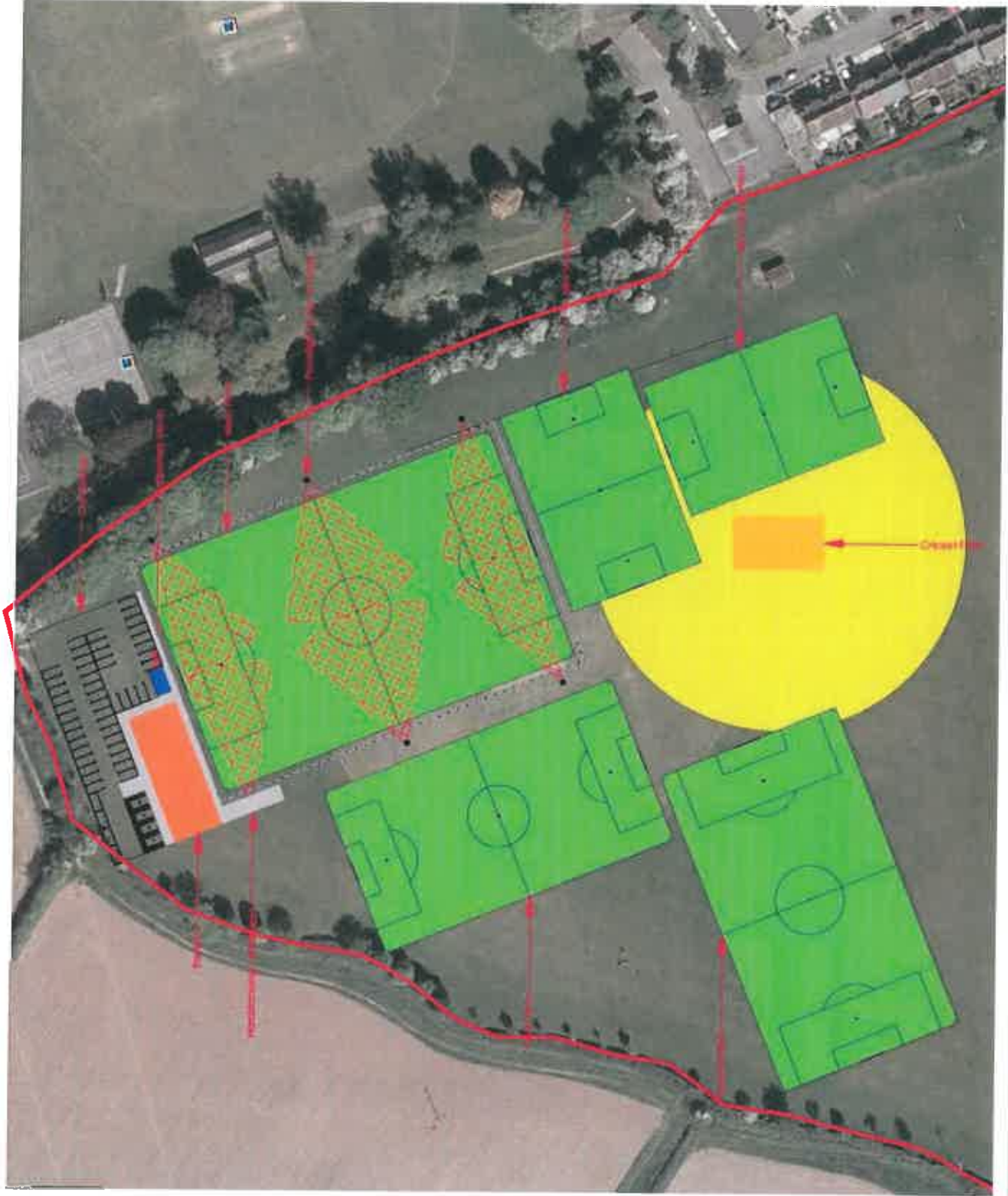
Walsh, A.L. and Harris, S. (1996) Foraging habitat preferences of vespertilionid bats in Britain. *Journal of Applied Ecology*, **33**, 508-518

Walsh, A.L. and Harris, S. 1996b. Factors determining the abundance of vespertilionid bats. *Journal of Applied Ecology*, **33**, 519-529



Appendix I – Site Figures



Site Boundary





-  Site Boundary
-  Hedgerow
-  Defunct hedgerow
-  Trees
-  Woodland
-  Pond (former canal)
-  Floodlight area
-  New pavillion



