

**Ecological Evaluation**

**Proposed Birchall Garden  
Suburb Area & Environs**

**August 2017**

For and on behalf of:  
Hertingfordbury Parish Council  
22 Firs Walk  
Tewin  
Hertfordshire  
AL6 0NZ



***ELMAW Consulting***  
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## **Date of Report**

August 2017



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<b>1.0</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Terms of Reference.....	1
1.2	Purpose of Report .....	3
<b>2.0</b>	<b>Methodology &amp; Technical Approach .....</b>	<b>5</b>
2.1	Scope of Ecological Evaluation .....	5
2.2	Biological Data Search .....	7
2.3	Limitations.....	9
<b>3.0</b>	<b>Data Search Results - Sites .....</b>	<b>10</b>
3.1	Statutorily Designated Sites of Nature Conservation Importance .....	10
3.2	Non-Statutorily Designated Sites of Nature Conservation Importance .....	11
3.3	Ancient Woodland Inventory Sites.....	14
3.4	Hertfordshire Ecological Network Mapping .....	15
3.5	Habitats of Principal Importance.....	17
<b>4.0</b>	<b>Data Search Results - Species and Species Groups of Importance.....</b>	<b>23</b>
4.1	Plants .....	23
4.2	Invertebrates.....	25
4.3	Amphibians & Fish .....	36
4.4	Reptiles .....	38
4.5	Mammals .....	39
4.6	Other Mammals.....	42
4.7	Birds .....	45
<b>5.0</b>	<b>Discussion and Valuation – Habitats of Principal Importance .....</b>	<b>64</b>
5.1	Lowland Mixed Deciduous Woodland - Country BAP Priority Habitat and Woodland Local BAP Priority Habitat:.....	64
5.2	Wood Pasture and Parkland - Country BAP Priority Habitat.....	65
5.3	Ponds – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands).....	65
5.4	Rivers/Running Water – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands).....	66
5.5	Open Water – Local BAP Priority Habitat (included under Wetlands) .....	66
5.6	Lowland Fen – Country BAP Priority Habitat and Local BAP (included under Wetlands).....	67
5.7	Arable Field Margins – Country BAP Priority Habitat and Local BAP (included under Farmland) .....	68

5.8	<i>Lowland Meadows – Country BAP Priority Habitat and Neutral Grassland Local BAP Priority Habitat</i> .....	68
5.9	<i>Hedgerows – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Farmland)</i> .....	69
6.0	<b>Discussion and Valuation – Species of Principal Importance</b> .....	71
6.1	<i>Plants</i> .....	71
6.2	<i>Invertebrates</i> .....	72
6.3	<i>Amphibians</i> .....	73
6.4	<i>Reptiles</i> .....	74
6.5	<i>Bats</i> .....	76
6.6	<i>Other Mammals</i> .....	78
6.7	<i>Birds</i> .....	82
7.0	<b>Conclusions</b> .....	106
8.0	<b>References</b> .....	109
9.0	<b>Appendix 1 – Impact Assessment Methodology</b> .....	111
9.1	<i>Geographical Importance of Ecological Resources/Features</i> .....	111
10.0	<b>Appendix 2 – Valuing Bats in Ecological Impact Assessment</b> .....	112
10.1	<i>Valuing Commuting Routes and Foraging Areas</i> .....	112
10.2	<i>Scoring System for Valuing Commuting and Foraging Bats</i> .....	112
11.0	<b>Appendix 3 – Protected and Notably Important Species Legislation and Protection</b> .....	113
11.1	<i>Birds</i> .....	113
11.2	<i>Bats</i> .....	113
11.3	<i>Water Vole</i> .....	114
11.4	<i>Badger</i> .....	115
11.5	<i>Brown Hare</i> .....	115
11.6	<i>Hedgehog</i> .....	116
11.7	<i>Great Crested Newt</i> .....	116
11.8	<i>Common Toad</i> .....	117
11.9	<i>Reptiles</i> .....	117
11.10	<i>Otter</i> .....	117
11.11	<i>Dormouse</i> .....	118

## 1.0 Introduction

### 1.1 Terms of Reference

- 1.1.1 This Ecological Evaluation has been commissioned by The Hertingfordbury Parish Clerk, Amanda Glew, on behalf of Hertingfordbury Parish Council, as part of their preparation for the forthcoming production of the Hertingfordbury Parish Neighbourhood Plan. It is envisaged that this report will be used, in part, by the Parish Council to inform the development of a number of local Parish Plan policies for the protection and enhancement of important biodiversity within the Parish of Hertingfordbury and adjacent areas.
- 1.1.2 The report's main author is Mr Keith Seaman who holds a first degree in Environmental Studies; Agri-Ecosystem Management, a University Diploma in Ecology and a University Certificate in Ecology and Conservation. His professional qualifications include full membership of the Royal Society of Biology (RSB) registered as a Chartered Biologist and full membership of The Chartered Institute of Ecology and Environmental Management (CIEEM). Keith Seaman also holds Natural England Survey & Research licences for all species of bat, great crested newt (*Triturus cristatus*), otter (*Lutra lutra*), barn owl (*Tyto alba*) and dormouse (*Muscardinus avellanarius*).
- 1.1.3 The study area which is the subject of this ecological evaluation is known as the Proposed Birchall Garden Suburb Area and Environs and is referred to as the study area throughout this report. The study area encompasses an area of land between the southern/eastern edge of Welwyn Garden City and the western edge of Hertford, north of the A414 road. It forms a green corridor through part of central Hertfordshire and covers an area of approximately 890ha.
- 1.1.4 The study area covers part of Hertingfordbury Parish, Welwyn Borough and a small part of Essendon Parish. The extent of the study area is



annotated on Plate 1 below and has been defined by Hertingfordbury Parish Council as a potentially important ecological corridor within and adjacent to the parish and bounded by the A414 to the south.

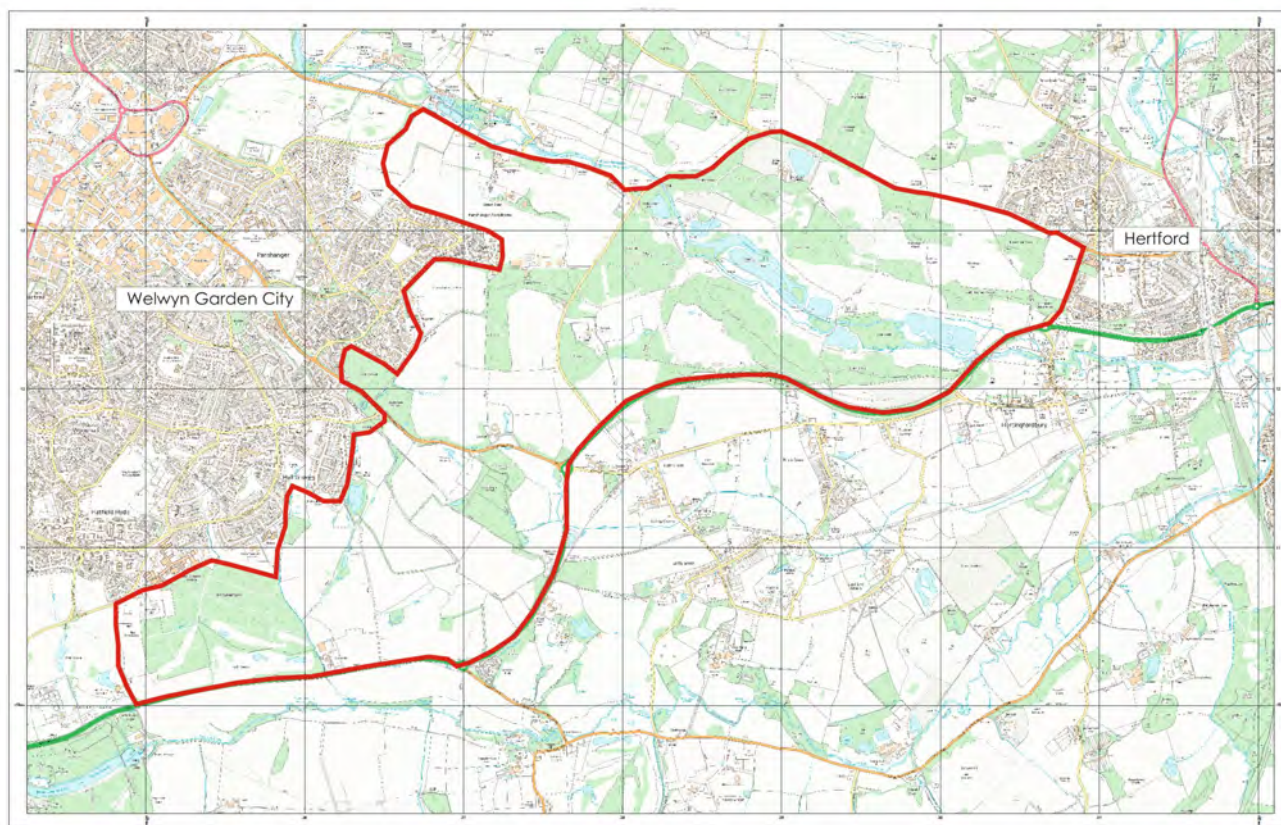


Plate 1: Map to show the extent and limits of the Study Area

- 1.1.1 For the purposes of ease of interpreting the biological data search results, the study area has been divided into five component sub-areas; The Commons (which is divided into The Commons Local Nature Reserve and the Commons [Commonswood] Local Wildlife Site), the former Cole Green Landfill Site, the Birchall Farm area, Panshanger Aerodrome and Panshanger Park, as shown in Plate 2 below. The extent and limits of the sub-areas must be considered as arbitrary, through consultation and as defined by the Hertfordshire Environmental Records Centre's local sites maps.

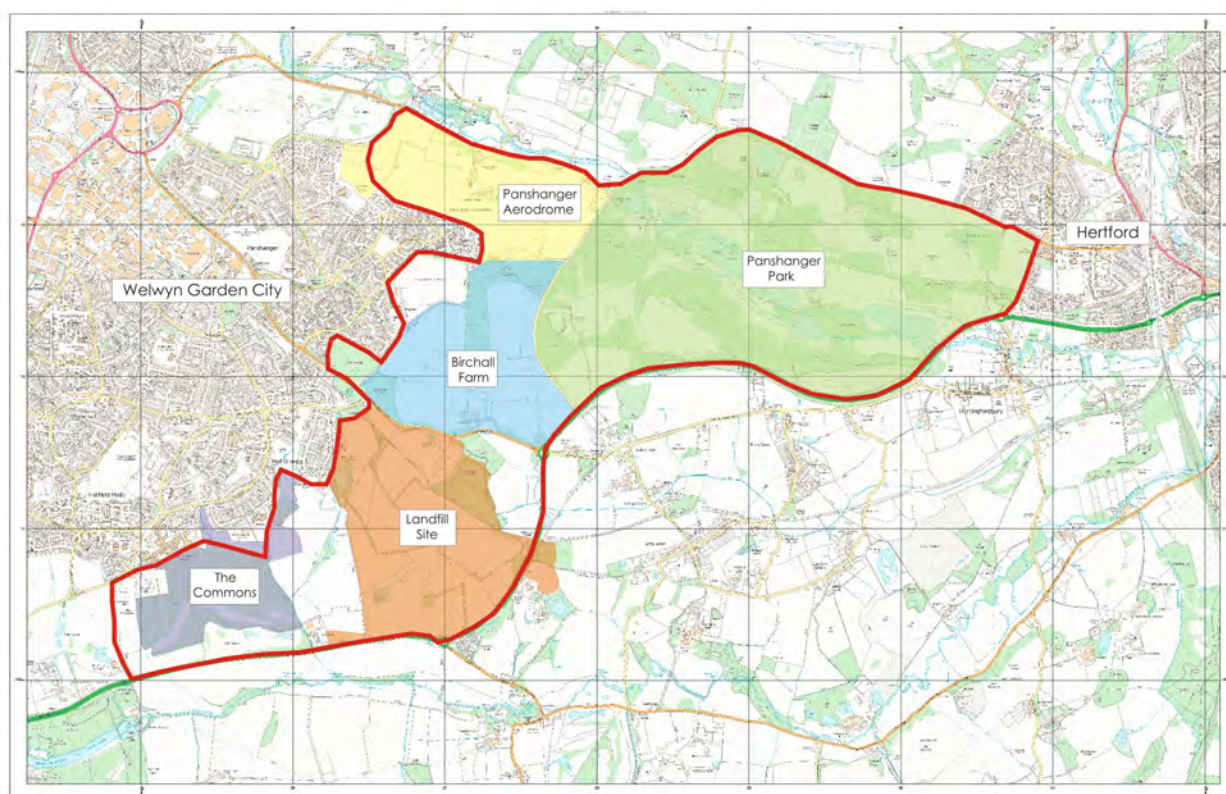


Plate 2: Five component areas within the Study Area

## 1.2 Purpose of Report

- 1.2.1 The purpose of this report is to present the results of an ecological evaluation of the study area, its importance as an ecological resource and potential value as a wildlife corridor.
- 1.2.2 This ecological evaluation is designed to assist the Parish Council in the formulation of their Parish Neighbourhood Plan. Neighbourhood planning is a right for communities which was introduced through the Localism Act 2011. A Neighbourhood Plan is a way of helping local communities to influence the planning of the area in which they live and work and can be used to;

- Develop a shared vision for the neighbourhood
- Choose where new homes, shops, offices and other development should be built
- Identify and protect important local green spaces
- Influence what new buildings should look like



## 2.0 Methodology & Technical Approach

### 2.1 Scope of Ecological Evaluation

- 2.1.1 This ecological evaluation focuses on the known and recorded extant protected and important habitats and species within the study area. It is a desk-top study focused on a baseline of data gathered from a large collection of biological records and referenced materials obtained from a wide variety of available information and data.
- 2.1.2 The ecological valuation of the important species and habitats within the study area, levels of geographical importance and significance have been determined following the general guidance of the CIEEM in the *Ecological Impact Assessment in the UK 2016 and the Handbook of Biodiversity Methods. Survey, Evaluation and Monitoring 2005* and have been tabulated and appended to this report.
- 2.1.3 For the purposes of this study, protected and species of importance are defined within the following legislation; The Conservation of Habitats & Species Regulations 2010, the Wildlife & Countryside Act (as amended) 1981, the Protection of Badgers Act 1992, Hedgerow Regulations 1997, IUCN (International Union for Conservation of Nature) BoCC Red and Amber Lists and the Natural Environment & Rural Communities (NERC) Act 2006.
- 2.1.4 Notably important habitats and species are considered under the Country's Biodiversity Action Plans (UKBAP) under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006.
- 2.1.5 Both Country BAP and Local BAP habitats and species are included in the scope of this ecological evaluation.
- 2.1.6 The IUCN Birds of Conservation Concern (BoCC) Red and Amber Lists relate specifically to bird conservation internationally and the criteria for species inclusion is described below;

Red List criteria

- Globally threatened
- Historical population decline in UK during 1800–1995
- Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969)
- Severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period.

Amber List criteria

- Species with unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern)
- Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years
- Moderate (25-49%) decline in UK breeding population over last 25 years, or the longer-term period
- Moderate (25-49%) contraction of UK breeding range over last 25 years, or the longer-term period
- Moderate (25-49%) decline in UK non-breeding population over last 25 years, or the longer-term period
- Rare breeder; 1–300 breeding pairs in UK
- Rare non-breeders; less than 900 individuals
- Localised; at least 50% of UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders
- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively).

## 2.2 Biological Data Search

2.2.1 The following organisations have been contacted for biological records of important habitats and species within the study area;

Consultee	Type of Records
Hertfordshire Environmental Records Centre (HERC)	Statutory Sites of Importance for Nature Conservation
	Non-statutory Sites of Importance for Nature Conservation
	Ancient Woodland Inventory Statutory Sites
	Protected and Notably Important Species
Hertfordshire Natural History Society	Species records
Hertfordshire Bird Club	Bird records
London, Essex & Hertfordshire Amphibian & Reptile Trust (LEHART)	Amphibian & Reptile records
Hertfordshire & Middlesex Bat Group	Bat records
Hertfordshire Badger Group	Badger ( <i>Meles meles</i> ) records and sett records

- 2.2.1 The records provided by the Hertfordshire Environmental Records Centre were provided in separate sets of documents, covering component geographical areas within the study area and its environs.
- 2.2.2 In addition, both DEFRA's Magic Map Application and Google Earth images have been analysed.
- 2.2.3 The research for this study also included a broad-based literary review.
- 2.2.4 In the case of The Commons Local Nature Reserve and Local Wildlife Site (LNR/LWS), the habitats and species were identified during initial site surveys undertaken by Mr Trevor James (former Head of Ecology with the Hertfordshire Biological Records Centre) in 1995 and later bird and mammal surveys by former Honorary Warden, Mr Peter Oakenfull and colleagues.
- 2.2.5 Hertfordshire Ecological Network Mapping provided by the Hertfordshire Environmental Records Centre has also been utilised when identifying conservation Priority Habitats within the study area. The Hertfordshire Ecological Network Mapping project was carried out between 2011 and 2013 producing a new Hertfordshire habitat inventory using the latest available data to generate potential habitat network maps.
- 2.2.6 *'Potential habitat network maps identify how our habitats are spatially related to each other and where the highest priorities are for expanding them and linking them together. This strategic approach ensures that efforts can be targeted to where they are of most potential benefit'.<sup>1</sup>*

<sup>1</sup> Hertfordshire Environmental Records Centre (2013) *Hertfordshire Ecological Network Mapping - Introduction*

## **2.3**      ***Limitations***

- 2.3.1      This ecological evaluation is based on the results of the desk study and biological records recovered from the various organisations and consultees which will include the results of numerous habitat and species surveys, although none were specifically commissioned and completed to inform this study.
- 2.3.2      The identification of Country BAP and Local BAP Priority Habitats within the study area is based solely on empirical evidence – from reports and background data and from the results of a Hertfordshire-wide Phase 1 Habitat Survey completed by The Herts and Middlesex Wildlife Trust for the Hertfordshire Wildlife Site's project in the early 1990s.
- 2.3.3      Although this process was carried out some time ago, when Country and Local BAP Priority Habitats were not in existence, many of the criteria for LWS site selection are directly translatable as today's BAP Priority Habitats.
- 2.3.4      There were no limitations to the retrieval of biological records for the data search area. All biological records that were requested have been received and no records were redacted. In some instances only two or four-figure grid references were provided, meaning that the exact location of some records was not known. Where four-figure grid references were provided, records have been included if the grid square in question was within the designated study area.



### 3.0 Data Search Results - Sites

#### 3.1 *Statutorily Designated Sites of Nature Conservation Importance*

- 3.1.1 There are no internationally important sites of importance for nature conservation within the study area. Nor are there any Sites of Special Scientific Interest (SSSIs) within the study area.

##### Local Nature Reserves (LNR)

- 3.1.2 There is a single statutorily protected Local Nature Reserve (LNR) within the study area. Local Nature Reserves are land owned, leased or managed by Local Authorities and designated under the National Parks and Access to the Countryside Act 1949.

Name	Grid Ref.	Area (ha)
The Commons LNR	TL258109	13.17

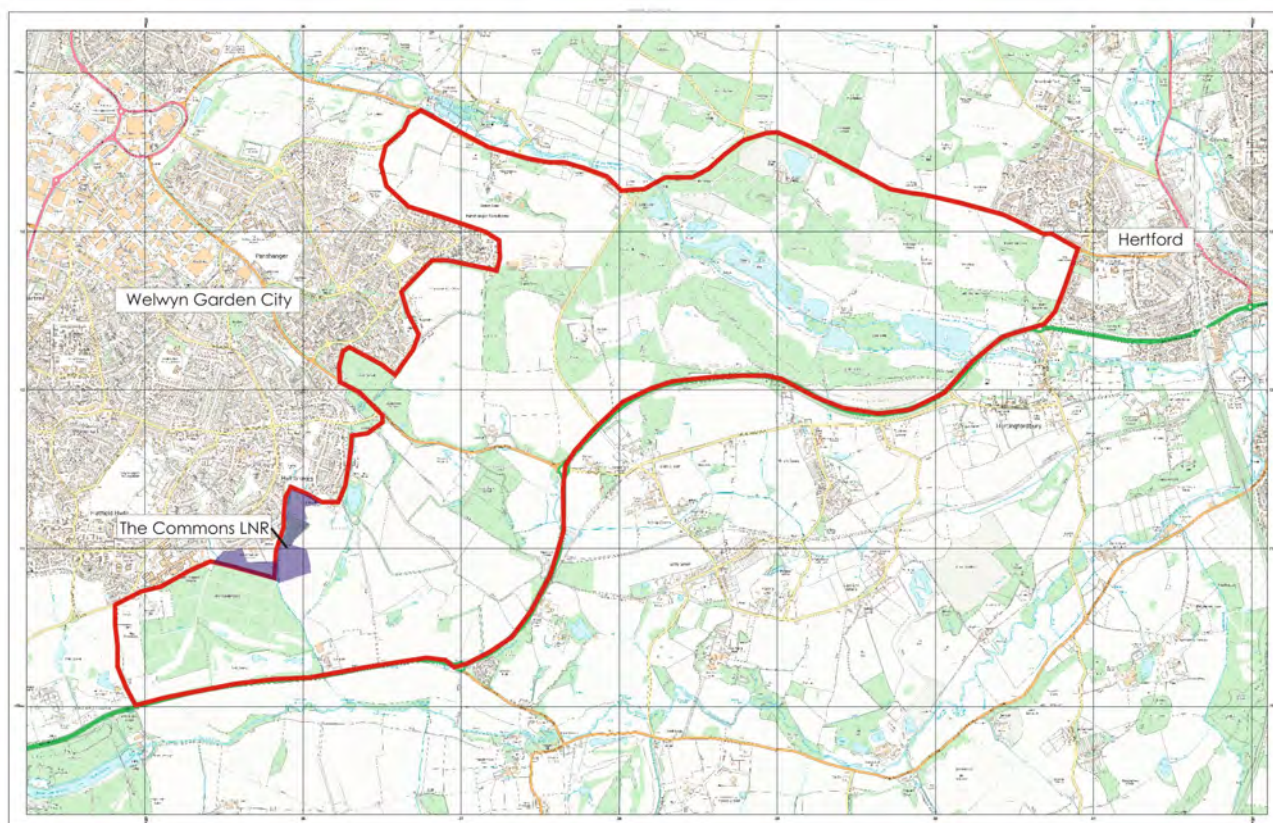


Plate 3: Map to show location of Local Nature Reserves within the Study Area

### **3.2 Non-Statutorily Designated Sites of Nature Conservation Importance**

#### Local Wildlife Sites

- 3.2.1 There are a total of seven Local Wildlife Sites (LWSs) within the study area. Local Wildlife Sites are non-statutory sites designated at a county level as being of conservation importance and often recognised and protected through policies in Local Authority Development Plans.
- 3.2.2 The aim of this designation is to protect such sites from land management changes which may lessen their nature conservation interest and to encourage sensitive management to maintain and enhance their importance. Although Local Wildlife Sites have no

statutory protection, they need to be considered in the planning process through planning policy guidance.

