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**10a & 10b Burwell Road, Stevenage,  
Hertfordshire SG2 9RF**

**Ecological Impact Assessment**

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**March 2022**

***on behalf of SJM & Co Ltd***

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<b>Client</b>	SJM & Co Ltd
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## Report Contents

<b>1</b>	<b>Executive Summary</b>	<b>1</b>
<b>2</b>	<b>Introduction</b>	<b>2</b>
2.1	Site Description & Context	2
2.2	Proposals	2
2.3	Aims of Study	2
2.4	Bat Ecology	2
<b>3</b>	<b>Methodology</b>	<b>3</b>
3.1	Desk Study	3
3.2	Field Surveys	4
3.2.1	Extended Phase 1 Habitat Survey	4
3.2.2	Initial Bat Survey & Preliminary Roost Assessment (PRA)	4
3.3	Biodiversity Impact (Net Gain) Calculation	5
3.4	Limitations on Survey Data	6
<b>4</b>	<b>Results</b>	<b>6</b>
4.1	Ecological Context	6
4.1.1	Sites of Nature Conservation Importance	6
4.2	Species Records	9
4.2.1	Reptiles	9
4.2.2	Amphibians	9
4.2.3	Birds	9
4.2.4	Bats	11
4.2.5	Other Mammals	11
4.2.6	Plants	11
4.2.7	Invertebrates	11
4.2.8	Invasive Species	12
4.3	Habitats	12
4.3.1	Buildings	12
4.3.2	Garden Habitats	13
4.4	Species	14
4.4.1	Plants	14
4.4.2	Reptiles	14
4.4.3	Amphibians	14
4.4.4	Birds	14
4.4.5	Bats	14
4.4.6	Invertebrates	15
4.4.7	Hedgehogs	15
4.4.8	Other Species	15
<b>5</b>	<b>Discussion</b>	<b>15</b>
5.1	Legislative & Policy Guidance	15
5.1.1	Nesting Birds	15
5.1.2	Bats	15
5.1.3	The Natural Environment and Rural Communities Act 2006	16
5.1.4	The National Planning Policy Framework (NPPF)	17
5.2	Impact Assessment	19
5.2.1	Sites of Nature Conservation Importance	19
5.2.2	Habitats	19
5.2.3	Biodiversity Impact (Net Gain) Assessment	19
5.2.4	Species	22

<b>6</b>	<b>Recommendations</b>	<b>23</b>
6.1	Further Surveys	23
6.2	Habitats	23
6.2.1	Protection of Existing Habitats	23
6.2.2	Landscape/Garden Planting	23
6.2.3	Biodiversity Net Gain	24
6.3	Species	24
6.3.1	Birds	24
6.3.2	Bats	25
6.3.3	Hedgehogs	26
<b>7</b>	<b>References</b>	<b>27</b>
<b>8</b>	<b>Appendix 1. Photographs</b>	<b>28</b>
<b>9</b>	<b>Appendix 2. Site Location Plans</b>	<b>30</b>
<b>10</b>	<b>Appendix 3. Phase 1 Habitat Plan</b>	<b>31</b>
<b>11</b>	<b>Appendix 4. Proposal Habitat Plan</b>	<b>32</b>
<b>12</b>	<b>Appendix 5. Proposal Plan</b>	<b>33</b>
<b>13</b>	<b>Appendix 6. Species for Landscape &amp; Ornamental Planting</b>	<b>34</b>
<b>14</b>	<b>Appendix 7. Biodiversity Impact (Net Gain) Calculation</b>	<b>36</b>