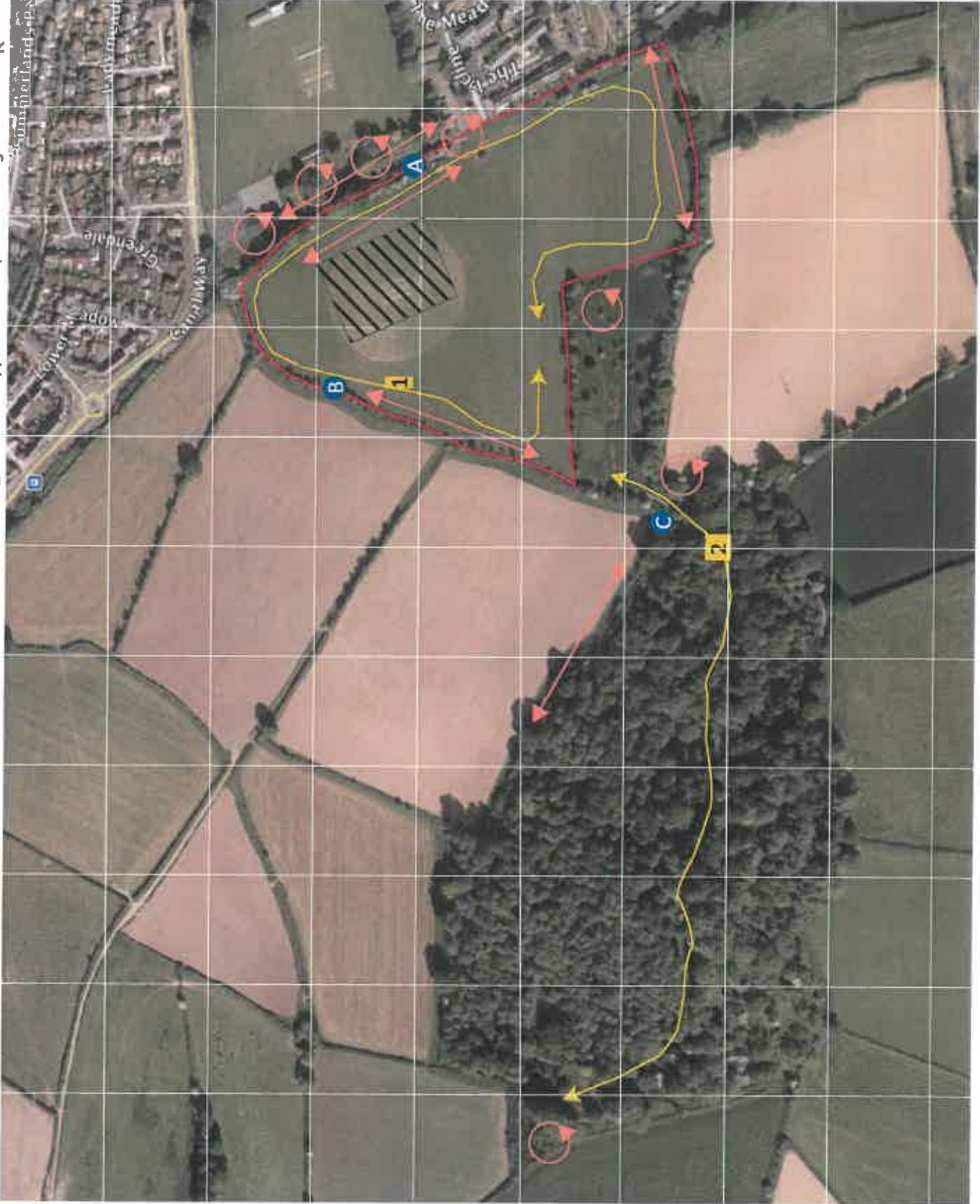
Client Ilminster Town Council

Figure Habitat map







Date Ilminster Sports Ground

Scale 1

A B C D E F G H I J K



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-  Site Boundary
-  Transect route
-  Commuting routes
-  Key foraging areas
-  Automated device locations
-  Floodlight area

Client Ilminster Town Council
 Figure Bat survey plan
 Date Ilminster Sports Ground
 Scale 3

Appendix II – Site Photographs

Photographs 1- 3



Location of football pitch and proposed floodlighting.

Pictuire taken looking north-east towards new clubhouse.



Photograph 2:

Location of football pitch and proposed floodlighting.

Pictuire taken looking south towards Herne Hill.



Photograph 3:

Location of football pitch and proposed floodlighting.

Pictuire taken looking north towards new clubhouse.

Photographs 4 - 6



Hedgerow and trees along north-west boundary of the site.

Photograph taken looking south towards Herne Hill



Photograph 5:

Hedgerow and trees along north-west boundary of the site.



Photograph 6:

Hedgerow and trees along north-west boundary of the site, northern end.

Photographs 7 - 9



Section of north-west boundary hedgerow that is defunct with bramble.



Photograph 8:

Hedgerow and mature trees along eastern boundary of site.

Looking north.



Photograph 9:

Hedgerow and mature trees along eastern boundary of site.

Looking south.

Photographs 10 - 12



Cracked limb within eastern boundary hedgerows.



Photograph 11:

Canal section adjacent to site.

Floodlights will be positioned on the other side of hedgerow at back of canal.



Photograph 12:

Canal adjacent to the site.

Football pitch and floodlights will be positioned on other side of hedgerow.

Appendix III – Information Sheets

Bat Survey

Bat roosting potential	Criteria	Survey requirements to prove likely absence ¹
Negligible	No features or locations presenting roosting opportunities apparent. Building, structure or tree considered unlikely to be used by roosting bats, although occasional or transient use can rarely be entirely ruled out	No further survey work required
Low	Few features or locations within building, structure or tree with the potential to support roosting bats, although quality of these features limited by size, aspect or internal microclimate. Although not directly assessed by these criteria, the chances of significant roost types (maternity or hibernation) is not considered likely	One activity survey
Medium	Some features/locations within building, structure or tree with the potential to be used by roosting bats. Although not directly assessed by these criteria, the chances of significant roost types (maternity or hibernation) is considered possible	Two activity surveys
High	Several features/locations within building, structure or tree with the potential to support	Three activity surveys

¹ Survey requirements are taken from the Bat Conservation Trust Good Practice Guideline (2012), which is the recognised industry standard guidance used by local planning authorities and other statutory consultees.

roosting bats.
Combination of size, aspect and internal micro-climate within these locations make them very suitable for roosting bats. Although not directly assessed by these criteria, the chance of significant roost types (maternity or hibernation) is considered possible.