- 3.2.3 *'LWS can support locally and nationally threatened species and habitats, including those listed in Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. They play a critical role in forming the building blocks of ecological networks and Nature Improvement Areas. The new National Planning Policy Framework requires that any development on, or affecting, such sites is judged against criteria-based policies in Local Plans. It also states that planning policies should also promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Local action to safeguard Local Wildlife Sites is crucial to the success of the Biodiversity Action Plan, with many of the criteria for site selection being directly translatable as BAP habitats and species'.<sup>2</sup>*

<sup>2</sup> Terms of reference for the Hertfordshire Local Wildlife Sites Partnership

Name	File Code	Grid Ref.	Area (ha)	Description
Land SW of Birchall Lane/Cole Green Tip, NE area pond	58/004/01	TL269115	0	Ponds and environs important for protected species
Greater Captain's & Howellpark Wood	58/015	TL271115	7.96	Remnant of a much larger ancient semi-natural oak ( <i>Quercus robur</i> )/hornbeam ( <i>Carpinus betulus</i> ) woodland. Designated for its woodland indicators.
Rolls & Blackthorn Woods	58/020	TL263121	12.49	Areas of ancient semi-natural oak/hornbeam woodland. Designated for its woodland indicators.
Henry and Birchall Woods	58/021	TL276126	15.46	Ancient semi-natural woodland supporting predominantly hornbeam coppice with oak standards. Designated for its woodland indicators.
The Commons (Commons wood)	58/023	TL256106	26.77	Long-standing broad-leaved plantation supporting a mature mixed stand of oak, ash ( <i>Fraxinus excelsior</i> ), sycamore ( <i>Acer pseudoplatanus</i> ) and small-leaved elm ( <i>Ulmus minor</i> ). Designated as old secondary woodland with some semi-natural character and varied structure. Designated for woodland indicators.
Panshanger Park	58/025/01	TL291127	255.01	Large ornamental parkland along the deeply-incised valley of the River Mimram. The site supports many veteran trees (c.800) which predate the Park. Designated for its grassland indicators, fen and swamp, ancient woodland and woodland indicators, veteran trees and species.
The Commons LNR	58/037	TL258109	13.17	A mosaic of habitats including Blackfan Valley Fen, broad-leaved woodland, Windmill Hill set-aside field, Howlands Meadow and The Commons entrance way to the west. Designated for its grassland indicators, fen and swamp indicators.



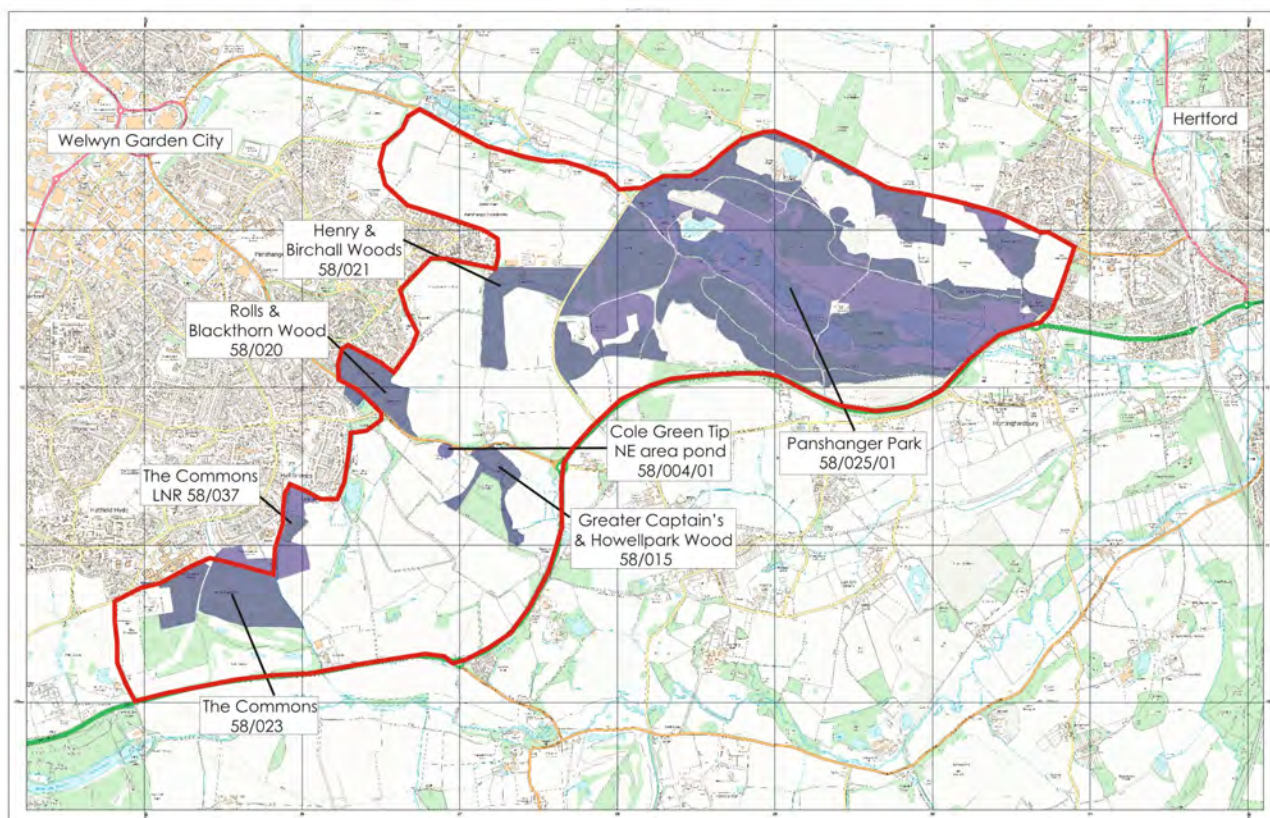


Plate 4: Map to show location of Local Wildlife Sites within the Study Area

### 3.3 Ancient Woodland Inventory Sites

- 3.3.1 There are a total of four Ancient Woodland Inventory Sites within the study area. These sites are defined as 'woodland that retains a native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally. This covers all stands of ancient woodland which do not obviously regenerate from planting.'

Name	Grid Ref.	Area (ha)
Holwell Park Wood	TL271114	1.92
Birchall Wood	TL274126	10.36
Birchall Wood	TL272122	4.96
Blakemore Wood, Panshanger Park	TL305128	5.26



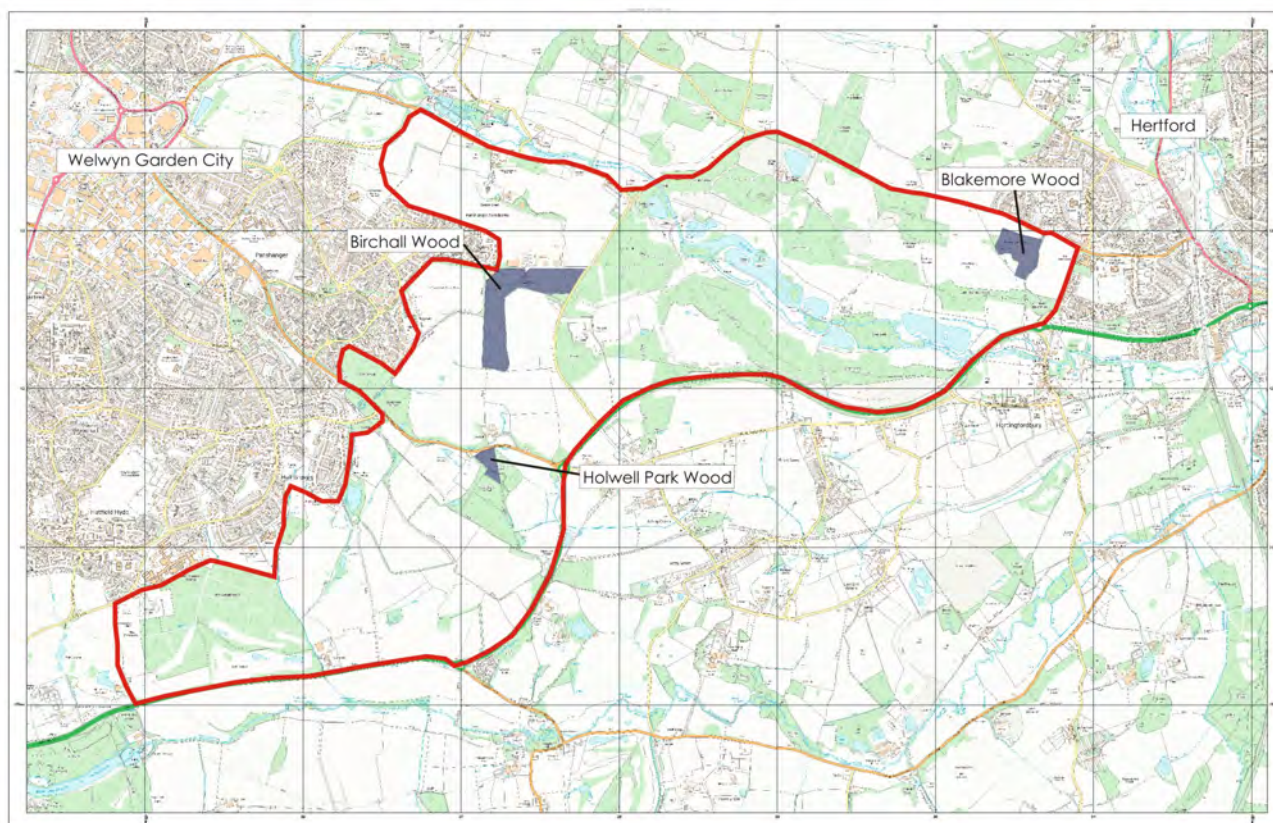


Plate 5: Map to show location of Ancient Woodland Inventory Sites within the Study Area

### 3.4 Hertfordshire Ecological Network Mapping

- 3.4.1 The map reproduced below shows the results of the Hertfordshire Ecological Network Mapping for the study area and shows areas identified as areas either of biodiversity value or potential biodiversity value. The interpretation of the mapping is based on an advisory document produced by the Hertfordshire Local Nature Partnership Task Group and is based around identifying appropriate actions and principles to apply to the different areas on the map.
- 3.4.2 The Hertfordshire Ecological Network Mapping was based on the identification of Priority Habitats reflecting both the generic importance of these resources identified within Section 41 of the NERC

Act 2006 as well as the landscape-scale approach promoted as part of the National Planning Policy Framework (NPPF).

- 3.4.3 For ease of use, maps are colour-coded and these colours of areas of value or potential value are described below;

Green Areas

- 3.4.4 *'These patches contain habitats listed within Section 41 of the NERC Act 2006 and should be avoided for development and protected by the development management system. Adjacent or surrounding development should provide for the enhancement of these habitats through on-going positive conservation management. Development causing significant harm to these patches should normally be refused.'*

Purple Areas

*'These patches contain habitats not currently qualifying under Section 41 of the NERC Act 2006 but with high potential to do so. Whilst not receiving the same level of statutory and policy-based protection as the green areas, they should nonetheless be avoided by development and protected by the development management system where reasonable to do so. This is because they are important components of ecological networks and it is much quicker, less risky and more cost-effective to restore these habitats than to create new ones elsewhere.'*

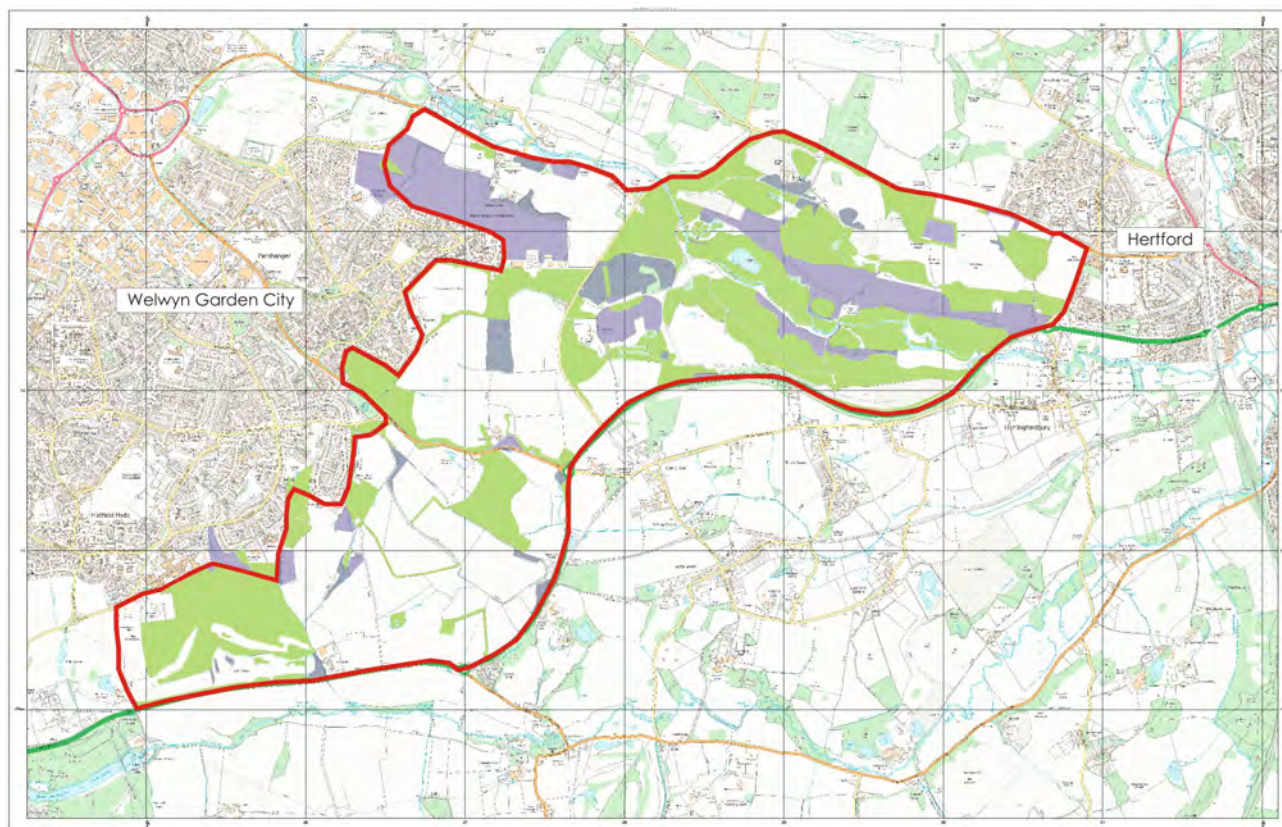


Plate 6: Map to show Hertfordshire Ecological Network Mapping within the Study Area

### 3.5 **Habitats of Principal Importance**

3.5.1 The study area covers a total area of approximately 890ha and is made up of a mosaic of diverse and interconnecting important habitats including eight Priority Country BAP Habitats and nine Local BAP Habitats:

- Lowland Mixed Deciduous Woodland (Country BAP Priority Habitat) and Woodland (Local BAP Priority Habitat)
- Wood Pasture and Parkland (Country BAP Priority Habitat and Local BAP Habitat)
- Ponds – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands)



- Rivers/Running Water – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands)
- Open Water – Local BAP Priority Habitat (included under Wetlands)
- Lowland Fen – Country BAP Priority Habitat and Local BAP (included under Wetlands)
- Arable Field Margins – Country BAP Priority Habitat and Local BAP (included under Farmland)
- Lowland Meadows – Country BAP Priority Habitat and Neutral Grassland Local BAP Priority Habitat
- Hedgerows – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Farmland)

3.5.2 The study area's Habitats of Principal Importance are described below;

#### Lowland Mixed Deciduous Woodland

Designation	Country BAP Priority Habitat Local BAP Priority Habitat (Woodland)
Status in Hertfordshire	Woodland covers approximately 15,000 ha in Hertfordshire (Hertfordshire Habitat Survey), which represents only about 9% of the land surface. The overall level of woodland cover has not changed significantly over the previous few centuries.
Status in Study Area	Woodlands deemed to meet the criteria for both Country BAP and Local BAP status are found throughout the study area and include The Commons LWS, Rolls & Blackthorn Wood LWS, Henry & Birchall Woods LWS, Great Captain's and Howellpark Woods LWS and the woods within Panshanger Park. Collectively, these woods cover an area of approximately 240ha (representing approximately 27% of the study area).

#### *Ancient Woodland*

3.5.3 The study area contains three woods in the Ancient Woodland Inventory for Hertfordshire, published by the then Nature Conservation Council – Howellpark Wood LWS within the landfill site area, Birchall Wood LWS within the Birchall Farm area and Blackmore Wood within Panshanger Park.

### Wood Pasture and Parkland

Designation	Country BAP Priority Habitat Local BAP Habitat
Status in Hertfordshire	Wood pasture is mainly found in the southern part of the county and is associated with large sites such as Ashridge, Broxbourne Woods, Northaw Great Wood, Knebworth Woods and Hatfield Home Park.
Status in Study Area	Wood pasture and parkland are mosaic habitats valued for their trees, especially veteran and ancient trees and the niche plants and animals they support. Specialised and varied habitats within wood pasture and parkland support a wide variety of species, many of which only occur in these habitats, particularly invertebrates, lichens and fungi which depend on dead or decaying wood. Panshanger Park is designated as a Local Wildlife Site partly for its wood pasture and parkland habitats. Panshanger Park is cited in the Hertfordshire Biodiversity Action Plan as of special value for its veteran trees and associated species. The Park contains a total of 489 veteran trees and it is thought that some trees at Panshanger are approaching 1,000 years old. The site is named in the document as a key parkland site in Hertfordshire. <sup>3</sup>

### Ponds

Designation	Country BAP Priority Habitat Local BAP Habitat: Wetlands
Status in Hertfordshire	In 1986 there were a reported 7,007 ponds in the county. However, the 1994-96 Hertfordshire Habitat Survey found only 2,606 ponds in the county with 80% classified as being in poor condition. Only 3% supported a reasonable flora or fauna. There has been and continues to be a major decline in the number and quality of ponds in the county.
Status in Study Area	There are over 30 ponds within the data search area, of which several are recorded as supporting species of importance - great crested newt and common toad ( <i>Bufo bufo</i> ).

<sup>3</sup> Herts & Middlesex Wildlife Trust. (1998) *A Biodiversity Action Plan for Hertfordshire*. Revised reprint – The Biodiversity Partnership. March 2006.