## 1 Executive Summary

<p><b>Site Details</b></p>	<p>10a &amp; 10b Burwell Road, referred to as the 'site' for the purpose of this report, is two semi-detached dwellings located to the eastern side of Burwell Road, within the eastern area of Stevenage in Hertfordshire SG2 9RF. The approximate Ordnance Survey grid reference for the site is TL 260 236.</p>
<p><b>Proposals</b></p>	<p>There is a proposal to demolish all existing buildings and erect two blocks of flats within the site.</p>
<p><b>Methodology</b></p>	<p>The extended Phase 1 Habitat survey and Initial Bat Survey &amp; Preliminary Roost Assessment were undertaken on 14<sup>th</sup> March 2022 by professional ecologist Reuben Hayden <i>MSc QCIEEM</i>.</p>
<p><b>Results</b></p>	<ul style="list-style-type: none"> <li>• The site comprises two semi-detached dwellings, two sheds and line of garages set within a garden of amenity grassland (lawn), hard-standing, scattered trees and hedges. The properties are accessed via a road and driveway off Burwell Road.</li> <li>• The majority of habitats are considered to be of negligible to low ecological value. Scattered trees are considered to be of high ecological value within the context of the site.</li> <li>• All buildings and trees within the site are assessed as having 'negligible' potential for roosting bats (Collins, 2016).</li> <li>• Habitats are not considered to be suitable for amphibians or reptiles.</li> </ul>
<p><b>Impact Assessment</b></p>	<ul style="list-style-type: none"> <li>• Proposals will only result in the loss of all existing habitats, excluding 6 trees.</li> <li>• There are no foreseeable impacts on roosting bats.</li> <li>• New external lighting has the potential to affect bat behaviour.</li> <li>• If nesting birds are present within woody habitats at the time of clearance works, there is the potential for the destruction of active birds' nests and the killing/injury of eggs/young.</li> <li>• Based on the proposal plans and using the Small Sites Metric, the proposals will achieve a biodiversity <b>net loss of -2.19% habitat units (-0.0117 habitat units) and net gain of +0.4050 hedgerow units.</b></li> </ul>
<p><b>Recommendations</b></p>	<p>Recommendations are made with the creation of native species-rich hedgerows and flowering lawns as well as species-specific enhancement including bird/bat boxes.</p> <p>Careful work practices are recommended to protect hedgehogs and badgers.</p>

## 2 Introduction

### 2.1 Site Description & Context

10a & 10b Burwell Road, referred to as the 'site' for the purpose of this report, are two semi-detached dwellings located to the eastern side of Burwell Road, within the eastern area of Stevenage in Hertfordshire SG2 9RF. The approximate Ordnance Survey grid reference for the site is TL 260 236.

The site comprises two semi-detached dwellings, two sheds and line of garages set within a garden of amenity grassland (lawn), hard-standing, scattered trees and hedges. The properties are accessed via a road and driveway off Burwell Road.

The site is surrounded by residential and industrial development. Habitats within the wider landscape are dominated by residential development associated with Stevenage. It is of note that there are 9 ancient woodlands within 1km of the site, likely providing foraging, commuting and roosting habitat for bats.

### 2.2 Proposals

There is a proposal to demolish all existing buildings and erect two blocks of flats within the site. A proposal plan can be seen in Appendix 5.

### 2.3 Aims of Study

The aims of this study are to describe and evaluate the habitats present within the site and to assess the potential for the site to support protected and notable species. The report discusses the likely impacts of the proposed development on the ecology of the site, on valued habitats and on protected/notable species. The study also makes recommendations for appropriate mitigation measures and habitat enhancement with regard to habitats and species. The need for further ecological survey work is discussed in light of the impact assessment.

One specific aim of this study is to survey the buildings for bats and/or evidence of bats, and other protected species including nesting birds. The report makes recommendations for appropriate mitigation, compensation and enhancement measures and the potential impacts on protected species are assessed in accordance with the legal protection afforded to bats under The Conservation of Habitats & Species Regulations 2017.

### 2.4 Bat Ecology

Bats are the only mammals to have developed the ability of true flight. At present, over 1,100 species of bat are recognised worldwide, making bats the second largest mammal group after rodents. As well as flight, bats have evolved a system of navigation and orientation using echolocation which has allowed many species to become nocturnal. There are 18 species of bat that occur within the British Isles, of which 17 are known to breed here. More species occur in the south and west of the country, with species numbers declining towards the north and into Scotland.

All bat species in the UK are nocturnal and feed exclusively on insects (they are insectivorous) which they catch in flight during their night-time activity, using echolocation to locate and home-in on their prey. Bats will roost during the daytime and seek out dark, enclosed and undisturbed places in which to do so, often using a variety of roosting sites within their home range. Different roost sites are used for different purposes (such as mating, giving birth and hibernation) and at different periods of a bat's life cycle.

During the summer, female bats will gather together in a maternity or breeding roost. In the UK, this starts to occur towards the end of May and the females will seek out a warm and undisturbed site in which to give birth. Because maternity roosts require a particular set of environmental attributes (such as location, temperature, orientation and size), breeding bats tend to return to roost and breed in the

same locations year after year. Given that bats live a relatively long time (anywhere from 10-20 years), and only give birth to one pup a year, maternity colonies are crucial to the reproduction and survival of the local population and can be very sensitive to environmental change.

Relatively little is known about hibernation roosts, as tracking and locating hibernating bats is very difficult. However, many species (particularly those within the genera *Myotis* and *Rhinolophus*) have been found within underground sites such as caves, mines and cellars, where the temperature remains constant and low throughout the winter allowing the bats to remain in a state of torpor. The spring and autumn are periods of transition and bats can use a number of different locations on a temporary basis, often moving between roosts as environmental conditions change and temperatures fluctuate. In the autumn, bats will mate, and it has been shown that male and female bats will gather at particular locations (such as a building, cave or tree) to meet, socialise and copulate.

Bats choose to roost in a number of different locations, depending on the species, their activity pattern and the period of their lifecycle. Certain species, such as the pipistrelles, favour crevices and small cavities for roosting and will use features such as cracks, crevices and small rot holes in the boughs and trunks of trees and within certain features of buildings such as boxed eaves, gaps under roof tiles, hanging tiles and soffit boards. Other species favour large, uncluttered roof spaces and lofts within buildings where they can hang up on the underside of the roof and use the interior space for flying prior to emergence. Hollow trees, cellars, caves, barns, churches and cavity walls can also all be used for roosting, given suitable access. Certain species, such as the noctule, favour roosting sites within trees whilst others tend to favour buildings. Roost sites may be used by only a very small number of bats, such as solitary males, or may offer shelter to tens or hundreds of bats within maternity and hibernation roost sites.

The suitability of roosting sites is also highly influenced by the location or context of a tree, building or cave. Roost sites are most often favoured when they are within close proximity to foraging habitats and where those habitats are connected to one another within the landscape by features such as hedgerows, woodlands, rivers or sunken lanes along which bats disperse and 'commute' from place to place. Suitable foraging habitats are any places where insect prey is diverse and abundant such as woodlands, ponds, lakes, rivers, scrub, hedgerows and unimproved grassland or pasture. Thus, the ecological context of a site is very important for determining if bats may be present within a roost and the potential for a roost to be present tends to be much higher within rural or village locations.

### **3 Methodology**

#### **3.1 Desk Study**

The Herts Environmental Records Centre (HERC) was contacted in February 2022 to collate records that it holds for protected/notable species and non-statutory sites of nature conservation importance within a 1km radius of the site.

The Multi-Agency Geographic Information for the Countryside ([www.magic.gov.uk](http://www.magic.gov.uk)) website was searched for information regarding internationally protected sites (e.g. Special Areas of Conservation) within 5km of the survey area and statutory sites of nature conservation importance (e.g. Sites of Special Scientific Interest) within a 1km radius of the site. Other Internet resources interrogated as part of the desk study include:

- Bing Maps - [www.bing.com/maps](http://www.bing.com/maps)
- Google Earth - [www.earth.google.co.uk](http://www.earth.google.co.uk)
- Google maps - [www.google.co.uk/maps](http://www.google.co.uk/maps)

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and the Hertfordshire Biodiversity Action Plan were also consulted to gather information pertaining to priority habitats and species for conservation action at the national and local level.