Rivers/Running Water

Designation	Country BAP Priority Habitat Local BAP Habitat: Wetlands
Status in Hertfordshire	A total of 1,258 kilometres of watercourse are marked on the Ordnance Survey map for the county although in 1994-96, only 730 kilometres were reported to have recently held water. In 1978 the Nature Conservancy Council reported that the County supported 240 kilometres of main river but only 20 kilometres were reported to be of good quality.
Status in Study Area	<p>The River Mimram flows through the study area, specifically through Panshanger Park. It is a chalk river that is predominantly spring-fed and is considered to be Hertfordshire's most natural and cleanest river, being least affected by abstraction and discharges. Chalk rivers represent water courses with the highest riverine biodiversity and represent our quintessentially English rivers, often carrying iconic species such as brown trout (<i>Salmo trutta</i>).</p> <p>Although the River Mimram is a good example of a chalk river, water quality and species diversity vary along its length however the stretch of the Mimram which runs through the study area is one of the finest. It is one of only a handful of stretches that demonstrates riffle/pool characteristics so important for protected and important species such as the white-clawed crayfish (<i>Austropotamobius pallipes</i>) and brown trout. Ponds and pools associated with the Mimram and channel-islands are also found within Panshanger Park.</p> <p>Other running water features present within the study area include Hatfield Hyde Brook which enters The Commons LNR/LWS at the Howlands entrance and the Fen Brook which emerges at the end of Blackfan Fen and forms the western boundary of the fen. It then flows into Hatfield Hyde Brook at the north-eastern corner of Commons LWS and joins the River Lea approximately 1km to the south.</p> <p>The two brooks within The Commons LWS are known to support water vole (<i>Arvicola amphibius</i>).</p>

Open Water

Designation	Local BAP Habitat: Wetlands
Status in Hertfordshire	In Hertfordshire it is reported that there is an estimated 623 hectares of open water (greater than 0.3ha in size). These are man-made and are made up of former gravel pits, mill ponds, sewage treatment lagoons, reservoirs and lakes.
Status in Study Area	<p>Many of the wetlands in Hertfordshire, especially open waters have been created by human activity and this is the case with the former gravel pits within Panshanger Park. For the purpose of the Local BAP, open waters include all freshwater systems comprising standing water lacking any dominant flow.</p> <p>Open waters make a significant contribution to national biodiversity and reflect their various origins, functions and management. They can be remarkably rich in plant and animal life.</p>

Lowland Fen

Designation	Country BAP Priority Habitat Local BAP Habitat: Wetlands
Status in Hertfordshire	Only around 114ha of fen or marsh habitats remain in Hertfordshire. Calcareous fens are listed in the European Habitats Directive as very important features and only 13 are considered examples in the county including Blackfan Fen within the study area.
Status in Study Area	Calcareous fen is found within The Commons LNR/LWS in the form of Blackfan Fen. This area of fen is a diverse mix of habitats including an area of open wet fenland and a smaller, drier capped fen with scrub, woodland and hedgerow habitats. The two distinct areas are divided by a ditch and a broad band of scrub comprising blackthorn ( <i>Prunus spinosa</i> ), hawthorn ( <i>Crataegus monogyna</i> ), hazel ( <i>Corylus avellana</i> ), field maple ( <i>Acer campestre</i> ), oak, ash and elder ( <i>Sambucus nigra</i> ), with large blocks of bramble ( <i>Rubus fruticosus</i> ). This area of scrub, particularly the blackthorn and hawthorn are important for feeding and roosting redwing ( <i>Turdus iliacus</i> ) and fieldfare ( <i>Turdus pilaris</i> ) during the winter months. During the summer the same habitat has proved important for warbler species such as reed warbler ( <i>Acrocephalus scirpaceus</i> ). Areas of fen are also present within Panshanger Park LWS.

Arable Field Margins

Designation	Country BAP Priority Habitat Local BAP Habitat: Farmland
Status in Hertfordshire	Not known
Status in Study Area	The arable areas of The Commons LNR/LWS are managed for crop production including wheat, barley and oats. Under Environmental Stewardship, features such as beetle banks, hedgerows, areas of grassland and headlands have been created and the crops managed with sensitivity to wildlife – for example, fertilizers have not been used on the arable land within The Commons LNR/LWS since 1995. The creation of arable field margins/headlands at The Commons LNR/LWS has formed, on average, an eight metre wide permanent wildlife corridor around the boundary of the arable area.

Lowland Meadows

Designation	Country BAP Priority Habitat Local BAP Habitat: Grassland
Status in Hertfordshire	The Hertfordshire Habitat Survey estimates that there are only 950ha of quality, unimproved neutral grassland remaining in the county.
Status in Study Area	The unimproved, species-rich neutral grassland of Howlands Meadow and Windmill Hill at The Commons LNR/LWS is considered both a Country BAP and a Local BAP Priority Habitat. Unimproved grasslands of all soil types are now rare habitats in Hertfordshire and nationally. This sheep-grazed grassland of Windmill Hill has provided both breeding and feeding habitat for a range of important farmland birds including skylark ( <i>Alauda arvensis</i> ) and grey partridge ( <i>Perdix perdix</i> ), as well as a variety of flora which supports important species of invertebrate. Panshanger pasture within Panshanger Park LWS is also considered to be a key neutral grassland site within the study area.

Hedgerows

Designation	Country BAP Priority Habitat Local BAP Habitat: Farmland
Status in Hertfordshire	Whilst the current status of hedgerows is not known in Hertfordshire, nationally, between 1984 and 1990, a 21% loss of hedgerow has been reported with a continued decline and loss of 5% per annum predicted as a trend.
Status in Study Area	Hedgerows are found throughout the study area and within The Commons LNR/LWS alone 3km of species-rich hedgerow is found. The boundary hedgerows around the LNR are found on maps dating back to the 1840s, giving them added antiquity value.

## 4.0 Data Search Results - Species and Species Groups of Importance

### 4.1 Plants

#### Bluebell (*Hyacinthoides non-scripta*)

Status and level of protection	Specially protected under Schedule 8 of the Wildlife & Countryside Act 1981 (as amended). Schedule 8 lists plant species that are protected under Section 13 of the Act. Section 13 protects the bluebell from selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) and advertising for buying or selling.
National Status	Although still common in Britain, bluebells are threatened locally by habitat destruction, collection from the wild, and from the escape of the Spanish bluebell from gardens and subsequent cross-breeding and loss of true native populations.
Status in Hertfordshire	This species seems to have been recorded from more tetrads than in the 1960s, but it is unclear as to whether this is to do with better recording where it is scarce. The bluebell is specifically characteristic of old woodlands on mildly acidic to moderately calcareous, free-draining loam soils throughout Hertfordshire <sup>4</sup> .
Status in Study Area	Recorded extensively throughout the Panshanger Park LWS, in Poplar's Grove, Lodge Lake Woodland, Garden Wood, Evergreen Wood, Blakemore Wood, Monument Wood, Lady Hughes Wood, Cheshers' Plantation, Fifty Acres Corner, Chisel Shelf and High Grove & Pit Wood. Elsewhere within the study area, this species is recorded in Rolls & Blackthorn Wood LWS (within the landfill site area) and in Holwell Park Wood LWS. Finally, this species has been recorded in Henry & Birchall Woods in the Birchall Farm area.

#### Cornflower (*Centaurea cyanus*)

Status and level of protection	Country BAP Local BAP
National Status	In the UK, this species is now classified as endangered.
Status in Hertfordshire	Designated a Local BAP species and regarded as a conservation priority because of its rarity in the county.
Status in Study Area	The cornflower is recorded within Panshanger Park LWS.

<sup>4</sup> James, T. J. (2009). *Flora of Hertfordshire*. Hertfordshire Natural History Society

Tower Mustard (*Arabis glabra*)

Status and level of protection	Country BAP
National Status	This species is classified as endangered in the UK.
Status in Hertfordshire	Now thought extinct in Hertfordshire in the wild. <sup>5</sup>
Status in Study Area	Historically recorded within Panshanger Park LWS and at Cole Green in the 1970s.

Common eyebright (*Euphrasia nemorosa*)

Status and level of protection	Country BAP
National Status	Found across the UK.
Status in Hertfordshire	Although still reasonably frequent in the main areas of old chalk grassland in Hertfordshire, it has become increasingly rare on road verges or in other types of grassland in the county. <sup>5</sup>
Status in Study Area	Recorded in the northern part of Panshanger Park LWS, although an exact location for the record is not known.

Basil Thyme (*Clinopodium acinos*)

Status and level of protection	Country BAP
National Status	Classified as 'Vulnerable'.
Status in Hertfordshire	This plant is especially characteristic of short, nutrient-poor, sometimes slightly disturbed turf over chalk. It is only found in small quantities on a few sites in the County and is described as 'decreasing markedly'. <sup>5</sup>
Status in Study Area	Recorded on the Commons LNR/LWS, on Howlands Meadow, on Windmill Hill and within the southern fen.

<sup>5</sup> James, T. J. (2009). *Flora of Hertfordshire*. Hertfordshire Natural History Society



## 4.2 Invertebrates

### Crustaceans

#### White-clawed Crayfish

Status and level of protection	Specially protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Country BAP Local BAP
National Status	Classified as 'Globally threatened' by the IUCN. The only freshwater crayfish native to the UK, this species is widespread but scarce and declining in clean calcareous streams, rivers and lakes in England and Wales. Since the 1970s many local populations have been lost.
Status in Hertfordshire	In Hertfordshire, records suggest that the native crayfish was common throughout most waters but is now generally considered to be locally extinct. As a county where complexes of chalk rivers (a priority habitat in the European Habitats Directive) are extensive but often degraded, Hertfordshire may play a significant role in the future fate of this species.
Status in Study Area	The last recorded sightings of this species within the study area are on the River Mimram in Panshanger Park LWS, in 1993.

### Molluscs

#### Roman Snail (*Helix pomatia*)

Status and level of protection	Specially protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and it is an offence to intentionally kill, injure or take individuals of this species.
National Status	Confined to the south-east of England.
Status in Hertfordshire	The Roman snail is known to inhabit open woodland, rough and tussocky grassland, hedge banks, areas of scattered scrub and chalk quarries. They require loose, friable soil for burying into for hibernation and also for depositing eggs. Hertfordshire's chalky soils make it an important county for this species.
Status in Study Area	Recorded as recently as 2016 within areas around the former gravel pits and the River Mimram within Panshanger Park LWS.

### Butterflies

- 4.2.1 There are no protected species of invertebrates recorded within the study area. There are however four species of important butterfly recorded within the study area. All are the subject of Country BAPs and one is also a Local BAP species.

White Admiral (*Limenitis camilla*)

Status and level of protection	Country BAP
National Status	Deciduous woodland butterfly of southern and south-eastern England. Its food plant is honeysuckle ( <i>Lonicera periclymenum</i> ) and specifically that growing in shady woodland edges. This species has shown worrying declines in recent decades and hence its inclusion on the list of Country BAP species.
Status in Hertfordshire	Within Hertfordshire, the white admiral is found in woods with wide rides, honeysuckle and good amounts of shade for courtship, mating and egg-laying. They are also occasionally seen well away from woods, possibly dispersing to new sites. Numbers have shown a slight drop in the last five years within the county. <sup>6</sup>
Status in Study Area	Within the study area, this species has been recently recorded within The Commons LWS (specifically within the woodland) and within the Landfill Site (specifically within Howellpark Wood).

Small Heath (*Coenonympha pamphilus*)

Status and level of protection	Country BAP
National Status	A butterfly of a variety of grassland habitats which has shown a sharp decline in numbers over the long term, hence its Country BAP status.
Status in Hertfordshire	In Hertfordshire, the small heath has shown a dramatic decline in numbers in some areas of the county since the 1980s. In parts of eastern and western Hertfordshire there appear to be large areas where it has disappeared. Contraction can be attributed to a loss of dry grassland with little disturbance - the habitat that supports this species. <sup>6</sup>
Status in Study Area	This species is recorded extensively throughout the study area, at The Commons LNR/LWS, the Commons LWS, in the Birchall Farm area, on the Landfill Site, on Panshanger Aerodrome and throughout Panshanger Park LWS.

White-letter Hairstreak (*Satyrus w-album*)

Status and level of protection	Partially protected under the Wildlife & Countryside Act 1981 (as amended) from sale. Country BAP
National Status	A Country BAP species, whose sole foodplant is elm ( <i>Ulmus</i> sp.) and consequently this species suffered as a result of Dutch elm disease in the 1970s and early 1980s, especially in southern sites.
Status in Hertfordshire	In Hertfordshire 1980s surveys showed a scattering of records across the county. However by 1995, there was an increase in the number of tetrads where the species was recorded. However, due to a resurgence of Dutch elm disease in the late 1990s, saw a contraction of range. Records for 2001 to 2005 showed gradual gains in its distribution and abundance and records from the past five years have produced a similar pattern. <sup>6</sup>
Status in Study Area	Within the study area this butterfly is recorded within The Commons LNR/LWS, specifically within Howlands Meadow where a number of elms are present. These trees are under a management regime specifically tailored for this species of butterfly. The white-letter hairstreak is also recorded on Panshanger Aerodrome and within a number of the woodlands of Panshanger Park.

<sup>6</sup> Wood A. (2016) *Butterflies of Hertfordshire & Middlesex*. Hertfordshire Natural History Society

Grizzled Skipper (*Pyrgus malvae*)

Status and level of protection	Country BAP Local BAP
National Status	It is primarily confined to the south-east and east of England.
Status in Hertfordshire	Hertfordshire is one of this species' strongholds. At the beginning of this century, it was considered locally common in Hertfordshire however by the mid-1980s small numbers were only found in discrete areas including the Mimram valley. In the last decade a further, rapid decline has occurred. <sup>7</sup>
Status in Study Area	Within the study area, the grizzled skipper has, in the past, been recorded within The Commons LNR/LWS (specifically on Windmill Hill) and within Panshanger Park LWS (specifically on the edges of Garden Wood and Evergreen Wood).

<sup>7</sup> Wood A. (2016) *Butterflies of Hertfordshire & Middlesex*. Hertfordshire Natural History Society

## Moths

- 4.2.2 A total of 44 important species of moth (all Country BAP designated) are recorded within the study area, of which 11 are recorded within The Commons LNR/LWS. These species are indicative of the diverse range of habitats present within the study area, including woodlands, unimproved grassland, fen, arable field margins and hedgerows.
- 4.2.3 For the majority of moth records only a two figure grid reference has been provided, so exact locations of records cannot be provided. The exception to this are the records from The Commons LNR/LWS which were the result of a moth survey by Colin Plant Associates (UK) – Consultant Entomologists, in 2009.

### August Thorn (*Ennomos quercinaria*)

Status and level of protection	Country BAP
National Status	Found locally throughout most of Britain <sup>8</sup>
Status in Hertfordshire	Locally common <sup>8</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park

### Beaded Chestnut (*Agrochola lychnidis*)

Status and level of protection	Country BAP
National Status	It occurs most commonly in the southern half of England and Wales, becoming scarcer further north <sup>8</sup>
Status in Hertfordshire	Locally common <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

### Blood-vein (*Timandra comae*)

Status and level of protection	Country BAP
National Status	Fairly common in the southern counties of England <sup>8</sup>
Status in Hertfordshire	Widespread throughout Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park .

<sup>8</sup> UK Moths website <http://www.ukmoths.org.uk/>

<sup>9</sup> Herts & Middlesex Moth Group website <http://www.hertsmothgroup.org.uk/>

Brindled Beauty (*Lycia hirtaria*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Occurring locally throughout a large part of Britain, this species is commonest in the south, especially the Home Counties <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Broom Moth (*Ceramica pisi*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Quite common in most of Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Brown-spot Pinion (*Agrochola litura*)

Status and level of protection	Country BAP
National Status	Reasonably common over a large part of Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Buff Ermine (*Spilosoma luteum*)

Status and level of protection	Country BAP
National Status	A common resident in most of Britain <sup>8</sup>
Status in Hertfordshire	Widespread throughout Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR/LWS, in Panshanger Park and at Panshanger Aerodrome.

Cinnabar (*Tyria jacobaeae*)

Status and level of protection	Country BAP
National Status	Fairly common moth in much of Britain <sup>8</sup>
Status in Hertfordshire	Widespread throughout Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR/LWS, at Panshanger Aerodrome and in Panshanger Park.

Crescent (*Calaena leucostigma*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Locally widespread throughout Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Dark Spinach (*Pefurga comitata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Fairly common over much of Britain <sup>8</sup>
Status in Hertfordshire	Vulnerable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area.

Dark-barred Twin-spot Carpet (*Xanthorhoe ferrugata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Fairly common throughout the UK <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Dot Moth (*Melanchra persicariae*)

Status and level of protection	Country BAP
National Status	Very common and widespread in England and Wales <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR/LWS and in Panshanger Park.

Dusky Brocade (*Apamea remissa*)

Status and level of protection	Country BAP
National Status	A common species throughout much of Britain <sup>8</sup>
Status in Hertfordshire	No perceived threats in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Dusky-lemon Sallow (*Cirrhia gilvago*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	This moth has a scattered distribution throughout much of England and Wales <sup>8</sup>
Status in Hertfordshire	Endangered in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.



Dusky Thorn (*Ennomos fuscantaria*)

Status and level of protection	Country BAP
National Status	Distributed over England and Wales <sup>8</sup>
Status in Hertfordshire	Uncommon in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR/LWS and in Panshanger Park.

Ear Moth (*Amphipoean oculea*)

Status and level of protection	Country BAP
National Status	Occurs over much of Britain <sup>8</sup>
Status in Hertfordshire	No perceived threats in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park LWS.

Feathered Gothic (*Tholera decimalis*)

Status and level of protection	Country BAP
National Status	Widely distributed, though local, over much of Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park LWS.

Figure of Eight (*Diloba caeruleocephala*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Distributed reasonably commonly over England and Wales <sup>8</sup>
Status in Hertfordshire	Vulnerable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park LWS.

Flounced Chestnut (*Agrochola helvola*)

Status and level of protection	Country BAP
National Status	Relatively common in the southern half of England and Wales <sup>8</sup>
Status in Hertfordshire	Endangered in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park LWS.

Garden Dart (*Euxoa nigricans*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	The distribution of this moth covers most of Britain <sup>8</sup>
Status in Hertfordshire	Endangered in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR/LWS and in Panshanger Park.

Ghost Moth (*Hepialus humuli*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	A common species over much of Britain <sup>8</sup>
Status in Hertfordshire	Widespread throughout Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR, in Panshanger Park and at Panshanger Aerodrome.

Green-brindled Crescent (*Allophyes oxyacanthae*)

Status and level of protection	Country BAP
National Status	Fairly common throughout much of Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Grey Dagger (*Acronicta psi*)

Status and level of protection	Country BAP
National Status	Common throughout England and Wales <sup>8</sup>
Status in Hertfordshire	No perceived threats in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR and in Panshanger Park.

Knot Grass (*Acronicta rumicis*)

Status and level of protection	Country BAP
National Status	Widely distributed and quite common in most of Britain <sup>8</sup>
Status in Hertfordshire	No perceived threat in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR and in Panshanger Park.

Lackey (*Malacosoma neustria*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Occurs mainly in the southern half of Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Large Nutmeg (*Apamea anceps*)

Status and level of protection	Country BAP
National Status	Distributed throughout much of England, though most common in the south-east <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at Panshanger Aerodrome.

Latticed Heath (*Chiasmia clathrata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Widely distributed through most of Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Mottled Rustic (*Caradrina morpheus*)

Status and level of protection	Country BAP
National Status	Common to abundant in much of England and Wales <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Mouse Moth (*Amphipyra tragopoginis*)

Status and level of protection	Country BAP
National Status	Commonly distributed over most of the British Isles <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Mullein Wave (*Scopula marginepunctata*)

Status and level of protection	Country BAP
National Status	Occurs over a large part of the British Isles <sup>8</sup>
Status in Hertfordshire	Scarce in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area.

Oak Hook-tip (*Watsonalla binaria*)

Status and level of protection	Country BAP
National Status	Reasonably common in the southern half of Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR and in Panshanger Park.

Powdered Quaker (*Orthosia gracilis*)

Status and level of protection	Country BAP
National Status	Occurs widely in England and Wales <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Pretty-chalk Carpet (*Melantia procellata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Fairly common in the southern half of England and Wales <sup>8</sup>
Status in Hertfordshire	Vulnerable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Rosy Rustic (*Hydraecia micacea*)

Status and level of protection	Country BAP
National Status	Common and widespread throughout the British Isles <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Rustic (*Hoplodrina blanda*)

Status and level of protection	Country BAP
National Status	Very common throughout Britain <sup>8</sup>
Status in Hertfordshire	No perceived threats in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Sallow (*Cirrhia icteritia*)

Status and level of protection	Country BAP
National Status	A common species in most of Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

September Thorn (*Ennomos erosaria*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Reasonably common in England and Wales <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Shaded Broad-bar (*Scotopteryx chenopodiata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Widespread and fairly common throughout Britain <sup>8</sup>
Status in Hertfordshire	Threatened in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR and in Panshanger Park.

Shoulder-striped Wainscot (*Mythimna comma*)

Status and level of protection	Country BAP
National Status	Fairly common throughout most of Britain <sup>8</sup>
Status in Hertfordshire	Fairly widespread throughout Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at Panshanger Aerodrome and in Panshanger Park.

Small Emerald (*Hemistola chrysoprasaria*)

Status and level of protection	Country BAP
National Status	Occurring in the southern parts of Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at The Commons LNR and in Panshanger Park.



Small Pheonix (*Ecliptopera silaceata*)

Status and level of protection	Country BAP
National Status	Quite common in England and Wales <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

Small Square-spot (*Diarsia rubi*)

Status and level of protection	Country BAP
National Status	A common species throughout Britain <sup>8</sup>
Status in Hertfordshire	Stable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded at Panshanger Aerodrome and in Panshanger Park.

Spinach (*Eulithis mellinata*)

Status and level of protection	Country BAP Hertfordshire Red List
National Status	Fairly common in England and Wales <sup>8</sup>
Status in Hertfordshire	Vulnerable in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

White Ermine (*Spilosoma lubricipeda*)

Status and level of protection	Country BAP
National Status	Widely distributed and fairly common over much of Britain <sup>8</sup>
Status in Hertfordshire	No perceived threats in Hertfordshire <sup>9</sup>
Status in Study Area	Recorded within the study area. Recorded in Panshanger Park.

**4.3 Amphibians & Fish**

- 4.3.1 Two protected and/or notably important species of amphibian are present within the study area – the great crested newt and the common toad. In addition, two important fish species are also recorded from the River Mimram within Panshanger Park LWS.

Great Crested Newt

Status and level of protection	Fully protected under both European legislation (the Habitats Directive) and under domestic legislation - the Wildlife & Countryside Act 1981 (as amended) Country BAP Local BAP
National Status	In the UK this is a lowland species, with the largest numbers in the south-east of England. The British population is estimated to be amongst the largest in Europe, where it is threatened in many counties.
Status in Hertfordshire	In Hertfordshire, the great crested newt shows a widespread distribution but studies in the 1980s and 1990s revealed a severe decline in the population of this species in Hertfordshire. <sup>10</sup>
Status in Study Area	Recorded within The Commons LNR/LWS, The Commons LWS within the ponds in woodland and a pond in the grounds of Commonswood School and in the Hall Grove area, both adjacent to the study area boundary. They are also recorded in Cole Green Tip NE Area Pond LWS.

Common Toad

Status and level of protection	Protected from sale under the Wildlife & Countryside Act 1981 (as amended) Country BAP
National Status	Widespread amphibian found throughout Britain, though is absent from Ireland.
Status in Hertfordshire	Widely distributed throughout Hertfordshire.
Status in Study Area	Recorded from within the woodland ponds of The Commons LWS and the South Fen of The Commons LNR/LWS and also from the Lake at Holwell Hyde Farm within the Landfill Site area, a pond within the Birch Green area and within Panshanger Park LWS.

4.3.2 In addition, two species of important bony fish are recorded within the study area.

European Eel (*Anguilla anguilla*)

Status and level of protection	Country BAP
National Status	IUCN – Critically Endangered <sup>11</sup>
Status in Hertfordshire	Unknown
Status in Study Area	Recorded on the River Mimram within Panshanger Park LWS.

<sup>10</sup> Herts & Middlesex Wildlife Trust. (1998) *A Biodiversity Action Plan for Hertfordshire*. Revised re-print – The Biodiversity Partnership. March 2006.

<sup>11</sup> <http://www.iucnredlist.org/>

Brown Trout

Status and level of protection	Country BAP
National Status	One of the most widespread fish in the British Isles. <sup>12</sup>
Status in Hertfordshire	Unknown.
Status in Study Area	Recorded on the River Mimram within Panshanger Park LWS.

**4.4 Reptiles**

4.4.1 Three species of partially protected and notably important reptile are recorded within the study area.

Slow Worm (*Anguis fragilis*)

Status and level of protection	Protected from killing and injuring under the Wildlife & Countryside Act 1981 (as amended). Country BAP
National Status	Widespread throughout most of the UK.
Status in Hertfordshire	In Hertfordshire, slow worms are widespread but are considered to be scarce and declining. <sup>13</sup>
Status in Study Area	Slow worms are known to persist in good numbers within The Commons LWS, on the woodland edges and also on The Commons LNR/LWS specifically on Windmill Hill and its interface with the South Fen. Elsewhere within the study area, slow worms are found within Garden Wood on Panshanger Park LWS and on the line of the old railway (now the Cole Green Way).

Common Lizard (*Zootoca vivipara*)

Status and level of protection	Protected from killing and injuring under the Wildlife & Countryside Act 1981 (as amended). Country BAP
National Status	Widespread throughout most of the UK.
Status in Hertfordshire	In Hertfordshire, common lizards are locally found throughout the county but are considered to be scarce and declining. <sup>13</sup>
Status in Study Area	Within the study area common lizards are only recorded on Windmill Hill within The Commons LNR/LWS and on the line of the old railway (now the Cole Green Way).

<sup>12</sup> <http://www.wildtrout.org/>

<sup>13</sup> Mammals, Amphibians and reptiles of Hertfordshire. Clark M. 2001

Grass Snake (*Natrix natrix*)

Status and level of protection	Protected from killing and injuring under the Wildlife & Countryside Act 1981 (as amended). Country BAP
National Status	Widespread in England and Wales.
Status in Hertfordshire	In Hertfordshire, distribution has a distinct bias towards the south and particularly favour sandy soils, with ponds and former gravel pits which have been filled with water. Considered local and declining. <sup>13</sup>
Status in Study Area	Grass snakes have been found in high numbers within The Commons LWS particularly along the woodland edges and its interface with the Mill Green Golf Course to the south. In addition, this species is recorded within The Commons LNR/LWS within the South Fen. Other records from within the study area include the landfill site, the allotment site off Dalewood, Welwyn Garden City in the Birchall Farm part of the study area and numerous records from the riparian habitat of the River Mimram in Panshanger Park LWS.

**4.5 Mammals**

- 4.5.1 A total of 17 protected or notably important mammal species are recorded within the study area.

**Bats**

- 4.5.2 A total of nine species of bat are recorded within the study area.

Daubenton's bat (*Myotis daubentonii*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
National Status	Fairly widespread throughout the UK with an estimated population of 150,000 and appears to be increasing in parts of its range possibly due to the increasing number of artificial water bodies, including former gravel pits which provide a favoured feeding and foraging resource.
Status in Hertfordshire	In Hertfordshire this species is regarded widespread and relatively frequent near still water
Status in Study Area	Recorded within the woodland of The Commons LWS, along Hatfield Hyde Brook on The Commons LNR, on Holwell Hyde fishing pit on the landfill site as well as within the riparian habitats of the River Mimram of Panshanger Park LWS. In addition, this species is recorded within Panshanger Aerodrome.

Natterer's bat (*Myotis nattereri*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Local BAP
National Status	Found throughout the UK but it is regarded as a rarer bat with an estimated population of 100,000. The UK is the stronghold for this species and is probably of international importance.
Status in Hertfordshire	In Hertfordshire, Natterer's favour barns that are more than 100 years old, with thick beams containing hollow mortice joints. 50% of listed barns used by bats in Hertfordshire had evidence of Natterer's bats and 25% had breeding roosts of this species <sup>14</sup> . The recent growth in the number of barn conversions in Hertfordshire poses a threat to this species as does the removal of limbs from veteran trees and the loss of underground hibernation sites such as icehouses, kilns, tunnels etc. The Natterer's bat is designated a Local BAP species as special action is deemed necessary to maintain this species at a favourable conservation status within the county.
Status in Study Area	Recorded within the woodland of The Commons LWS, on Howlands Meadow on The Commons LNR as well as within the riparian habitats of the River Mimram of Panshanger Park LWS.

Noctule (*Nyctalus noctula*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Country BAP
National Status	Considered a rarer bat in the UK with an estimated population of 50,000 individuals.
Status in Hertfordshire	Primarily tree-dwelling bats, noctules mainly roost in cavities and rot holes. Veteran and mature trees are particularly important for this species. In Hertfordshire the noctule is regarded as widespread but relatively scarce.
Status in Study Area	Recorded in the woodland of The Commons LWS, on The Commons LNR, on Panshanger Aerodrome and within the riparian habitats of the River Mimram and Selebroom Wood in Panshanger Park LWS.

Leisler's bat (*Nyctalus leisleri*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
National Status	Considered one of the rarest bats in the UK with a population estimated at only 10,000.
Status in Hertfordshire	In Hertfordshire, this species is regarded as widespread but scarce.
Status in Study Area	Recorded in Bocket Hill Wood and Lady Hughes's Wood within Panshanger Park LWS and also on Panshanger Aerodrome.

<sup>14</sup> Briggs, P (1995)



Serotine (*Eptesicus serotinus*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
National Status	Considered a rare bat in the UK and is confined to the south and south-east of England.
Status in Hertfordshire	In Hertfordshire this species is regarded as widespread but scarce.
Status in Study Area	Within the study area serotines are recorded in the woodland of The Commons LWS and in the north and east of Panshanger Park LWS.

Common pipistrelle (*Pipistrellus pipistrellus*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
National Status	Along with the soprano pipistrelle, this is regarded as the commonest and most widespread of British bats with estimated UK populations of 2,000,000.
Status in Hertfordshire	In Hertfordshire, regarded as widespread, occasionally common
Status in Study Area	Recorded widely, throughout the study area.

Soprano pipistrelle (*Pipistrellus pygmaeus*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Country BAP
National Status	Along with the common pipistrelle, this is regarded as the commonest and most widespread of British bats with estimated UK populations of 2,000,000.
Status in Hertfordshire	In Hertfordshire, regarded as widespread, occasionally common
Status in Study Area	Recorded widely, throughout the study area.

Brown long-eared bat (*Plecotus auritus*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Country BAP
National Status	Regarded as a common bat in the UK with an estimated population of 200,000.
Status in Hertfordshire	In Hertfordshire, this species is regarded as widespread, relatively frequent but not often encountered outside of roosts
Status in Study Area	Recorded in the woodland of The Commons LWS, on The Commons LNR and also throughout the woods of Panshanger Park LWS.

Barbastelle (*Barbastella barbastellus*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under Annex II of the Conservation of Habitats and Species Regulations 2010. Country BAP
National Status	The barbastelle is very rare, found in southern and central England and Wales, with an estimated UK population of only 5,000 individuals. Very few breeding sites are known in the UK and it is important that where these exist the surrounding environments are maintained.
Status in Hertfordshire	In Hertfordshire the barbastelle is found in only a handful of locations. One of the most important is Panshanger Park LWS, where recent survey work by the Herts & Middlesex Bat Group and the Herts & Middlesex Wildlife Trust has revealed the presence of this species in a number of the woods within the estate, close to the open water of the former gravel pits.
Status in Study Area	Barbastelles forage over a wide area and are known to cover large distances to reach foraging areas, often travelling up to 20km from their roost site <sup>15</sup> . Thus the individuals roosting in Panshanger Park may feed and forage over suitable habitat within the study area which may include the Landfill Site and The Commons LNR /LWS and the Commons LWS.

**4.6 Other Mammals**Water Vole (*Arvicola amphibious*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended). Country BAP Local BAP
National Status	The water vole was once an abundant inhabitant of the river corridor habitats throughout the UK. Investigations by Jefferies et al (1989) concluded that the water vole had suffered long-term decline in the UK, probably since at least 1900.
Status in Hertfordshire	In 1996, the Hertfordshire Biological Records Centre conducted a water vole census in Hertfordshire and the results estimated that the percentage of positive sites has declined by 72.9% since 1989 (Molloy, 1996).
Status in Study Area	Recorded on the Mimram to the immediate north of the study area, on Panshanger Aerodrome and on the brooks and South Fen of The Commons LNR/LWS. Water vole has also recently been recorded in a ditch east of the landfill site within the study area. Breeding has been reported on the River Mimram in Panshanger Park, with surveys of the entire river suggesting that the population here plays a key role in the metapopulation structure. <sup>16</sup>

<sup>15</sup> Matt R.K Zeale, Ian Davidson-Watts, Gareth Jones (2012) *Home range use & habitat selection by barbastelle bats: implications for conservation.* Journal of Mammalogy

<sup>16</sup> Dr. Edmonds-Brown R. (2016) Panshanger Park – Report on Visitor Impacts on Aquatic Habitats

Otter

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under the Conservation of Habitats and Species Regulations 2010. Country BAP Local BAP
National Status	A significant decline in numbers occurred during the 1960s and 1970s as a result of the use of persistent organochlorine pesticides and habitat loss. The otter is highly sensitive to the health of the whole ecosystem that supports it and its presence is an important indicator species in riparian habitats.
Status in Hertfordshire	In Hertfordshire otters became extinct in the late 1970s however six animals were re-introduced to two sites in 1991/1992 by the Otter Trust and breeding was confirmed at Rye Meads Nature Reserve in Hoddesdon in 1995 and the otter appears to have become established in the Lea Valley.
Status in Study Area	Recorded as recently as 2016 on the River Mimram in Panshanger Park LWS.

Hedgehog (*Erinaceus europaeus*)

Status and level of protection	Country BAP
National Status	The once common hedgehog is now under threat from development and habitat loss caused by the reduction of hedgerows and increase in intensification of our agricultural landscapes. In just the last 10 years, hedgehog numbers have fallen by 30%, and there are now thought to be fewer than one million left in the UK.
Status in Hertfordshire	In Hertfordshire the hedgehog is widespread in rural and rural fringe areas but never appears common.
Status in Study Area	Recorded in the South Fen and on Windmill Hill at The Commons LNR/LWS, in Rolls & Blackthorn Wood LWS within the Landfill Site area and also within Panshanger Park LWS.

Brown Hare (*Lepus europaeus*)

Status and level of protection	Country BAP
National Status	Widespread throughout the UK but most common in the south and south-east of England.
Status in Hertfordshire	In Hertfordshire, this species is mostly found in the arable areas of the north of the county and appears to be making a recovering in Environmental Stewardship farmlands. This species is scarce in the southern areas of the County
Status in Study Area	Recorded breeding on Windmill Hill in The Commons LNR/LWS, on the Landfill Site and within Panshanger Park LWS.

Badger

Status and level of protection	Protected under The Protection of Badgers Act 1992.
National Status	A widespread and locally common mammal throughout the UK, although the highest numbers are found in the south-west of the country.
Status in Hertfordshire	In Hertfordshire, the badger is widespread, common and well recorded.
Status in Study Area	The study area supports numerous badger setts - particularly within Panshanger Park LWS but also within The Commons LNR/LWs and the Commons LWS. In addition, the landfill site, Birchall Farm area and Panshanger Aerodrome are known to support this species. Numerous records are also found from sites adjacent to the study area boundary at Holwell Lane and Cole Green.

Harvest Mouse

Status and level of protection	Country BAP
National Status	Generally considered rare and in decline in the 20th century, until in the 1970s a national survey showed it to be widely distributed and locally common and the paucity of earlier records was attributed to its secretive nature and rarity in the pellets of predatory birds.
Status in Hertfordshire	Found locally throughout the county in suitable habitats which include long grass, reedbeds, fen, rushes, bramble patches and some arable crops.
Status in Study Area	Within the study area this species is known to breed successfully within Windmill Hill and the South Fen of the Commons LNR/LWS. Research work on harvest mice carried out in the early 2000s confirmed the presence of a sustainable population on Windmill Hill and the South Fen <sup>17</sup> . Subsequent regular surveys of the suitable habitats has confirmed the continued presence of this sustainable population on The Commons LNR/LWS. Harvest mice are also recorded from the riparian habitats of the River Mimram within Panshanger Park.

Polecat (*Mustela putorius*)

Status and level of protection	Country BAP
National Status	In the UK the species was formerly widespread but its range was restricted following heavy persecution in the late 19th and early 20th centuries.
Status in Hertfordshire	In Hertfordshire, the polecat is at the easterly edge of its range and is not widespread in the county, with the greatest number of records from central Hertfordshire.
Status in Study Area	Within the study area, polecats are recorded on the Landfill Site, in the Birchall Farm area and at on Cole Green Tip NE Area Pond LWS, on The Commons LNR/LWS and along the River Mimram and its riparian habitats within Panshanger Park LWS.

<sup>17</sup> Seaman, K. (2002) *An Investigation into the Colonisation of a Newly Created Habitat by Harvest Mice at The Commons Local Nature Reserve, Welwyn Garden City, Hertfordshire* Research Project Report for University of Hertfordshire

Dormice (*Muscardinus avellanarius*)

Status and level of protection	Fully protected under the Wildlife & Countryside Act 1981 (as amended), and under the Conservation of Habitats and Species Regulations 2010. Country BAP Local BAP
National Status	In the UK this species is widespread in the Midlands, Wales and southern England but is declining in both numbers and distribution.
Status in Hertfordshire	In Hertfordshire, the dormouse is found to be in serious decline with very few confirmed recent records.
Status in Study Area	Within the study area, dormice are recorded from The Commons LNR/LWS, in Rolls & Blackthorn Woods and along the Aerodrome track in a shed in 2009.

**4.7 Birds**

- 4.7.1 A total of 84 protected and/or notably important bird species have been recorded within the study area, with 38 of these species having bred or are currently breeding (\* indicates breeding records).

Barn Owl\*

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB wintering estimate 12,500 - 25,000 <sup>18</sup> GB breeding population estimate 4,000 pairs <sup>18</sup> Nationally, this bird has suffered declines through the 20th century and is thought to have been adversely affected by organochlorine pesticides such as DDT in the 1950s and '60s.
Status in Hertfordshire	In Hertfordshire, the estimated breeding population is 50-200 pairs <sup>19</sup> .
Status in Study Area	This species is recorded across the study area with records from The Commons LNR/LWS, the Landfill Site, Panshanger Aerodrome and Panshanger Park. Importantly, the barn owl bred on The Commons LNR/LWS in 2017 when five chicks were ringed, with the barn owls' territory extending to over the Landfill Site to the north-east. In addition, this species has bred on the Birchall Farm area.

Barnacle Goose (*Branta leucopsis*)

Status and level of protection	BoCC Amber List
National Status	GB wintering estimate 94,000 <sup>18</sup> GB breeding population estimate 900 pairs <sup>18</sup>
Status in Hertfordshire	A scarce introduced resident in Hertfordshire, occasionally breeding <sup>19</sup> .
Status in Study Area	This species is recorded in Panshanger Park.

<sup>18</sup> British Trust for Ornithology (BTO)

<sup>19</sup> Smith, K W, Dee, C W, Fearnside, J D & Ilett, M (2015) *Birds of Hertfordshire* Hertfordshire Natural History Society, Hertfordshire



Bittern (*Botaurus stellaris*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 Country BAP Local BAP BoCC Amber List
National Status	GB wintering estimate 600 <sup>18</sup> GB breeding population estimate 80 pairs <sup>18</sup>
Status in Hertfordshire	A regular visitor to Hertfordshire with an estimated wintering population of 6-12 birds <sup>19</sup> .
Status in Study Area	A single record from 2009 from Broadwater Reedbed, in Panshanger Park.

Black-headed Gull (*Chroicocephalus ridibundus*)

Status and level of protection	BoCC Amber List
National Status	GB wintering estimate 2.2 million birds <sup>18</sup> GB breeding population estimate 130,000 pairs <sup>18</sup>
Status in Hertfordshire	An abundant winter visitor and recently re-established breeder in Hertfordshire, with an estimated breeding population of 100-200 pairs and an estimated >20,000 wintering birds <sup>19</sup> .
Status in Study Area	Recorded at The Commons LNR/LWS, on the Landfill Site and in Panshanger Park.

Brambling (*Fringilla montifringilla*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB wintering estimate 285,000 birds <sup>18</sup>
Status in Hertfordshire	A scarce wintering species in Hertfordshire, widely distributed in small numbers in winter, often mixed in amongst flocks of other finches although occasionally seen in large flocks. Numbers in Hertfordshire vary massively from year to year, apparently depending on food availability, meaning sites where they are found are increasingly important <sup>19</sup> .
Status in Study Area	Recorded on Windmill Hill at The Commons LNR/LWS, on the Landfill Site and in Panshanger Park.

Bullfinch (*Pyrrhula pyrrhula*)\*

Status and level of protection	Country BAP BoCC Amber List
National Status	GB breeding population estimate 190,000 pairs <sup>18</sup>
Status in Hertfordshire	The Breeding Bird Atlas shows a gradual reduction in the numbers for the bullfinch with gaps in their distribution now appearing throughout the country. The estimated Hertfordshire breeding population is only 1,800 territories. <sup>19</sup>
Status in Study Area	Recorded on Howlands Meadow, Blackfan Fen and Commons LWS, on the Landfill Site and in Panshanger Park.

Cetti's Warbler (*Cettia cetti*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB breeding population estimate 2,000 males <sup>18</sup>
Status in Hertfordshire	A scarce resident in Hertfordshire, following recent colonisation. The estimated Hertfordshire breeding population is only 15 - 25 males. <sup>19</sup>
Status in Study Area	Within the study area this species is only recorded within Panshanger Park, however the number of records suggest this may be an important site for this species within Hertfordshire. Most recently recorded here in 2015.

Common Gull (*Larus larus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 48,000 pairs <sup>18</sup>
Status in Hertfordshire	A common passage and wintering species in Hertfordshire. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on the restored gravel pits of Panshanger Park.

Common Sandpiper (*Actitis hypoleucos*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 15,000 pairs <sup>18</sup>
Status in Hertfordshire	A passage migrant, rarely overwinters. Estimated wintering numbers 73 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on the restored gravel pits of Panshanger Park.

Common Tern (*Sterna hirundo*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 10,000 pairs <sup>18</sup>
Status in Hertfordshire	A spring and autumn migrant and regular breeder. Estimated Hertfordshire breeding population 40 - 80 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on the restored gravel pits of Panshanger Park.

Corn Bunting (*Emberiza calandra*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 11,000 territories. <sup>18</sup>
Status in Hertfordshire	A restricted resident species. Estimated Hertfordshire breeding population 138 males. <sup>19</sup>
Status in Study Area	Within the study area, this species is only recorded at The Commons LNR/LWS, specifically on Windmill Hill.

Corncrake (*Crex crex*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 Country BAP BoCC Red List
National Status	GB breeding population estimate 1,200 males. <sup>18</sup>
Status in Hertfordshire	A rare summer visitor and passage migrant. Since 1980 there have only been three records in Hertfordshire. <sup>19</sup>
Status in Study Area	Within the study area, an immature was caught and ringed at Cole Green on 24 <sup>th</sup> September 1985.