Aerial photography interpretation is used to place the site into an ecological context and to provide information on the nature of the habitats beyond the site boundary. The information gathered is used to provide a baseline to the habitat assessment.

## 3.2 Field Surveys

### 3.2.1 *Extended Phase 1 Habitat Survey*

An extended Phase 1 Habitat survey was undertaken on 14<sup>th</sup> March 2022 by professional ecologist Reuben Hayden *MSc QCIEEM*. A walkover of the site was conducted, and a description of the habitats present was prepared using standard Phase 1 Habitat Survey methodology (JNCC, 2010).

Target notes were also prepared on features of particular ecological interest and an assessment was made of the site's potential to support protected and notable species (such as species listed under Section 41 of the NERC Act 2006).

#### 3.2.1.1 *Weather Conditions*

The weather on the day was mild and dry (11°C) with little cloud cover (20% cloud cover) and a light breeze (Beaufort Scale 2).

### 3.2.2 *Initial Bat Survey & Preliminary Roost Assessment (PRA)*

An initial bat survey (daytime building inspection) and preliminary roost assessment (PRA) were also undertaken on 14<sup>th</sup> March 2022, by Reuben Hayden *MSc QCIEEM*.

Mr Hayden holds a licence from Natural England to survey for bats within all counties of England (Natural England Level 1 Licence no. 2021-54302-CLS-CLS) and has over 2 years of experience undertaking bat surveys.

A detailed internal and external survey of the buildings was undertaken using a 1 million candle-power torch in order to look for bats and/or evidence of bats and to assess the potential of the buildings to support roosting bats. Internal rooms, loft spaces (if present) and external elevations were inspected for evidence of bats including, bat droppings, urine stains, feeding remains (such as moth wings) and characteristic fur staining around access points.

The bat survey was undertaken according to best practice guidelines published by the Bat Conservation Trust (Collins, 2016) and the *Bat Workers Manual* (JNCC, 2010).

The buildings were assessed for their potential to offer shelter to roosting bats, in accordance with best practice (Collins, 2016; see Table 1).

The study also takes into account the structure and ecological context of the building, including the following factors which may increase the likelihood of roosting bats being present:

- Age of the building (pre-20<sup>th</sup> Century or early 20<sup>th</sup> Century construction)
- Nature of construction; traditional brick, stone or timber construction
- Large and complicated roof void with unobstructed flying spaces
- Large (>20 cm) roof timbers with mortice/tenon joints, cracks and holes
- Entrances and gaps for bats to fly and crawl through
- Poorly maintained fabric providing ready access points for bats into roofs, walls; but at the same time not being too draughty and cool.



- Roof warmed by the sun, south-facing roofs in particular
- Weatherboarding and/or hanging tiles with gaps
- Undisturbed roof voids
- Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year
- Buildings or built structures close to good foraging habitat, in particular mature trees, parkland, woodland or wetland, especially in a rural setting.

The following criteria in Table 1 are used as guidelines for assessing the potential suitability of buildings for bats (Collins, 2016):

Table 1. Criteria for the assessment of buildings and trees for roosting bats (Collins, 2016)

Potential	Features
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure or tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation significance.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Confirmed presence of roosting bats is where evidence indicates that a building or other structure is used by bats, this includes:

- bats seen roosting or observed flying from a roost or freely in the habitat;
- droppings, carcasses, feeding remains etc. found and/or
- bats heard 'chattering' inside a roost on a warm day or at dusk.

Where the possibility that bats are present cannot be eliminated or evidence of bats is found during the building inspection survey, then further surveys (such as winter hibernation, presence/absence and/or roost characterisation) are likely to be necessary if impacts on the roosting habitat (or the bats using it) are predicted.

In addition to the bat survey, the buildings were checked for evidence of nesting birds including old birds' nests, bird droppings, feathers and eggs. Specific observations were made with regard to species such as the barn owl, swallow and house martin; species that are often associated with buildings.