Crossbill (*Loxia curvirostra*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB breeding population estimate 39,000 pairs. <sup>18</sup>
Status in Hertfordshire	A scarce breeding and occasional wintering species. Estimated Hertfordshire breeding population is <5 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has only been recorded within Panshanger Park.

Cuckoo (*Cuculus canorus*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 16,000 pairs. <sup>18</sup>
Status in Hertfordshire	A declining summer visitor. Estimated Hertfordshire breeding population is 500 to 1,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is a regular summer visitor to Panshanger Park, The Commons LNR/LWS (occasionally bred) and the Landfill Site.

Curlew (*Numenius arquata*)

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 66,000 pairs. <sup>18</sup>
Status in Hertfordshire	A common passage and scarce wintering bird. Records shows some evidence of a long-term decline. <sup>19</sup>
Status in Study Area	Within the study area, this species has only been recorded on the Landfill Site.

Dunnock (*Prunella modularis*)\*

Status and level of protection	Country BAP BoCC Amber List
National Status	GB breeding population estimate 2,300,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread and common resident species. Estimated Hertfordshire breeding population is 15,000 – 27,000 territories. <sup>19</sup>
Status in Study Area	This species is recorded throughout the study area, with many records from Panshanger Park.

Fieldfare

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Red List
National Status	GB wintering population estimate 680,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread and numerous winter visitor. <sup>19</sup>
Status in Study Area	This species has been recorded throughout the study area at The Commons, on the Landfill Site, on Panshanger Aerodrome and within Panshanger Park.

Firecrest (*Regulus ignicapilla*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB breeding population estimate 550 territories. <sup>18</sup>
Status in Hertfordshire	A scarce resident species. Estimated Hertfordshire breeding population <5 territories. <sup>19</sup>
Status in Study Area	This species has only been recorded within the Fen at The Commons and in one of the woods within Panshanger Park.

Gadwall (*Anas strepera*)

Status and level of protection	BoCC Amber List.
National Status	GB breeding population estimate 1,200 pairs. Wintering 25,000 birds <sup>18</sup>
Status in Hertfordshire	An increasing breeding species, common winter visitor and passage migrant. Estimated Hertfordshire breeding population 50-100 pairs, wintering 1,000 – 1,500 birds <sup>19</sup>
Status in Study Area	Within the study area, Panshanger Park is one of the only three sites in Hertfordshire with >100 birds (261 in 2015). The species is also recorded on the northern edge of Panshanger Aerodrome.

Goldeneye (*Bucephala clangula*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Amber List.
National Status	GB wintering population estimate 20,000 birds. <sup>18</sup>
Status in Hertfordshire	A regular wintering bird in low numbers. Estimated Hertfordshire wintering population 40 - 60 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the gravel pits of Panshanger Park.

Goshawk (*Accipiter gentilis*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981.
National Status	GB breeding population estimate 280 – 420 pairs. <sup>18</sup>
Status in Hertfordshire	A rare visitor. Only eight records within Hertfordshire since 1984. <sup>19</sup>
Status in Study Area	Within the study area, this species was recorded in Panshanger Park in 1981.

Grasshopper Warbler (*Locustella naevia*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 13,000 territories. <sup>18</sup>
Status in Hertfordshire	A scarce summer migrant. Estimated Hertfordshire breeding population 10 – 30 territories <sup>19</sup> .
Status in Study Area	Within the study area, this species has been recorded in Commonswood and on The Commons LNR and in Panshanger Park. Record from 1997 of breeding on the filter beds of the landfill site.

Great Black-backed Gull (*Larus marinus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 17,000 pairs, wintering estimate: 76,000 birds. <sup>18</sup>
Status in Hertfordshire	A common winter visitor. Estimated Hertfordshire wintering population: 100 – 500 birds <sup>19</sup> .
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site and in Panshanger Park.

Green Sandpiper (*Tringa ochropus*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Amber List
National Status	GB breeding population estimate 1 - 3 pairs, wintering estimate: 910 birds. <sup>18</sup>
Status in Hertfordshire	A localised passage and wintering species in small numbers. Suitable wetland sites in Hertfordshire are very important for this species. Estimated Hertfordshire wintering population: 20 – 40 birds <sup>19</sup> .
Status in Study Area	Within the study area, this species has been recorded on The Commons, the Landfill Site and on the River Mimram where it flows through Panshanger Park.

Greenshank (*Tringa nebularia*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Amber List
National Status	GB breeding population estimate 1,100 pairs, wintering estimate: 610 birds. <sup>18</sup>
Status in Hertfordshire	A common autumn passage migrant and widespread scarce winter visitor <sup>19</sup> .
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site only.

Greylag Goose (*Anser anser*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 46,000 pairs, wintering estimate: 220,000 birds. <sup>18</sup>
Status in Hertfordshire	An increasing resident species derived from introduced birds. Estimated Hertfordshire breeding population 20 pairs, wintering estimate: 500 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the gravel pits of Panshanger Park.

Grey Partridge\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 43,000 territories. <sup>18</sup>
Status in Hertfordshire	A declining resident species. Estimated Hertfordshire breeding population 75 - 200 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has bred on Windmill Hill at The Commons and also on the Landfill Site where they bred in 2010. Also recorded within Panshanger Park.

Grey Plover (*Pluvialis squatarola*)

Status and level of protection	BoCC Amber List
National Status	GB wintering population estimate 43,000 birds. <sup>18</sup>
Status in Hertfordshire	An occasional but regular passage and winter bird. <sup>19</sup>
Status in Study Area	Within the study area, this species has only been recorded on the Landfill Site.

Grey Wagtail (*Motacilla cinerea*)\*

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 35,000 birds. <sup>18</sup>
Status in Hertfordshire	A common resident species. Estimated Hertfordshire breeding population 100 – 200 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded at The Commons, on the Landfill Site and on the River Mimram within Panshanger Park.

Hawfinch (*Coccothraustes coccothraustes*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 500 – 1,000 pairs. <sup>18</sup>
Status in Hertfordshire	A scarce resident species. Estimated Hertfordshire breeding population <5 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in Panshanger Park as recently as 2015.



Herring Gull (*Larus argentatus*)

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 130,000 pairs, wintering estimate 730,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread wintering species with small numbers now breeding. Estimated Hertfordshire breeding population 0 - 2 pairs, wintering estimate 500 – 1,000 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site and in Panshanger Park.

Hobby (*Falco subbuteo*)\*

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981.
National Status	GB breeding population estimate 2,800 pairs. <sup>18</sup>
Status in Hertfordshire	A well distributed migrant breeding species. Estimated Hertfordshire breeding population 130 – 180 pairs, based on Hertfordshire survey. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons (breeding confirmed on edge of Commonswood for the last 10 years), on the Landfill Site and in Panshanger Park (where there are over 30 records from within Garden Wood alone and where breeding was confirmed in 2015).

House martin (*Delichon urbicum*)\*

Status and level of protection	BoCC Amber List.
National Status	GB breeding population estimate 510,000 pairs. <sup>18</sup>
Status in Hertfordshire	A widespread summer visitor. Estimated Hertfordshire breeding population 1,500 – 3,000 pairs, based on Hertfordshire survey. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons, the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

House sparrow (*Passer domesticus*)\*

Status and level of protection	Country BAP BoCC Red List.
National Status	GB breeding population estimate 5,100,000 pairs. <sup>18</sup>
Status in Hertfordshire	A declining resident species. Estimated Hertfordshire breeding population 10,000 – 20,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons, the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

Kestrel (*Falco tinnunculus*)\*

Status and level of protection	BoCC Amber List.
National Status	GB breeding population estimate 45,000 pairs. <sup>18</sup>
Status in Hertfordshire	A widespread resident species. Estimated Hertfordshire breeding population 300 – 400 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons, the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

Kingfisher (*Alcedo atthis*)\*

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Amber List.
National Status	GB breeding population estimate 3,600 – 6,100 pairs. <sup>18</sup>
Status in Hertfordshire	A widespread resident species. Estimated Hertfordshire breeding population 100 – 200 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site, on Hatfield Hyde Brook and on Windmill Hill and as breeding within Panshanger Park.

Lapwing (*Vanellus vanellus*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 130,000 pairs, wintering 620,000 birds. <sup>18</sup>
Status in Hertfordshire	A common but declining breeding, passage and wintering species. Estimated Hertfordshire breeding population 100 – 300 pairs, wintering 5,000 – 10,000 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on Windmill Hill at The Commons (breeding records), on the Landfill Site (breeding records), on Panshanger Aerodrome and in Panshanger Park.

Lesser Black-backed Gull (*Larus fuscus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 110,000 pairs, wintering 120,000 birds. <sup>18</sup>
Status in Hertfordshire	A passage migrant and wintering bird becoming established as a breeding species in small numbers. Estimated Hertfordshire breeding population 1 – 5 pairs, wintering <1,000 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons, on the Landfill Site and in Panshanger Park.

Lesser Redpoll (*Acanthis cabaret*)

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 190,000 pairs. <sup>18</sup>
Status in Hertfordshire	A scarce breeding and more common wintering species. Estimated Hertfordshire breeding population <10 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

Lesser-spotted Woodpecker (*Dendrocopos minor*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 1,000 – 2,000 pairs. <sup>18</sup>
Status in Hertfordshire	A scarce and decreasing resident species. Estimated Hertfordshire breeding population 20 - 50 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded at The Commons where it breeds in Commonswood, in Howlands Meadow and in Panshanger Park.

Linnet (*Linaria cannabina*)\*

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 410,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread and numerous breeding and wintering species. Estimated Hertfordshire breeding population 2,000 – 5,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in good numbers at The Commons on Windmill Hill as recently as 2015, at Cole Green within the Landfill Site area also in 2015, on Panshanger Aerodrome and in Panshanger Park. Bred at The Commons.

Little-ringed Plover (*Charadrius dubius*)\*

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981.
National Status	GB breeding population estimate 1,200 pairs. <sup>18</sup>
Status in Hertfordshire	A passage migrant and rare breeding species. Estimated Hertfordshire breeding population 5 - 10 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site and on the gravel pits of Panshanger Park, where breeding was confirmed in 2015.

Mallard (*Anas platyrhynchos*)\*

Status and level of protection	BoCC Amber List.
National Status	GB breeding population estimate 59,000 – 142,000 pairs, wintering 680,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread and numerous species with numbers supplemented by released birds. Estimated Hertfordshire breeding population 2,000 – 3,000 pairs, wintering 4,000 – 6,000 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site and on the gravel pits and River Mimram in Panshanger Park where there was one of the highest summer counts in 2015.

Marsh Harrier (*Circus aeruginosus*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Amber List.
National Status	GB breeding population estimate 320 – 380 pairs. <sup>18</sup>
Status in Hertfordshire	A passage migrant. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in Panshanger Park.

Marsh Tit (*Poecile palustris*)\*

Status and level of protection	Country BAP BoCC Red List.
National Status	GB breeding population estimate 41,000 territories. <sup>18</sup>
Status in Hertfordshire	A declining resident species. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in Howlands Meadow on The Commons, on Panshanger Aerodrome and in Panshanger Park.

Meadow Pipit (*Anthus pratensis*)\*

Status and level of protection	BoCC Amber List
National Status	GB population estimate 1,900,000 breeding pairs. <sup>18</sup>
Status in Hertfordshire	A widespread wintering and scarce breeding species. Estimated Hertfordshire population: 200-300 breeding pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on Windmill Hill at The Commons, on the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

Merlin (*Falco columbarius*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Red List
National Status	GB breeding population estimate 1,100 pairs. <sup>18</sup>
Status in Hertfordshire	A scarce passage migrant and winter visitor. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded at The Commons and at Cole Green tip on the Landfill Site as recently as winter 2015.

Mistle Thrush (*Turdus viscivorus*)\*

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 1 60,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread and common resident. Estimated Hertfordshire breeding population 2,400 – 4,300 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site, on Panshanger Aerodrome and in Panshanger Park. In addition, there is a breeding record from The Commons LNR.

Mute Swan (*Cygnus olor*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 6,000 pairs, wintering 74,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread resident species. Estimated Hertfordshire breeding population 80 - 100 pairs, wintering 500 – 700 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site, on Panshanger Aerodrome and throughout the gravel pits of Panshanger Park where it breeds.

Nightingale ( *Luscinia megarhynchos* )

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 6,700 males. <sup>18</sup>
Status in Hertfordshire	A scarce summer visitor. Estimated Hertfordshire breeding population <10 males. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded at The Commons LNR/LWS as recently as 2010 in Blackfan Fen.

Osprey (*Pandion haliaetus*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. BoCC Amber List
National Status	GB breeding population estimate 200 – 250 pairs. <sup>18</sup>
Status in Hertfordshire	An uncommon passage migrant. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on Panshanger Aerodrome and on the gravel pits within Panshanger Park, with over 16 records, some as recently as 2015.

Oystercatcher (*Haematopus ostralegus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 110,000 pairs, wintering 320,000 birds. <sup>18</sup>
Status in Hertfordshire	A scarce passage migrant and recent breeding colonist. Estimated Hertfordshire breeding population 2 – 3 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in Panshanger Park.

Peregrine (*Falco peregrinus*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981.
National Status	GB breeding population estimate 1,400 pairs <sup>18</sup>
Status in Hertfordshire	A scarce resident species but not yet fully established as a breeder. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on Panshanger Aerodrome.

Pintail (*Anas acuta*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Amber List
National Status	GB breeding population estimate 9 - 33 pairs, wintering 29,000 birds. <sup>18</sup>
Status in Hertfordshire	A regular but scarce winter visitor and passage migrant. Estimated Hertfordshire wintering population normally <10 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the gravel pits of Panshanger Park.

Pochard (*Aythya farina*)

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 330 - 610 pairs, wintering 38,000 birds. <sup>18</sup>
Status in Hertfordshire	A common winter visitor, passage migrant and scarce breeding species. Estimated Hertfordshire breeding population 25 – 50 pairs, wintering 600 – 1,000 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the gravel pits of Panshanger Park.

Red Kite (*Milvus milvus*)\*

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981
National Status	GB breeding population estimate 1,600 pairs. <sup>18</sup>
Status in Hertfordshire	An increasing resident species having become established from birds reintroduced in other nearby counties. Estimated Hertfordshire breeding population 25 – 50 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on The Commons LNR/LWS, on the Landfill Site, in Panshanger Aerodrome and in Panshanger Park (with 21 records). This species is recorded breeding in Panshanger Park in 2017.

Redpoll (*Acanthis flammea*)

Status and level of protection	BoCC Amber List
National Status	Wintering estimate 300 birds. <sup>18</sup>
Status in Hertfordshire	A rare winter visitor. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded in Panshanger Park.



Redshank (*Tringa tetanus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 24,000 pairs, wintering 120,000 birds. <sup>18</sup>
Status in Hertfordshire	A scarce breeding species and regular passage migrant. Estimated Hertfordshire breeding population 5 – 12 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species has been recorded on the Landfill Site and in Panshanger Park.

Redwing

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Red List
National Status	GB wintering population estimate 650,000 birds, breeding 4 - 16 pairs. <sup>18</sup>
Status in Hertfordshire	A common autumn passage and wintering bird. No estimated Hertfordshire wintering population. <sup>19</sup>
Status in Study Area	Recorded across the study area, at The Commons LNR/LWS, on the Landfill Site, on Panshanger Aerodrome and in Panshanger Park.

Reed Bunting (*Emberiza schoeniclus*)\*

Status and level of protection	Country BAP BoCC Amber List
National Status	GB breeding population estimate 230,000 territories. <sup>18</sup>
Status in Hertfordshire	A common resident species. Estimated Hertfordshire breeding population 1,100 – 1,500 territories. <sup>19</sup>
Status in Study Area	Recorded across the study area, at The Commons, on the Landfill Site and in breeding in Panshanger Park. Breeding confirmed at The Commons (in Blackfan Fen) as recently as 2007.

Ringed Plover (*Charadrius hiaticula*)

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 5,300 pairs, wintering 34,000 birds. <sup>18</sup>
Status in Hertfordshire	A frequent passage migrant and scarce breeding and wintering species. Estimated Hertfordshire breeding population 10 – 15 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the gravel pits of Panshanger Park.

Ruff (*Philomachus pugnax*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Red List
National Status	GB breeding population estimate 0 – 11 females, wintering 800 birds. <sup>18</sup>
Status in Hertfordshire	A regular migrant, usually in autumn and scarce winter visitor. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site.

Short-eared Owl (*Asio flammeus*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 610 – 2,140 pairs. <sup>18</sup>
Status in Hertfordshire	A regular winter visitor. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site.

Shoveler (*Anas clypeata*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 310 – 1,010 pairs, wintering 18,000 birds. <sup>18</sup>
Status in Hertfordshire	A common winter visitor and passage migrant, a scarce breeding species. Estimated Hertfordshire breeding population 2 – 5 pairs, wintering 600 – 800 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the gravel pits of Panshanger Park.

Skylark\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 1,400,000 territories. <sup>18</sup>
Status in Hertfordshire	A common resident and winter visitor. Estimated Hertfordshire breeding population 8,000 – 20,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on Windmill Hill at The Commons LNR/LWS, on the Landfill Site, on Panshanger Aerodrome and on Panshanger Park. Skylark breed on the arable land and Windmill Hill at The Commons LNR/LWS and on the Landfill Site. Ringing captures during the winter of 1997 on the arable land of The Commons LNR/LWs accounted for 2% of the national total caught and ringed in GB that year.

Snipe (*Gallinago gallinago*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population 76,000 pairs, wintering 1,000,000 birds. <sup>18</sup>
Status in Hertfordshire	A common winter visitor and passage migrant, no longer breeds. Estimated Hertfordshire wintering population 200 – 500 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded in the fen woodland of The Commons LNR/LWS, on the Landfill Site, on the River Mimram adjacent to Panshanger Aerodrome and on Panshanger Park.

Song Thrush (*Turdus philomelos*)\*

Status and level of protection	Country BAP Local BAP BoCC Red List
National Status	GB breeding population estimate 1,000,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread and numerous resident species with additional birds arriving in winter. Estimated Hertfordshire breeding population 11,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS, on the Landfill Site, on Panshanger Aerodrome and throughout Panshanger Park.

Spotted Flycatcher (*Muscicapa striata*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 33,000 territories. <sup>18</sup>
Status in Hertfordshire	Formerly widespread but now a scarce summer migrant. Estimated Hertfordshire breeding <1,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons, on Panshanger Aerodrome, on Panshanger Aerodrome and on Panshanger Park.

Starling (*Sturnus vulgaris*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 1,800,000 pairs. <sup>18</sup>
Status in Hertfordshire	A widespread resident species and winter visitor. Estimated Hertfordshire breeding population 13,000 – 25,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS, on the Landfill Site, on Panshanger Aerodrome, on Panshanger Aerodrome and on Panshanger Park.

Stock Dove (*Columba oenas*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 260,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread and numerous resident species. Estimated Hertfordshire breeding population 2,000 – 3,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS, on the Landfill Site and on Panshanger Park.

Swift (*Apus apus*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 87,000 pairs. <sup>18</sup>
Status in Hertfordshire	A widespread summer visitor. Estimated Hertfordshire breeding population 1,000 – 2,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site, on Panshanger Aerodrome and on Panshanger Park.

Tawny Owl (*Strix aluco*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 50,000 pairs. <sup>18</sup>
Status in Hertfordshire	A stable resident species. Estimated Hertfordshire breeding population 1,000 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS, on the Landfill Site, on Panshanger Aerodrome and on Panshanger Park.

Teal (*Anas crecca*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 1,500 – 2,600 pairs, wintering 210,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread winter visitor and passage migrant. Sporadic breeder in Hertfordshire, wintering 1,000 – 1,500 birds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on Panshanger Park. One of the highest count of this species in Hertfordshire is from Panshanger Park (62 in 2015).

Tree Pipit (*Anthus trivialis*)

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 88,000 pairs. <sup>18</sup>
Status in Hertfordshire	An extremely scarce summer visitor. Estimated Hertfordshire breeding population <5 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on Panshanger Park.

Tree Sparrow (*Passer montanus*)\*

Status and level of protection	Country BAP LBAP BoCC Red List
National Status	GB breeding population estimate 180,000 territories. <sup>18</sup>
Status in Hertfordshire	A scarce and extremely localised resident species. Estimated Hertfordshire breeding population 10 - 20 pairs. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS (1995 Howlands Meadow) and on Panshanger Park.

Turtle Dove (*Streptopelia turtur*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 14,000 territories. <sup>18</sup>
Status in Hertfordshire	A rapidly declining summer visitor. Estimated Hertfordshire breeding population <20 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded in 2011 at The Commons LNR/LWS (North Fen) and on Panshanger Park.

Whinchat (*Saxicola rubetra*)

Status and level of protection	BoCC Red List
National Status	GB breeding population estimate 47,000 pairs. <sup>18</sup>
Status in Hertfordshire	Annual passage migrant, most often in autumn. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site and on Panshanger Park.

Wigeon (*Anas penelope*)

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 300 - 500 pairs, wintering 440,000 birds. <sup>18</sup>
Status in Hertfordshire	A widespread winter visitor and passage migrant. Estimated Hertfordshire wintering population 800 – 1,200 birds <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the gravel pits and water bodies of Panshanger Park.

Willow Tit (*Poecile montana*)

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 3,400 pairs. <sup>18</sup>
Status in Hertfordshire	A declining resident species, now probably extinct. No longer breeds. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS (on Howlands Meadow) and on Panshanger Park.

Willow Warbler (*Phylloscopus trochilus*)\*

Status and level of protection	BoCC Amber List
National Status	GB breeding population estimate 2,200,000 territories. <sup>18</sup>
Status in Hertfordshire	Formerly a common and widespread summer migrant, now declining. Estimated Hertfordshire breeding population <1,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS, on Panshanger Aerodrome and on Panshanger Park as recently as 2015.

Woodcock (*Scolopax rusticola*)\*

Status and level of protection	BoCC Red List
National Status	GB population estimate 78,000 breeding males, 1,400,000 individuals in winter. <sup>18</sup>
Status in Hertfordshire	A scarce and rapidly declining breeding species and a widespread, though not numerous, wintering bird. Estimated Hertfordshire population <10 breeding males, winter population not known. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded in the fen woodland on The Commons LNR/LWS, on the Landfill Site and on Panshanger Park.

Wood Sandpiper (*Tringa glareola*)

Status and level of protection	Specially protected under Schedule 1 of the Wildlife & Countryside Act 1981 BoCC Amber List
National Status	GB population estimate 11 – 27 pairs. <sup>18</sup>
Status in Hertfordshire	An occasional passage migrant. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons LNR/LWS.

Yellowhammer (*Emberiza citronella*)\*

Status and level of protection	County BAP BoCC Red List
National Status	GB breeding population estimate 700,000 territories. <sup>18</sup>
Status in Hertfordshire	A widespread resident species. Estimated Hertfordshire breeding population: 9,100 – 18,000 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded at The Commons, on the Landfill Site, on Panshanger Aerodrome and around the peripheries of Panshanger Park. This species has bred regularly on the arable habitats of Windmill Hill at The Commons LNR/LWS. Ringing studies have shown that large numbers of yellowhammer use the Commons LNR/LWs during the winter.

Yellow Wagtail (*Motacilla flava*)\*

Status and level of protection	Country BAP BoCC Red List
National Status	GB breeding population estimate 15,000 territories. <sup>18</sup>
Status in Hertfordshire	A common summer visitor. Estimated Hertfordshire breeding population: 100 – 300 territories. <sup>19</sup>
Status in Study Area	Within the study area, this species is recorded on the Landfill Site, on Panshanger Aerodrome and on Panshanger Park.



## 5.0 Discussion and Valuation – Habitats of Principal Importance

### 5.1 *Lowland Mixed Deciduous Woodland - Country BAP Priority Habitat and Woodland Local BAP Priority Habitat:*

- 5.1.1 It is estimated that Lowland Mixed Deciduous Woodland BAP habitat forms 26% of the land within the study area; a total of approximately 232ha. This area includes wood pasture as well as plantation and semi-natural broad-leaved woodland.
- 5.1.2 Broad-leaved woodlands often contain the greatest numbers as well as many of our rarest and most threatened species. They are important for most forms of wildlife from trees and shrubs to mosses, lichens and fungi and from mammals and birds to invertebrates. The woodlands within the study area represent a mixture of woodland types including ancient semi-natural woodland, secondary woodland and plantation woodland.
- 5.1.3 Key woodland species found in the woodlands of the study area include the bluebell which forms the major component of the ground flora of many of the oak-hornbeam woodlands in Hertfordshire.
- 5.1.4 The woodlands within the study area provide habitat for a number of protected and important species including nine species of bat. The most significant of these is considered to be the barbastelle which has been confirmed as roosting in Panshanger Park LWS as recently as 2017. Given the distances this species can disperse when foraging and feeding (up to 20km), it is possible that the barbastelle is utilising other woodlands within the study area including the Commons LWS. The importance of habitat for the barbastelle cannot be over-stated. This bat is the UK's fourth rarest, with a total estimated population of only 5,000 individuals.

- 5.1.5 The woodlands of the study area also provide important habitat for other protected and important mammals including badger, dormouse and polecat as well as for important species of nesting bird such as hawfinch, hobby, lesser-spotter woodpecker, spotted flycatcher, tawny owl and woodcock.
- 5.1.6 Based on the presence of nine species of bat and most importantly, the presence of a locally significant population of a nationally important species (the barbastelle), coupled with their importance for important nesting bird species, dormice and badgers, the woodlands within the study area are considered to be likely of at least **Regional** Importance.

## **5.2 Wood Pasture and Parkland - Country BAP Priority Habitat**

- 5.2.1 Given the important wood pasture and parkland habitats in Panshanger Park LWS particularly with its relation to the barbastelle bat, this Country BAP Habitat is considered likely of **Regional** Importance within the study area.

## **5.3 Ponds – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands)**

- 5.3.1 Overall, there are over 34 discernible ponds within the study area supporting known populations of great crested newts in four of the ponds in the south western part of the study area within and adjacent to the Commons LNR/LWS. With only four of the 34 ponds known to support great crested newts within the study area these ponds supporting protected species during their breeding cycle are considered to be of **District** value.

#### **5.4 Rivers/Running Water – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Wetlands)**

- 5.4.1 Chalk rivers are considered a globally significant habitat with only 224 chalk rivers in the UK representing 76% of the worlds chalk streams.<sup>20</sup>
- 5.4.2 The River Mimram is considered to be one of the most natural rivers in the county being spring fed and flowing mostly through arable land, and through Panshanger Park LWS.
- 5.4.3 Given that the rivers and streams within the study area are found to have supported key species of importance such as white-clawed crayfish, otter, water vole and kingfisher and the significant importance of the rarity of chalk streams within England, the study area's running water/rivers Country BAP habitats are considered likely to be of **Regional** Importance.

#### **5.5 Open Water – Local BAP Priority Habitat (included under Wetlands)**

- 5.5.1 2% of the study area is made up of standing water which equates to approximately 20ha. The largest areas of standing water comprise the lakes of Panshanger Park LWS which represent a valued resource for many important and specially protected species of bird within the county. Important species of bird such as the bittern are recorded at these open water bodies within Panshanger Park LWS as are important wildfowl including widgeon, pintail, pochard, and teal.
- 5.5.2 The seasonal wet grassland ephemeral pools on the former landfill site have been important for wading birds that have included snipe, grey plover, ruff, green sandpiper, greenshank, redshank, little-ringed plover, lapwing and curlew.

<sup>20</sup> WWF UK. The state of England's Chalk Streams. 2014.

- 5.5.3 This coupled with the Panshanger Park's lakes' value to feeding and foraging bat populations, the open water within the study area is considered to be likely at least of **County** Importance.

## **5.6 Lowland Fen – Country BAP Priority Habitat and Local BAP (included under Wetlands)**

- 5.6.1 Lowland Fens are complex and dynamic systems in the UK frequently forming complex mosaics with a number of associated habitat types and are highly sensitive to changes in quality and quantity of water supply as well as natural processes<sup>21</sup>.
- 5.6.2 It is a rare habitat within the study area - 5ha is found within Blackfan Fen of the Commons LNR/LWS and in Panshanger Park LWS.
- 5.6.3 A study of Blackfan Fen in July 2012 by Wessex Archeology<sup>22</sup> states that *' the results of the pollen assessment indicate changes in the localised vegetation openness from the late Romano-British periods through to the early post-medieval, when the top of the peat is capped by inorganic sediments. The presence of the deposits at Blackfan Fen dating to this period is therefore potentially of national significance.....'*
- 5.6.4 Given the importance of Blackfan Fen within The Commons LNR/LWS to a wide variety of protected and important species and its rarity as an important habitat in the county, it has been deemed to be likely of at least **County** Importance.

<sup>21</sup> Natural England. Lowland Fens: Climate Change Sensitivity No. 12

<sup>22</sup> Wessex Archeology. 2012. Blackfan Fen, Welwyn Garden City, Hertfordshire. Post-Excavation Assessment Report.

## **5.7      *Arable Field Margins – Country BAP Priority Habitat and Local BAP (included under Farmland)***

- 5.7.1      Arable Field Margins are identified as a Country and Local BAP Habitat and will be found surrounding many arable fields within the study area. Often the arable field margins are part of the Environmental Stewardship schemes for the UK's farmland and, when specifically managed for wildlife, can be important ecotones between the hedgerows and arable field, supporting important insects, small mammals such as the harvest mouse and birds such as the grey partridge. The amount of arable field margins is not quantified or qualified within the study area, but it is considered that arable field margins within the study area are likely to be at least of **Parish/Neighbourhood** importance.

## **5.8      *Lowland Meadows – Country BAP Priority Habitat and Neutral Grassland Local BAP Priority Habitat***

- 5.8.1      Lowland Meadows of both neutral and acidic grassland are identified as Country BAP Habitats with Neutral Grassland also listed as a Local BAP Habitat within the study area.
- 5.8.2      Approximately 10ha - 0.3% of the study area is listed as unimproved neutral and acid grassland and is found at The Commons LNR/LWS and Panshanger Park LWS. The very large area of grassland of the landfill site is not considered to qualify as Lowland Meadow BAP grassland. This large area of grassland is considered to lack antiquity often associated with species-rich grassland. However, its intrinsic importance is considered because of its value to important species and assemblages of birds.
- 5.8.3      Lowland meadows within the study area are considered likely to support regularly occurring significant populations of several species of important farmland bird during a critical stage of their life cycle and,

for this reason, this habitat has been valued as likely of **District** Importance.

## **5.9 Hedgerows – Country BAP Priority Habitat and Local BAP Priority Habitat (included under Farmland)**

- 5.9.1 Hedgerows within the study area form important habitat links with the woodland habitats as well as providing commuting, feeding and foraging habitats for the recorded nine species of bat (including the barbastelle) and dormice within the study area.
- 5.9.2 Hedgerows within the study area, particularly within the south-western part of the area have been shown, through the British Trust for Ornithology (BTO) licensed ringing studies, to be important as winter feeding and foraging habitats as well as breeding sites for important species of farmland bird. Studies have also indicated that these hedgerows particularly those surrounding arable fields are important commuting corridors between semi-natural blocks of feeding and nesting habitat within and outside the study area. Hedgerows considered to be important to farmland birds as revealed through long-term studies of farmland bird ecology within the study area are located east of The Commons LNR/LWS, south of the landfill site and east of The Commons LWS. Hedgerows north of the landfill site and west of Panshanger Park LWS are also considered important habitat links and corridors between blocks of semi-natural habitat<sup>23</sup>
- 5.9.3 Given hedgerows' importance as connecting habitats, supporting the breeding and movement of a number of important assemblages of farmland birds and potentially dormice, their value within the study area as a whole is likely to be of **District** importance.

<sup>23</sup> Oakenfull, P et al.



<b>BAP/LBAP Habitats within the Study Area</b>	<b>Level of likely Geographical Importance within Study Area</b>
Lowland Mixed Deciduous Woodland	Regional
Wood Pasture and Parkland	Regional
Rivers/running water	Regional
Lowland Fen	County
Open water	County
Ponds	District
Lowland Meadows	District
Hedgerows	District
Arable field margins	Parish/ Neighbourhood

## 6.0 Discussion and Valuation – Species of Principal Importance

### 6.1 *Plants*

- 6.1.1 A single species of protected plant is recorded throughout the study area – the bluebell. This species is recorded within most of the individual woodlands of the Panshanger estate. In addition, four important plants are also recorded within the study (albeit that one species - tower mustard - is now recorded extinct in Hertfordshire); cornflower LBAP, common eyebright and basil thyme.
- 6.1.2 The basil thyme is considered a county rare plant with few locations recorded in Hertfordshire and few records within the study area, mainly confined to the Commons LNR/LWS, it is considered to be likely of **County** value.
- 6.1.3 The common eyebright and cornflower are both species considered conservation priorities and are becoming increasingly rare and only recorded in Panshanger Park LWS within the study area; therefore they are considered to be likely of **District** value.

Species/Species Groups	Level of likely Geographical Importance within Study Area
Basil Thyme	County
Bluebell	District
Cornflower	District
Common eyebright	District

## 6.2 *Invertebrates*

- 6.2.1 The invertebrate species recorded within the study area are found across diverse habitats, with The Commons LNR/LWS, the Landfill Site, Panshanger Aerodrome and Panshanger Park LWS of particular importance.
- 6.2.2 A large number and diverse range of important invertebrate species have been recorded within the study area, including four important butterflies and 44 important species of moth. The four butterflies include white admiral, white-letter hairstreak, grizzled skipper and small heath. The grizzled skipper is considered to be the rarest important recorded butterfly within the study area - considered to be locally common but rapidly declining, therefore considered to be of likely **County** value. The study area is considered likely to be of **District** value for the three other important species of butterfly recorded.
- 6.2.3 Of the 44 species of important moth recorded within the study area, four are considered likely to be **Regionally** important; dusky lemon-sallow, lackey, oak hook-tip and small emerald. Of the remaining 40 species of moth, 15 are considered to be Hertfordshire Red Data listed as vulnerable or threatened and the remaining 25 are considered widespread and stable or under no perceived conservation threat in the county. As such the moth assemblages within the study area are considered to be of at least **District** value.
- 6.2.4 A single crustacean; white clawed crayfish is historically recorded in the River Mimram in Panshanger Park LWS, although it is thought likely to be extinct now in Hertfordshire.
- 6.2.5 Roman snails are recorded as recently as 2016 within areas of the former gravel pits and River Mimram within Panshanger Park LWS. There are no other records of this mollusc within the study area. This species is considered rare in Hertfordshire, restricted to certain types of

friable chalky soils and, as such, the Roman Snail is considered to be **District** value.

- 6.2.6 With such good numbers and such diversity of important invertebrate species present, the complete invertebrate assemblage of the study area can be considered likely to be of **County** Importance.

Species/Species Groups	Level of likely Geographical Importance within the Study Area
<b>Butterflies</b>	
Grizzled skipper	County
White admiral	District
White-letter hairstreak	District
Small heath	District
<b>Moths</b>	
Dusky lemon-sallow	Regional
Lackey	Regional
Oak hook-tip	Regional
Small emerald	Regional
Moth assemblages	District
<b>Molluscs</b>	
Roman snail	District

### 6.3 *Amphibians*

- 6.3.1 Two important species of amphibian are recorded within the study area (great crested newt and common toad), with good populations of the European protected great crested newt within the ponds in Commonswood LWS and the Cole Green Tip Area Pond LWS and the common toad (a Country BAP species) present throughout the study area.
- 6.3.2 The terrestrial habitat requirements of the great crested newt surrounding their natal ponds are the one of the most exacting of all

the native UK amphibians. The main requirement is a variety of vegetation under different management regimes, especially lightly-grazed pasture and scrub or woodland interfaces. Other essential features include frost-free conditions for hibernation and a lack of fertilizers and pesticides which newts are particularly sensitive to.

- 6.3.3 The regularly occurring, locally significant population of District/Borough important species (the great crested newt and the common toad), during a critical stage of their life cycle (ie breeding) within the study area can be considered of likely **District** Importance for both species.

Species/Species Groups	Level of likely Geographical Importance within Study Area
Great crested newt	District
Common toad	District

## 6.4 Reptiles

- 6.4.1 Good breeding populations of three protected and important species of reptile (slow worm, common lizard and grass snake) are recorded within the study area, with The Commons LNR/LWS, the Cole Green Way and Panshanger Park being especially important for reptile assemblages.
- 6.4.2 The regularly occurring, locally significant populations of three species of protected reptile, during a critical stage of their life cycle (ie breeding) within the study area, all three species can be considered of **District** Importance.

Species	Level of likely Geographical Importance within Study Area
Slow worm	District
Common lizard	District
Grass snake	District

## 6.5 Bats

- 6.5.1 A total of nine UK and European protected bat species are recorded within the study area. Of these, four are also Country BAP species (barbastelle, noctule, soprano pipistrelle and brown long-eared) and one is also a Local BAP species (Natterer's).
- 6.5.2 Significantly, the rarest of these species – the barbastelle – is specially protected under Annex II of the European Habitats Directive. Hertfordshire represents the more northerly limit of the barbastelle's distribution in the UK and the species is considered *Near Threatened* on the IUCN Red List. It is thought that the species prefers pastoral landscapes with deciduous woodland (with complex under-storey and rides preferred), wet meadows and water bodies, hence its status within Panshanger Park LWS.
- 6.5.3 For these reasons, the barbastelle bats present within the study area are considered likely to be of at least **Regional** importance.
- 6.5.4 Of the remaining eight bats recorded within the study, the serotine and Leisler's are considered among the rarest of the UK's bats and consequently these species' presence within the study area is also considered to be likely of **County** importance.
- 6.5.5 The noctule is considered to be a common and widespread bat in the UK and its presence within the study area particularly within Commons LWS and Panshanger Park LWS is considered to be of likely **District** importance.
- 6.5.6 The Natterer's bat is regarded as a *less common* bat and their presence within the study area coupled with the designation of the Natterers' bat as a County important species leads to the conclusion of a likely **District** importance for this species.
- 6.5.7 The Daubenton's bat is also considered to be a *less common* bat in the UK. It is recorded throughout the study area but the open water and



River Mimram of Panshanger Park LWS will be of particular importance to this species as it often favours riparian habitats and locations close to water bodies. Given the importance of the habitats of Panshanger Park LWS for a Country BAP species, a likely **District** importance valuation is considered appropriate for this species.

- 6.5.8 The soprano pipistrelle and brown long-eared bat are considered to be amongst the UK's most common species and both are recorded throughout the study area. Both are designated Country BAP species and as such, since they represent regularly occurring, country important species, they are deemed to be of likely **District** importance.
- 6.5.9 Finally, the common pipistrelle is regarded as one of the two most common species of bat in the UK (albeit still fully protected under both UK and European law). The study area provides large areas of suitable habitat for this species and as such is regarded as of likely **Parish/Neighbourhood** value.
- 6.5.10 Overall, the assemblage of bat species within the study area, including three of the rarest bats in the UK, is considered likely to be of **Regional** importance.
- 6.5.11 The value of the study area as a resource for bat commuting and foraging has been assessed using *Valuing Bats in Ecological Impact Assessment*<sup>24</sup> methodology (which has been appended). The valuation is based on existing records of bats within the study area and an assessment of the potential numbers of bat roosts in suitable identified habitat within the study area. The assessment is not based totally on species-specific baseline survey work.

<sup>24</sup> *Valuing Bats in Ecological Impact Assessment* – S Wray, D Wells, E Long, T Mitchell-Jones - December 2010 - In Practice

- 6.5.12 Based on the records of bats from within the study area, their relative national status and without quantitative data, an assumption of at least a small number of individual bats, tentatively a large number of potential roost sites and moderate-high levels of linear features for commuting, it has been calculated that the study area scores a total of 39 which indicates that the study area's potential importance to commuting, feeding and foraging bats is considered potentially to be of **Regional** importance.

Species	Likely Geographical Level of Importance within Study Area
Barbastelle	Regional
Serotine	County
Leisler's	County
Noctule	District
Natterer's	District
Daubenton's	District
Soprano pipistrelle	District
Brown long-eared	District
Common pipistrelle	Parish/Neighbourhood

## 6.6 Other Mammals

### Hedgehog

- 6.6.1 Hedgehogs are recorded within a number of locations within the study area including the Commons LNR/LWS, within the landfill site area and also within Panshanger Park LWS. The hedgehog is designated a Country BAP species given the UK population is declining and is under threat from development and habitat loss. Within Hertfordshire, hedgehogs are not commonly recorded, although they are considered to be widespread in rural fringe areas. Given the extensive

areas of suitable habitat for this species throughout the study area, it is deemed of likely **District** importance for hedgehogs.

#### Brown Hare

- 6.6.2 This Country BAP species is reported to breed on The Commons LNR/LWS, on the Landfill Site and within Panshanger Park LWS. The study area provides large amounts of suitable habitat for this species which is found in the arable farmland, particularly where arable fields interface with field margins, woodlands and hedgerows and, as such, can be considered likely to be of **District** importance.

#### Otter

- 6.6.3 This species, which is fully protected under both domestic and European legislation and is the subject of a Country BAP, has been recorded as recently as 2016 on the River Mimram within Panshanger Park LWS. Otters in Hertfordshire have become established as sustainable populations since the reintroduction programme in the early 1990s. Never common but widespread within suitable water catchments of the county, the Lea Valley is deemed to support a sustainable population of otters. Within the study area, the River Mimram which flows into the River Lea is considered to be an important part of the riparian habitat of the otter population extant within the Lea Valley. As such, the study area is deemed to be likely of **County** value for otter.

#### Water Vole

- 6.6.4 This fully protected species is recorded breeding on the River Mimram within Panshanger Park LWS with surveys of the entire river suggesting that the population here plays a key role in the metapopulation structure. In addition, the species is recorded immediately to the north of the study area on the River Mimram and also on Panshanger

Aerodrome and the brooks of The Commons LNR/LWS. In addition, in 2017, a population of water vole was found on a small ditch system east of the landfill site within the study area.

- 6.6.5 Given the regular occurrence of this Country and Local BAP species in a number of locations within the study area, the water vole within the study area is deemed to be of likely **Regional** importance.