### 3.3 Biodiversity Impact (Net Gain) Calculation

A Biodiversity Impact (Net Gain) Assessment was conducted, using the Small Sites Metric published by Natural England (July 2021), to calculate the impact of the proposed development on biodiversity. The calculation also ascertains whether the proposals achieve a net gain in biodiversity, calculated as biodiversity units and percentage biodiversity units.

To effectively assess the impact of the proposals the habitats within the site were classified according to the habitat types given in the UKHab classification system (Butcher *et al.*, 2020). Habitats were assessed for their condition and strategic significance according to the criteria given within the Biodiversity Metric (Panks *et al.*, 2021) through onsite visits and the interrogation of Internet resources including MAGIC ([www.magic.gov.uk](http://www.magic.gov.uk)) and Google Earth ([www.earth.google.co.uk](http://www.earth.google.co.uk)).

The areas of given habitats in both their current state and the proposed development were mapped using satellite imagery and GIS software, with the resulting areas inputted into the Biodiversity Metric alongside relevant habitat condition and strategic significance classifiers.

The condition assessment was conducted by Reuben Hayden *MSc QCIEEM* on 14<sup>th</sup> March 2022.

### 3.4 Limitations on Survey Data

As with any survey undertaken on a certain date, the data presented within this report provide information at particular points in time and present a ‘snap-shot’ of the ecological status of the site. Ecosystems and species behaviour/activity are dynamic and can change over time.

Whilst this report presents a characterisation and evaluation of habitat and species status at the time of the study, it should not be taken as an exhaustive representation of the ecological status of the site either at present or into the future.

The lack of access into the loft spaces of 10a and 10b Burwell Road is not considered a constraint of this study, due to the absence of potential access points observed on the exterior of the buildings. The area in which the site is located is very urban, comprising built-up residential areas that are likely to have decreased opportunity for roosting bats.

## 4 Results

### 4.1 Ecological Context

#### 4.1.1 Sites of Nature Conservation Importance

##### 4.1.1.1 Statutory Sites

There are no statutory sites of nature conservation importance within a 1km radius of the site.

There are no sites of international conservation importance within a 5km radius of the site.

##### 4.1.1.2 Non-statutory Sites

There are no Local Wildlife Sites within the site, or adjacent to the site boundary.

However, there are 12 Local Wildlife Sites (LWS) within 1km of the site. For a brief summary of each of these refer to Table 2 below. For the location of the sites see Figure 1.

Table 2. Summary of non-statutory sites within a 1km radius of 10a & 10b Burwell Road.

Name	Distance from Site (m)	Area (ha)	Description
Monks & Whomerley Woods	970	25.12	Ancient Pedunculate Oak ( <i>Quercus robur</i> )/Hornbeam ( <i>Carpinus betulus</i> ) woodland on decalcified Boulder Clays containing a large water-filled moat and other earthworks. The ground flora typically contains Bramble ( <i>Rubus fruticosus</i> agg.), Dog's Mercury ( <i>Mercurialis perennis</i> ), Bluebell ( <i>Hyacinthoides non-scripta</i> ) and Wood Anemone ( <i>Anemone nemorosa</i> ). A number of sedges and orchids recorded. There are several ponds, with amphibian