#### Badger

- 6.6.6 The study area supports numerous badger setts – particularly within Panshanger Park LWS and The Commons LNR/LWS and Commons LWS. Specifically, 13 setts have been recorded, but this is likely to be an underestimate and with many setts located just outside the study area. In addition the badger is recorded within the Landfill Site, Birchall Farm area and within Panshanger Aerodrome. Badgers are also recorded from sites adjacent to the study area boundary at Holwell Lane and Cole Green.
- 6.6.7 Overall, the populations of badgers within the study area are considered likely to be of **District** importance.

#### Harvest Mouse

- 6.6.8 Recent studies started in 2002 confirmed the presence of a sustainable population of this Country BAP species within Windmill Hill and the South Fen of The Commons LNR/LWS. Subsequent regular monitoring surveys of the Commons LNR/LWS confirm the continued presence of a breeding population of harvest mice. Harvest mice are also recorded within the riparian habitats of the River Mimram within Panshanger Park.

- 6.6.9 Nationally, harvest mice are considered widely distributed and locally common and in Hertfordshire are found locally throughout the county. Recorded in a number of locations within the study area, potential harvest mouse habitat is found throughout the study area and it is therefore considered to be of likely **Parish/Neighbourhood** importance.

#### Polecat

- 6.6.10 The polecat is a Country BAP species which is at the easterly edge of its range in Hertfordshire, with the greatest numbers from within central Hertfordshire. Within the study area, polecat is recorded on the landfill site, in the Birchall Farm area, on Cole Green Tip NE Area Pond LWS, on The Commons LNR/LWS and along the River Mimram and its riparian habitats within Panshanger Park LWS.
- 6.6.11 The presence of this species throughout the study area and the large areas of habitat considered of appreciable value to the polecat suggest that the study area is of likely **District** value to this species.

#### Dormouse

- 6.6.12 The dormouse is a European protected species as well as a priority Country and Local BAP mammal. In Hertfordshire there are only four confirmed locations for this species, although other locations within the county may exist. Within the study area a single dormouse record is reported within The Commons LNR/LWS; a single nest has recently been found within the scrub around the fen. Nest records are also reported from Rolls and Blackthorn Wood and a dormouse was seen in a seed bin within a shed along the Aerodrome track in 2009.

- 6.6.13 Potentially, dormice may be found within the hedgerows which radiate out from The Commons LNR/LWS and the hedgerows which radiate out from Rolls and Blackthorn Woods which link into Henry and Birchall Woods LWS. The study area supports at least 50% of the known records of dormice within the county and, as such, the study area is considered likely to be of at least **County** value to dormice.

Group	Species	Level of likely Geographical Importance within Study Area
Other Mammals	Water vole	Regional
	Otter	County
	Dormouse	County
	Hedgehog	District
	Brown hare	District
	Badger	District
	Polecat	District
	Harvest mouse	Parish/Neighbourhood

## 6.7 Birds

- 6.7.1 A total of 84 important species of bird have been recorded within the study area, with 38 of these species having bred or are currently breeding.
- 6.7.2 Of the 38 breeding birds recorded within the study area, five are specially protected under Schedule 1 of the Wildlife & Countryside Act 1981. 20 of the 38 species are designated as Country BAPs; two are listed as Local BAP species (song thrush and tree sparrow), 21 are BoCC Red Listed and 14 are BoCC Amber Listed.
- 6.7.3 Given the high numbers and diverse range of species recorded and the numbers of species of important birds that have bred or are breeding within the study area, the bird assemblage recorded within the study area is deemed to be important.
- 6.7.4 Extensive survey and ringing studies have concentrated on The Commons LNR/LWS and the landfill site. Results of colour-ringing studies have shown ecological links between the two sites – important

farmland birds such as skylark and yellowhammer have been shown to move between the two sites.

- 6.7.5 Other studies have shown, on a wider scale, a distinct ecological link exists between Stanborough Reed Marsh to the south-west of the study area and The Commons LNR/LWS and the landfill site.<sup>25</sup>

Schedule 1 Wildlife & Countryside Act 1981 'specially protected'

#### Barn Owl

- 6.7.6 A rare breeding bird within the study area, recorded from the landfill site, Panshanger Aerodrome and Panshanger Park, with confirmation of successful breeding at The Commons LNR/LWS in 2017. Anecdotal evidence suggests that the landfill site is an important hunting ground for this breeding pair. Breeding has also been reported on the Birchall Farm area. In Hertfordshire barn owls are considered a rare breeding bird and, as such, it is considered that the study area is likely of **County** importance for this species of bird.

#### Bittern

- 6.7.7 A single record of bittern at Panshanger Park was noted in 2009. This is the only record of this species within the study area and is considered neither a breeding nor wintering species and, as such, the study area is considered to be of **Negligible** value to this rare species.

#### Brambling

- 6.7.8 There are no records of brambling breeding within the study area, although there are records of brambling present within The Commons LNR/LWS, landfill site and Panshanger Park. The brambling is considered to be a scarce wintering bird in Hertfordshire and as such the study area is considered to be of **District** value to this species.

<sup>25</sup> Oakenfull P. *et al.*



Cetti's Warbler

- 6.7.9 This species has only been recorded within Panshanger Park (most recently in 2015) and it is suggested that Panshanger Park may be important this species. In Hertfordshire it is considered to be a scarce resident and therefore the study area could be considered to be of **County** value to this species.

Corncrake

- 6.7.10 In 1985, a single corncrake was recorded at Cole Green. This record is only one of three records since 1980 and therefore this species is not considered to be a wintering or breeding species within the study area and only a very rare visitor and as such the study area is considered to be of **Negligible** value to this species.

Crossbill

- 6.7.11 The crossbill has only been recorded in Panshanger Park within the study area and is not noted as either breeding or wintering. Considered to be a rare breeding and wintering bird in Hertfordshire, the study area is considered likely to be of **Negligible** value to this species.

Fieldfare

- 6.7.12 Recorded throughout the study area, this species is considered to a widespread and numerous wintering visitor throughout the study area and the county as a whole and as such the study area is considered likely to be of **District** value to this wintering species of bird.

Firecrest

- 6.7.13 This species has only been recorded within The Commons LNR/LWS and one woodland within Panshanger Park. The firecrest is considered to be a scarce resident species in Hertfordshire and, whilst the records in the study area do not explicitly discount the breeding of this species, the study area may be considered likely to be of **County** importance to this species of bird.

Goldeneye

- 6.7.14 Goldeneye is recorded within Panshanger Park and this is the only site recorded within the study area. This species is considered to be a regular wintering bird in Hertfordshire but only in low numbers therefore the study area is considered to be **County** value for the goldeneye.

Goshawk

- 6.7.15 This species of hawk was only recorded on one occasion in Panshanger Park, in 1981. The goshawk is described as a rare visitor to Hertfordshire and as such the study area is considered likely to be of **Negligible** value to this species.

Green Sandpiper

- 6.7.16 The green sandpiper is recorded within the Commons LNR/LWS, the landfill site and on the River Mimram in Panshanger Park. In Hertfordshire it is considered to be a localised passage and wintering species in small numbers and suitable wetland sites in the county are considered very important for this species. Within the study area, the landfill site was a regular site for this species and would have suggested a site of Regional value. However, in recent years, the study area has become less important to this species and as such is now considered to be of **County** value.

Greenshank

- 6.7.17 Only recorded within the landfill site, this species is considered to a common autumn passage migrant and widespread scarce winter visitor. The study area is considered likely to be of **Negligible** value to this species.

Hobby

- 6.7.18 Recorded as a breeding species within Panshanger Park and in the woodland of the Commons LWS, on Hatfield Hyde Brook and on Windmill Hill. As a widely distributed migrant breeding species in the county, the study area is likely to be of **District** value to the hobby.

Kingfisher

- 6.7.19 Breeding is confirmed only in Panshanger Park within the study area. The kingfisher is considered a widespread resident species and as such the study area is thought to be of **Parish/Neighbourhood** value to this species.

Little-ringed Plover

- 6.7.20 Within the study area this species is recorded breeding within Panshanger Park in 2015 and is also recorded from the landfill site. Considered to be a rare breeding species in Hertfordshire, the study area is therefore considered likely to be of at least **County** value.

Marsh Harrier

- 6.7.21 The marsh harrier is considered to be a passage migrant through Hertfordshire and this species is recorded in Panshanger Park only within the study area. The study area is therefore considered likely to be of **Negligible** value to this species.

Merlin

- 6.7.22 This species is considered to be a scarce passage migrant and winter visitor in the county. Within the study area, merlin have been recorded at the Commons LNR/LWS and on the landfill site as recently as 2015 and the study area is consider to be of **Parish/Neighbourhood** value to this species.

Osprey

- 6.7.23 There are numerous records of osprey from Panshanger Aerodrome and the gravel pits of Panshanger Park with records as recently as 2015. In Hertfordshire it is regarded as an uncommon passage migrant and as such the study area is considered to be of **District** value to this species.

Peregrine

- 6.7.24 In Hertfordshire this species is regarded as a rare resident species. Within the study area it is only recorded from Panshanger Aerodrome and as such the study area is considered to be of **Negligible** value to this species.

Pintail

- 6.7.25 The estimated wintering population of pintail in Hertfordshire is normally less than 10 birds and it is regarded as a regular but scarce winter visitor and passage migrant. Within the study area this species has been recorded on the gravel pits of Panshanger Park and as such the study area is considered likely to be of **County** value to this species.

Red Kite

- 6.7.26 Recorded as a breeding species within the study area and recorded throughout, the red kite is considered to be an increasing resident species within Hertfordshire. An estimated breeding population in the county is 25-50 pairs. The study area is therefore considered likely to be of **District** value to Red Kites.

Redwing

- 6.7.27 Recorded throughout the study area, the redwing is considered to be a common autumn passage and wintering bird in Hertfordshire and as such the study area is considered to be of **Parish/Neighbourhood** value.

Ruff

- 6.7.28 The ruff are considered to be a regular migrant in autumn in Hertfordshire and a scarce winter visitor. Within the study area the ruff is only recorded on the landfill site and as such the study area is considered to be of **Negligible** value to this species.

Wood Sandpiper

- 6.7.29 In Hertfordshire, this species is considered an occasional passage migrant and within the study area only recorded within The Commons LNR/LWS. As such the study area is considered to be of **Negligible** value to this species.

Species	Level of likely Geographical Importance within Study Area
Barn owl	County
Bittern	Negligible
Brambling	District
Cetti's warbler	County
Corncrake	Negligible
Crossbill	Negligible
Fieldfare	District
Firecrest	County
Goldeneye	County
Goshawk	Negligible
Green sandpiper	County
Greenshank	Negligible
Hobby	District
Kingfisher	Parish/Neighbourhood
Little-ringed plover	County
Marsh harrier	Negligible
Merlin	Parish/Neighbourhood
Osprey	District
Peregrine	Negligible
Pintail	County
Red kite	District
Redwing	Parish/Neighbourhood
Ruff	Negligible
Wood sandpiper	Negligible

#### BAP and Red listed Species of Birds of Importance (not listed above)

##### Bullfinch

- 6.7.30 Considered to be a declining breeding resident bird in Hertfordshire, the bullfinch has been recorded within the study area at The Commons LNR/LWS, on the landfill site, and in Panshanger Park. Breeding is reported within the study area and as such the study area could be considered likely to be of at least **District** value.

##### Corn Bunting

- 6.7.31 The corn bunting is considered to be a restricted resident species in Hertfordshire with a reported estimated breeding population of 138 males in 2015. Within the study area bird ringing studies have

confirmed the presence of this species within the Commons LNR/LWS area as a breeding species. The studies have also shown the importance of this part of the study area for wintering flocks of corn bunting. As such, the study area is tentatively considered likely to be of **County** value to this species.

#### Cuckoo

- 6.7.32 This species is considered to be a widespread but declining summer visitor to Hertfordshire. Cuckoo is recorded as a regular visitor to the study area with records from The Commons LNR/LWS, the landfill site and Panshanger Park - with records of occasional breeding. The value of the study area to cuckoo is considered likely to be of **Parish/Neighbourhood** value.

#### Curlew

- 6.7.33 Recorded only from the landfill site within the study area, this species is considered to be a very rare visitor although regarded as a common passage and scarce wintering bird. As such the study area is considered to be of **Negligible** value to this species.

#### Dunnock

- 6.7.34 The dunnock is a common and widespread species throughout Hertfordshire it has been recorded commonly throughout the study area and therefore the study area is considered to be of **Negligible** value to this species.

#### Grasshopper Warbler

- 6.7.35 This species is considered a scarce summer migrant in Hertfordshire with an estimated breeding population of 10-30 territories. Within the study area, the grasshopper warbler has been recorded from within



Panshanger Park, as a breeding record. In addition this species is recorded within Commonswood and on The Commons LNR in 1997. In the same year, grasshopper warbler bred on the filter beds of the landfill site. As such the study area is considered likely to be of at least **County** value to this species.

#### Grey Partridge

- 6.7.36 Recorded as a breeding species within Windmill Hill of the Commons LNR/LWS and the landfill site with additional non-breeding records of grey partridge from within Panshanger Park. In Hertfordshire this species is described as a declining resident species and as such the study area is thought to be at least of **District** value for this species.

#### Grey wagtail

- 6.7.37 Recorded as a breeding species within the study area, the grey wagtail is considered to be a common resident species in Hertfordshire. The study area is therefore considered likely to be of **Parish/Neighbourhood** value to this species.

#### Hawfinch

- 6.7.38 This species is a scarce resident species in Hertfordshire, with an estimated breeding population of less than five pairs. The hawfinch has been recorded breeding within Panshanger Park as recently as 2015 and therefore the study area is considered to be of at least **County** value.

#### Herring Gull

- 6.7.39 The herring gull is considered to be a widespread wintering species with small numbers now breeding in the county. Within the study area it is recorded from the landfill site and Panshanger Park and therefore

the study area is considered to be likely of **Parish/neighbourhood** value to this species.

#### House sparrow

- 6.7.40 The house sparrow is described as a declining resident species of bird within Hertfordshire. Within the study area, it is recorded on The Commons LNR/LWS, the landfill site, on Panshanger Aerodrome and in Panshanger Park; throughout the study area as a breeding bird. The study area is considered likely to be of **Parish/Neighbourhood** value to this species.

#### Lapwing

- 6.7.41 The lapwing is regarded as a common species in Hertfordshire, but a declining breeding, passage and wintering species. Within the study area, it is recorded as breeding on Windmill Hill at the Common LNR/LWS and on the landfill site. Non-breeding records arise from Panshanger Aerodrome and Panshanger Park. The study area is considered likely to be of **District** value to Lapwing.

#### Lesser Redpoll

- 6.7.42 In Hertfordshire, the lesser redpoll is considered to be a scarce breeding and more common wintering species. It has been recorded within the study area on the landfill site, on Panshanger Aerodrome, and in Panshanger Park, but not as a breeding species. As such the study area is considered to be of possible **Parish/Neighbourhood** value to this species.

Lesser-spotted Woodpecker

- 6.7.43 Within the study area, the lesser-spotted woodpecker is recorded as a breeding bird within the Commons LWS, on Howlands Meadow and Panshanger Park. In Hertfordshire it is regarded as a scarce and decreasing resident species. The study area is therefore considered to be likely of **County** value to this species.

Linnet

- 6.7.44 Within the study area, particularly within the farmland areas of land around the Commons LNR/LWS and the landfill site, the linnet is recorded as a breeding bird and bird ringing studies confirm linnets form large wintering flocks around the arable fields within the study area. In Hertfordshire, linnets are regarded as a widespread and numerous breeding and wintering species and as such the study area is considered likely to be of **Parish/neighbourhood** value to this species.

Marsh Tit

- 6.7.45 Within the study area this species is recorded within The Commons LNR/LWS, on Panshanger Aerodrome and in Panshanger Park. It is also recorded as a breeding bird within the study area. In Hertfordshire, the marsh tit is regarded as a declining resident species and therefore the study area is considered likely to be of **District** importance.

Mistle Thrush

- 6.7.46 This species is regarded as a widespread and common resident in Hertfordshire. Within the study area the mistle thrush has been confirmed as breeding on The Commons LNR and has been recorded from the landfill site, on Panshanger Aerodrome and in Panshanger

Park. The study area is considered to be of **Parish/Neighbourhood** value to Mistle thrush.

#### Nightingale

- 6.7.47 The nightingale is only recorded within the study area at the Commons LNR/LWS in 2010. Within the county, this species is considered to be a scarce summer visitor and as such the study area is considered to be of **Negligible** value to this species.

#### Pochard

- 6.7.48 This species of duck is regarded as a common winter visitor as well as a passage migrant and scarce breeding species within Hertfordshire. Within the study area, this species has been recorded on the gravel pits of Panshanger Park only and as such the study area is considered likely to be of **Negligible** value to Pochard.

#### Reed Bunting

- 6.7.49 The reed bunting is considered to be a common resident species in Hertfordshire although it is listed as a priority Country BAP species. Within the study area, breeding is reported at The Commons LNR/LWS and Panshanger Park with additional non-breeding records from the landfill site. Wintering bird ringing records indicate important flocking and feeding is evident around the Commons LNR/LWS and surrounding arable fields, with evidence of the movement of reed bunting flocks to and from the study area during the winter months. As such the study area is considered to be of at least **District** value to this species.

#### Ringed Plover

- 6.7.50 In Hertfordshire, the ringed plover is considered to be a frequent passage migrant and scarce breeding and wintering species. Within

the study area, this species has been recorded only on the gravel pits at Panshanger Park and as such the study area is considered to be of **Negligible** value to this species of bird.

#### Skylark

- 6.7.51 The skylark is regarded as a common resident in Hertfordshire as well as winter visitor. Within the study area, it is recorded as a breeding bird with records on the arable land adjacent to the Commons LNR/LWs, Windmill Hill and the landfill site. Non-breeding records arise from Panshanger Aerodrome and Panshanger Park.
- 6.7.52 Ringing studies have shown that the study area, particularly the arable land around the Commons LNR/LWS, is particularly important to wintering skylark flocks. In 1997, ringing captures of skylarks on the arable land of The Commons LNR/LWS accounted for 2% of the national total caught and ringed in the UK that year. For both breeding and wintering, the study area is considered to be of at least **County** value to skylarks.

#### Song Thrush

- 6.7.53 A common resident and widespread species throughout Hertfordshire, the study area records song thrush throughout, including breeding records. The study area is considered to be of **District** value to this species.

#### Spotted Flycatcher

- 6.7.54 The spotted flycatcher is currently regarded as a scarce summer migrant. Within the study area this species is recorded throughout, with breeding records including records from the Commons LWS. It is considered likely that the value of the study area to this species is **Parish/Neighbourhood**.

Starling

- 6.7.55 A widespread resident species and winter visitor in Hertfordshire. The starling is recorded throughout the study area with breeding records, and as such the study area is considered likely to be of **Parish/Neighbourhood** value to this species.

Tree Pipit

- 6.7.56 In Hertfordshire this species is an extremely rare summer visitor. This species has only been recorded from the landfill site and Panshanger Park with no breeding records and as such the study area is thought to be of **Negligible** value to tree pipits.

Tree Sparrow

- 6.7.57 A scarce and extremely localised resident species in Hertfordshire, tree sparrow is recorded at The Commons LNR/LWS in 1995 and in Panshanger Park in 1982. There are no recent records of tree sparrow within the study area and as such the study area is considered likely to be of **Negligible** value to this species this time.

Turtle Dove

- 6.7.58 This species is regarded as a rapidly declining summer visitor in Hertfordshire, which reflects its national status. Within the study area, turtle dove were recorded as breeding in 2011 in the north fen of The Commons LNR/LWS. There is also a non-breeding record from Panshanger Park. The value of the study area for turtle dove is tentatively considered to be of **District** value.

Whinchat

- 6.7.59 This species is considered to be an annual passage migrant in the county, most often in autumn. It has only been recorded within the landfill site and Panshanger Park and as such the study area is considered to be of **Negligible** value to this species.

Willow Tit

- 6.7.60 A declining resident species in Hertfordshire, the willow tit is now considered probably extinct in the county. Recorded historically at the Commons LNR/LWS and Panshanger Park, the study area's value to this species is therefore considered to be of **Negligible** value.

Woodcock

- 6.7.61 The woodcock is regarded as a scarce and rapidly declining breeding species and a widespread, although not numerous wintering bird in Hertfordshire. It is recorded within the fen woodland of The Commons LNR/LWS, the landfill site and Panshanger Park and records suggest breeding within the study area has occurred. Therefore the study area is considered to be of potential **County** value to this species.

Yellowhammer

- 6.7.62 The yellowhammer is a widespread resident species in Hertfordshire, albeit this species is as BAP and BoCC Red Data listed farmland bird. Within the study area it is recorded as a breeding resident and bird ringing studies have shown that the arable land as well as The Commons LNR/LWS is important for large numbers of wintering yellowhammers. The study area is therefore considered to be at least **District** value for his specie.



Yellow Wagtail

6.7.63 This species is considered to be a common summer visitor in Hertfordshire. Within the study area the yellow wagtail is recorded from the landfill site, Panshanger Aerodrome and Panshanger Park. This species is considered to be a breeding bird within the study area and as such the value of the study area to this species is considered likely to be of **Parish/Neighbourhood**.

Species	Level of likely Geographical Importance within Study Area
Bullfinch	District
Corn bunting	County
Cuckoo	Parish/Neighbourhood
Curlew	Negligible
Dunnock	Negligible
Grasshopper warbler	County
Grey Partridge	District
Grey wagtail	Parish/Neighbourhood
Hawfinch	County
Herring Gull	Parish/Neighbourhood
House sparrow	Parish/Neighbourhood
Lapwing	District
Lesser redpoll	Parish/Neighbourhood
Lesser spotted woodpecker	County
Linnet	Parish/Neighbourhood
Marsh tit	District
Mistle thrush	Parish/Neighbourhood
Nightingale	Negligible
Pochard	Negligible
Reed bunting	District
Ringed plover	Negligible
Skylark	County
Song thrush	District
Spotted flycatcher	Parish/Neighbourhood
Starling	Parish/Neighbourhood
Tree pipit	Negligible
Tree sparrow	Negligible
Turtle dove	District
Whinchat	Negligible
Willow tit	Negligible
Woodcock	County
Yellowhammer	District
Yellow wagtail	Parish/Neighbourhood

Amber Listed Species of Birds of Importance (not listed above)

Barnacle Goose

- 6.7.64 In Hertfordshire this species is considered a rare but introduced resident, occasionally breeding. Within the study area this species is only recorded within Panshanger Park and therefore the study area is considered likely to be of **Negligible** value to this species.

Black-headed Gull

- 6.7.65 In Hertfordshire this species is an abundant winter visitor, recently re-established as a breeding bird in the county. Within the study area it is recorded at the Commons LNR/LWS, on the landfill site and in Panshanger Park. The study area is considered likely to be of **Parish/Neighbourhood** value.

Common Gull

- 6.7.66 This species is a common passage and wintering species in the county with records from the landfill site and on the gravel pits of Panshanger Park. The study area is considered likely to be of **Negligible** value to this species.

Common Sandpiper

- 6.7.67 The common sandpiper is regarded as a passage migrant which rarely over-winters. Within the study area it has been recorded on the landfill site and the gravel pits of Panshanger Park. The study area is considered likely to be of **Negligible** value to this species.

Common Tern

- 6.7.68 A regular breeding bird in Hertfordshire, it is also a spring and autumn migrant. Recorded on the landfill site and gravel pits of Panshanger Park and there is evidence of breeding in Panshanger Park. The study area is considered likely to be of **Parish/Neighbourhood** value to this species.

Gadwall

- 6.7.69 In Hertfordshire the gadwall is regarded as an increasing breeding species and common winter visitor and passage migrant. Within the study area, Panshanger Park is one of only three sites in the county with over 100 birds (261 in 2015), suggesting that the study area is of **County** value for this species.

Great Black-backed Gull

- 6.7.70 A common winter visitor in Hertfordshire, this species is recorded in the landfill site and in Panshanger Park. The study area is considered likely to be of **Negligible** value to this species.

Greylag Goose

- 6.7.71 An increasing resident species in the county which has derived from introduced birds, the greylag goose has only been recorded from Panshanger Park and as such the study area is considered likely to be of **Negligible** value to this species.

Grey Plover

- 6.7.72 An occasional regular passage and winter bird in Hertfordshire, the grey plover is only recorded from the landfill site within the study area. The study area is considered likely to be of **Negligible** value to this species of bird.

House Martin

- 6.7.73 The house martin is regarded as a widespread summer visitor to Hertfordshire. Within the study area this species has been recorded commonly throughout and the study area is considered likely to be of **Negligible** value to this species.

Kestrel

- 6.7.74 A widespread resident species throughout Hertfordshire, the kestrel has been recorded throughout the study area and is also recorded as breeding. The study area is considered to be of likely **Parish/Neighbourhood** value for the kestrel.

Lesser Black-backed Gull

- 6.7.75 In Hertfordshire this species is considered to be a passage, and wintering bird, becoming established as a breeding species in small numbers. It is recorded in the Commons LNR/LWS, the landfill site and in Panshanger Park. There are no breeding records and as such the study area is considered likely to be of **Negligible** value to this species.

Mallard

- 6.7.76 The mallard is widespread and numerous throughout the county. Within the study area this species is recorded on the landfill site and in Panshanger Park where it has been reported to have one of the

highest numbers in 2015. The study area is thought to be of at least **Parish/Neighbourhood** value to this species.

#### Meadow Pipit

- 6.7.77 A widespread wintering but scarce breeding species in Hertfordshire, the meadow pipit is recorded as a breeding bird within the study area. It is recorded on Windmill Hill, on the landfill site, in Panshanger Aerodrome and in Panshanger Park. The study area is considered to be of at least **District** value to the meadow pipit.

#### Mute Swan

- 6.7.78 In Hertfordshire the mute swan is a widespread resident species. Within the study area it is recorded on the landfill site, on Panshanger Aerodrome and throughout the gravel pits of Panshanger Park, where it breeds. The study area is considered likely to be of **Parish/Neighbourhood** value to this species.

#### Oystercatcher

- 6.7.79 Within Hertfordshire, this species is a scarce passage migrant and very rare breeding species with only 2-3 pairs recorded breeding. Within the study area the oystercatcher is only recorded in Panshanger Park. Therefore the study area is considered likely to be of **Negligible** value to this species.

#### Redpoll

- 6.7.80 A rare winter visitor in the county with a record from Panshanger Park, suggesting the study area is of **Negligible** value to this species.

Redshank

- 6.7.81 In Hertfordshire the redshank is regarded a scarce breeding bird and regular passage migrant. This species is recorded within the study area from Panshanger Park and the landfill site which suggests the study area could be of **Parish/Neighbourhood** value for this species.

Short-eared Owl

- 6.7.82 A regular winter visitor in Hertfordshire, the short-eared owl is recorded only on the landfill site on one occasion and as such the study area is considered likely to be of **Negligible** value.

Shoveler

- 6.7.83 Within Hertfordshire the shoveler is considered to be a common winter visitor and passage migrant but scarce breeding species. Within the study area, it is only recorded on the gravel pits of Panshanger Park and not as a breeding bird. The study area is therefore considered likely to be of **Negligible** value to this species.

Snipe

- 6.7.84 A common winter visitor and passage migrant but which no longer breeds in the county. Snipe have been recorded in the fen woodland of The Commons LNR/LWS, the landfill site, on the River Mimram adjacent to Panshanger Aerodrome and in Panshanger Park. The study area is considered likely to be of **Parish/Neighbourhood** value to this species.

Stock Dove

- 6.7.85 The stock dove is a breeding bird in the county; numerous and widespread. Within the study area it has been recorded as breeding

and is found at The Commons LNR/LWS, the landfill site and in Panshanger Park. The study area is considered likely to be of **Parish/Neighbourhood** value for this species.

#### Swift

- 6.7.86 A widespread summer visitor, swifts are recorded at the landfill site, on Panshanger Aerodrome and in Panshanger Park, with breeding records and therefore the study area is thought to be of **Parish/Neighbourhood** value.

#### Tawny Owl

- 6.7.87 This species is considered to be a stable resident species found throughout the county. Recorded throughout the study area with breeding records suggesting the study area is of **Parish/Neighbourhood** value for this species.

#### Teal

- 6.7.88 In Hertfordshire the teal is considered to be a widespread winter visitor and passage migrant. This species is recorded in very high numbers within the study area, with one of the highest counts of this species in Hertfordshire from Panshanger Park (62) in 2015. The study area is therefore considered likely to be of **County** importance for this species.

#### Wigeon

- 6.7.89 The wigeon is a widespread winter visitor and passage migrant. It is only recorded from the gravel pits in Panshanger Park and therefore the study area is deemed to be of **Negligible** value for this species.

Willow Warbler

- 6.7.90 A widespread summer migrant in Hertfordshire, now declining. Within the study area the willow warbler is recorded as breeding and is recorded from The Commons LNR/LWS, Panshanger Aerodrome and on Panshanger Park. The study area is thought to be of **Parish/Neighbourhood** value for this species.

Species	Level of likely Geographical Importance within Study Area
Barnacle goose	Negligible
Black headed gull	Parish/Neighbourhood
Common gull	Negligible
Common sandpiper	Negligible
Common tern	Parish/Neighbourhood
Gadwall	County
Greater black-backed gull	Negligible
Greylag goose	Negligible
Grey plover	Negligible
House martin	Negligible
Kestrel	Parish/Neighbourhood
Lesser black-backed gull	Negligible
Mallard	Parish/Neighbourhood
Meadow pipit	District
Mute swan	Parish/Neighbourhood
Oystercatcher	Negligible
Redpoll	Negligible
Redshank	Parish/Neighbourhood
Short-eared owl	Negligible
Shoveler	Negligible
Snipe	Parish/Neighbourhood
Stock dove	Parish/Neighbourhood
Swift	Parish/Neighbourhood
Tawny owl	Parish/Neighbourhood
Teal	County
Wigeon	Negligible
Willow warbler	Parish/Neighbourhood



## 7.0 Conclusions

- 7.1.1 The study area covers a total area of approximately 890ha and is found to be made up of a mosaic of diverse and important habitats including eight conservation Priority Country BAP Habitats and nine Local BAP Habitats (listed below);

### Country Priority BAP Habitats

- Lowland Mixed Deciduous Woodland
- Wood Pasture & Parkland
- Ponds
- Rivers/Running Water
- Lowland Fen
- Arable Field Margins
- Lowland Meadows
- Hedgerows

### Local Priority BAP Habitats

- Woodland
- Wood Pasture and Parkland
- Ponds (included under Wetlands)
- Rivers/Running Water (included under Wetlands)
- Open Water (included under Wetlands)
- Lowland Fen (included under Wetlands)
- Arable Field Margins (included under Farmland)
- Lowland Meadows (included under Neutral Grassland)
- Hedgerows (included under Farmland)

- 7.1.2 The number and diversity of the protected and important species recorded within the study area are also indicative of high overall ecological value with at least:

- Four protected/important plants
- 48 protected/important invertebrates
- two protected/important species of amphibian
- three protected/important reptiles
- nine protected/important species of bat
- eight protected/important mammals
- 84 protected/important species of bird

- 7.1.3 This ecological evaluation of the study area has concluded (based on the desk study, data searches and consultations) an area of appreciable ecological interest and value.
- 7.1.4 Whilst the majority of the biological records arise from five main sites within the study area, these sites are found to be connected through a network of hedgerows, linear semi-natural habitats such as ditches and arable field margins, which form interconnecting corridors. These corridors provide vital dispersal routes throughout the study area for mobile species of invertebrate, mammals such as bats and dormice and birds.
- 7.1.5 Studies of both bats and wintering farmland birds have shown the value of the study area in facilitating the movement of species in and out of the study area, demonstrating the study area's overall value for biodiversity.
- 7.1.6 It must be acknowledged that this study is based only on available recorded biological data and cannot be viewed as definitive. The reported breadth of biodiversity and intrinsic importance within the study area must be viewed as a minimum as it is perfectly feasible that many species and species groups may have gone unrecorded or unreported.

- 7.1.7 This study provides a baseline of ecological data in which conservation priority habitats and important and protected species have been identified with the study area and should be taken into account in the proposed development of the Birchall Garden Suburb Area and Environs.
- 7.1.8 Section 40(1) of the Natural Environment and Rural Communities Act (NERC) 2006 places a direct statutory duty on all public authorities, in exercising their functions, to have regard to conserving biodiversity.
- 7.1.9 Paragraph 117 of the National Planning Policy Framework states that local planning authorities should have policies in the local Plan that promote the preservation, the restoration and recreation of priority habitats, ecological networks and protection and recovery of priority species population, linked to national and local targets. The local ecological network may include international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration and creation.
- 7.1.10 In accordance with the NERC Act and NPPF, Hertingfordbury Parish Council have, through this study, identified priority habitats, ecological networks and priority species of national and local importance within the study area. This ecological information can be used to inform the development of biodiversity policies within the emerging Parish Neighbourhood Plan.

## 8.0 References

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## 9.0 Appendix 1 – Impact Assessment Methodology

### 9.1 Geographical Importance of Ecological Resources/Features

Value Category	Site or Ecological Feature
International	All internationally important Sites or candidate/proposed Sites. Regularly occurring, nationally significant population of protected or internationally important species. A viable area of habitat type listed in Annex 1 of The Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of a larger whole
National/ Regional	SSSIs and other nationally designated Sites. A viable area of a priority habitat identified in the UKBAP or an area of such habitat which are essential to maintain the viability of a larger area Regularly occurring, regionally or nationally significant population of European Protected Species or habitats Regularly occurring, locally significant population of a regionally or nationally important species.
County	County designated Sites (CWS) Other Sites with BAP priority habitats or species of appreciable value not included in the above. Regularly occurring, locally significant population of a County important species. Local Nature Reserves and other viable areas of key habitat identified in the County or LBAP.
District	Area of habitat identified in a District/Borough BAP and other natural or semi-natural Sites of significant biodiversity. Regularly occurring, locally significant population of a District/Borough important species during a critical stage of its life cycle.
Parish/Neighbourhood	Areas of habitat considered to appreciably enrich the local habitat resource within approximately 2km of the application site, parish or neighbourhood.
Site level only	Sites with limited biodiversity, providing some biodiversity enrichment at project site only.

## 10.0 Appendix 2 – Valuing Bats in Ecological Impact Assessment

### 10.1 Valuing Commuting Routes and Foraging Areas

Species	Number of Bats	Roosts/potential roosts nearby	Type & complexity of linear features (for commuting value)/foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Low value (1)
-	-	Small number (3)	Low-moderate (2)
Rarer (5)	Small numbers of bats (10)	Moderate number/not known (4)	Moderate value (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Moderate-high (4)
Rarest (20)	Large numbers of bats (20)	Close to or within a SAC for the species (20)	High value (5)

### 10.2 Scoring System for Valuing Commuting and Foraging Bats

Geographic frame of reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not important	1-10

Valuing Bats in Ecological Impact Assessment – S Wray, D Wells, E Long, T Mitchell-Jones - December 2010 - In Practice

## **11.0 Appendix 3 – Protected and Notably Important Species Legislation and Protection**

### **11.1 Birds**

11.1.1 Legislation covering bird protection includes; The Birds Directive (1979), the Wildlife & Countryside Act 1981 (as amended), the Countryside & Rights of Way (CROW) Act 2000.

11.1.2 A number of British birds are UK Priority Species for Conservation and Species of Principal Importance under the Natural Environment and Rural Communities (NERC) Act 2006. The protection of UK BAP Priority Species and Species of Principal Importance is implemented through NPPF and Local Planning Policy.

11.1.3 All birds, their nests and eggs are protected by law and it is thus an offence (with certain exceptions), to:

- intentionally kill, injure or take any wild bird
- intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built
- intentionally take or destroy the egg of any wild bird
- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

### **11.2 Bats**

11.2.1 All bats and their roosts in the UK are protected by the Wildlife & Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.

11.2.2 In England the legislation makes it illegal to;



- Deliberately capture, injure or kill a bat,
- Deliberately disturb a bat which is likely to impair their ability to survive, breed or reproduce, rear or nurture their young, hibernate, migrate or affect significantly their local distribution or abundance
- Damage or destroy a breeding site or resting place of a bat
- Possess, control, transport, sell, exchange or offer for sale or exchange any live or dead bat or any part of a bat

11.2.3 Bats' roosts (including resting places) are protected whether or not bats are present at the time. The Wildlife & Countryside Act 1981 (as amended) additionally makes it an offence to;

- Intentionally or recklessly disturb a bat at a roost
- Intentionally or recklessly obstruct access to a roost

11.2.4 Finally, under the Natural Environment and Rural Communities Act (NERC) 2006, a duty is placed on all public bodies to promote and enhance biodiversity in all its functions. There is a general biodiversity duty in the NERC Act (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Section 41 draws up lists of species of principal importance to which special attention must be given and a number of bats are included in this list.

### **11.3 Water Vole**

11.3.1 The water vole receives full protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The animal and its home are protected under this legislation.

- 11.3.2 The Countryside & Rights of Way Act 2000 strengthens the provisions of the Wildlife & Countryside Act, including a new offence of 'recklessly' destroying or damaging the habitats of certain protected species, including the water vole, or recklessly disturbing water vole.
- 11.3.3 The water vole is also a UK Priority Species for Conservation under the UK Biodiversity Action Plan and a National Species Action Plan has been produced. It is a Species of Principal Importance under the NERC Act 2000. The protection of UKBAP Species including water vole is implemented through PPS9 and Local Planning Policy.

#### **11.4 Badger**

- 11.4.1 Badgers are protected under the Protection of Badgers Act 1992. This act provides comprehensive protection for badgers and their setts. Authorised sett disturbance or destruction can be carried out but only under a licence.
- 11.4.2 Again, it is the animal and its home (sett) that are protected and a sett is defined as 'any structure or place which displays signs indicating the current use by badgers and includes seasonally used setts.
- 11.4.3 Normally, machine digging is not permissible within 20/30m (according to the size of the machine) of a sett and hand digging is not permissible within 10 metres. During the months of November-July inclusive is the closed season where no works in the vicinity of a sett are allowed at all.

#### **11.5 Brown Hare**

- 11.5.1 The brown hare is a UK Biodiversity Action Plan Species and a Species of Principal Importance under Section 41 of the NERC Act 2000. The protection of these species is implemented through PPS9 and Local Planning Policy.

## **11.6 Hedgehog**

- 11.6.1 The hedgehog is a UK Biodiversity Action Plan Species and Species of Principal Importance under Section 41 of the NERC Act 2000. The protection of these species is implemented through Local Planning Policy.

## **11.7 Great Crested Newt**

- 11.7.1 Great crested newts are fully protected under both domestic and European legislation, under the following Acts and Regulations:

- Bern Convention 1979: Appendix III
- Wildlife & Countryside Act (as Amended) 1981: Schedule 5
- EC Habitats Directive 1992: Annex II and IV
- Conservation (Natural Habitats etc.) Regulations 1994: Schedule 2
- Countryside Rights of Way Act 2000 (CRoW 2000)

- 11.7.2 Because great crested newts are listed on Schedule 5 of the Wildlife & Countryside Act 1981, it is an offence to intentionally kill, injure or take great crested newts. It is also an offence to possess or control a live or dead great crested newt or any part or thing derived from them. It is an offence to intentionally damage, destroy, obstruct access to, any structure or place which great crested newts use for shelter or protection or to intentionally disturb them while occupying a structure or place which it uses for that purpose.

- 11.7.3 It is an offence to sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead great crested newt or any part or thing derived from them. In addition, it is also an offence to publish or cause to be published any advertisement likely to be understood as conveying that great crested newts, or parts or derived things of them

are bought, sold or are intended to be. All these offences apply to all stages in the animals' life cycle.

- 11.7.4 In addition, the great crested newt is a UK Biodiversity Action Plan Species and Species of Principal Importance under Section 41 of the NERC Act 2000. The protection of these species is implemented through PPS9 and Local Planning Policy.

## **11.8 Common Toad**

- 11.8.1 The common toad is a UK Biodiversity Action Plan Species and Species of Principal Importance under Section 41 of the NERC Act 2000. The protection of these species is implemented through PPS9 and Local Planning Policy.

## **11.9 Reptiles**

- 11.9.1 The Wildlife and Countryside Act 1981 (as amended) provides protection for all UK native reptile species under Schedule 5 (Section 9). Common lizard, slow worm, grass snake and adder receive partial protection – namely the intentional killing and injuring and trade in these species is prohibited. The CRoW Act 2000 strengthened the existing provisions of the Wildlife & Countryside Act 1981 for the enforcement of wildlife legislation, including a new offence of 'recklessly' killing or injuring the above species.
- 11.9.2 These four species of reptile are also UK Biodiversity Action Plan Species and Species of Principal Importance under Section 41 of the NERC Act 2000. The protection of these species is implemented through Local Planning Policy.

## **11.10 Otter**

- 11.10.1 Otters are protected under both UK (Wildlife & Countryside Act 1981) and European law (Conservation of Habitats and Species Regulations 2010).

- 11.10.2 Their resting places are fully protected. It is an offence to deliberately capture, injure or kill them or to damage, destroy or obstruct their breeding or resting places. It is also an offence to disturb otters in their breeding or resting places.

### **11.11 Dormouse**

- 11.11.1 In the UK the common or hazel dormouse has been protected since 1988 by the Wildlife and Countryside Act 1981 (as amended). The act lists the dormouse on Schedule 5, making an offence to intentional kill, injure, taking possession or control (live or dead animal, part or derivative) or damage to, destruction of, obstruction of access to any structure or place used by a scheduled animal for shelter or protection or disturbance of animal occupying such a structure or place or selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative) or advertising for buying or selling such things.
- 11.11.2 There have been many amendments and additions to law including the Countryside and Rights of Way Act 2000 (CRoW) that strengthen the protection of Wildlife and Habitat in the UK. One of the latest being, the 2007 European Habitats Regulations amendments, removing the 'incidental result of an otherwise lawful operation' defence, and the defence that enabled certain actions to take place to prevent serious damage. These defences were removed to bring the Habitats Regulations more into line with the EU Habitats Directive.
- 11.11.3 In the UK and Europe it is also listed under Schedule 2 of The Conservation of Habitats and Species Regulations 2010.
- 11.11.4 The dormouse is also a UK Biodiversity Action Plan Species and a Species of Principal Importance under the Section 41 of the NERC Act 2000. The protection of these species is implemented through Local Planning Policy.

- 11.11.5 The hazel dormouse is also listed both on the European Habitats Directive in Annex IVa and Appendix 3 of the Bern Convention.