Name	Distance from Site (m)	Area (ha)	Description
			species recorded, and wet areas. The varied animal life includes Yellow-necked Mouse ( <i>Apodemus flavicollis</i> ), Pigmy Shrew ( <i>Sorex minutus</i> ) and past records for Hazel Dormouse ( <i>Muscardinus avellanarius</i> ). Nightingales ( <i>Luscinia megarhynchos</i> ) have also been recorded in the past.
Shackledell Grassland	910	2.58	Old grassland site with frequent scattered to dense scrub supporting a moderately diversity of grassland species including Agrimony ( <i>Agrimonia eupatoria</i> ). The scrub includes much Rose ( <i>Rosa</i> spp.). Other habitats present include some planted trees, a stream along the grassland edge and hedges around the margins. Important for Bush Crickets.
Ridlins Wood	910	6.76	Ancient Pedunculate Oak ( <i>Quercus robur</i> )/Hornbeam ( <i>Carpinus betulus</i> ) woodland consisting mainly of overgrown Hornbeam coppice-with-standards with Ash ( <i>Fraxinus excelsior</i> ) and Field Maple ( <i>Acer campestre</i> ). The semi-natural habitat survives in patches between semi-mature plantation of Scots Pine ( <i>Pinus sylvestris</i> ) and European Larch ( <i>Larix decidua</i> ). Some Beech ( <i>Fagus sylvatica</i> ) is also present within the plantations. A stand of mature Wild Cherry ( <i>Prunus avium</i> ) occurs in the north-west corner. There is developing Willow ( <i>Salix</i> sp.) scrub and a stream within the wood. The wood margin is partly bounded by a ditch and Hornbeam hedge. Bird's-nest Orchid ( <i>Neottia nidus avis</i> ) recorded.
Loves Wood	780	2.60	Small area of ancient semi-natural Pedunculate Oak ( <i>Quercus robur</i> )/Hornbeam ( <i>Carpinus betulus</i> ) woodland. A large part has been cleared and some Oak and Ash ( <i>Fraxinus excelsior</i> ) replanted. The southern section is mainly European Silver Fir ( <i>Abies alba</i> ) plantation with some regeneration of coppice.
Poplars Meadow and Pond South	720	1.58	Remnant of an ancient hay meadow with an old pond in the south. The meadow supports a diverse ground flora which includes Lady's Bedstraw ( <i>Galium verum</i> ), Field Scabious ( <i>Knautia arvensis</i> ), Common Knapweed ( <i>Centaurea nigra</i> ), Meadowsweet ( <i>Filipendula ulmaria</i> ), Dropwort ( <i>Filipendula vulgaris</i> ), Hoary Ragwort ( <i>Senecio erucifolius</i> ) and abundant Betony ( <i>Stachys officinalis</i> ) and Pepper Saxifrage ( <i>Silaum silaus</i> ). The ecological diversity is enhanced by the broad, enclosing hedgerows and Blackthorn ( <i>Prunus spinosa</i> ) scrub with mature Pedunculate Oak ( <i>Quercus robur</i> ) standards. The northern end of the site has been planted with conifers. The ancient spring-fed pond supports a wide range of aquatic and wetland plants including Branched Bur-reed ( <i>Sparganium erectum</i> ), Flowering-rush ( <i>Butomus umbellatus</i> ), Lesser Spearwort ( <i>Ranunculus flammula</i> ), Celery-leaved Buttercup ( <i>Ranunculus sceleratus</i> ), Common Club-rush ( <i>Schoenoplectus lacustris</i> ), Water Forget-me-not ( <i>Myosotis scorpioides</i> ), Brooklime ( <i>Veronica beccabunga</i> ), Water-cress ( <i>Rorippa nasturtium-aquaticum</i> ), Common Duckweed ( <i>Lemna minor</i> ) and Water Soldier ( <i>Stratiotes aloides</i> ).
Ashtree Wood	390	5.75	Ancient semi-natural coppiced woodland composed of Hornbeam ( <i>Carpinus betulus</i> ), Pedunculate Oak ( <i>Quercus robur</i> ), Ash ( <i>Fraxinus excelsior</i> ), Hazel ( <i>Corylus avellana</i> ), Wild Cherry ( <i>Prunus avium</i> ) and Field Maple ( <i>Acer campestre</i> ). The central areas have been replanted with species such as Beech ( <i>Fagus</i>

Name	Distance from Site (m)	Area (ha)	Description
			<i>sylvatica</i> ) and conifers. The ground flora supports ancient woodland indicators, which is particularly rich below the semi-natural canopy around the edges. Bluebell ( <i>Hyacinthoides non-scripta</i> ) and Dog's Mercury ( <i>Mercurialis perennis</i> ) are abundant. There are some boundary coppice stubs and small wood banks in places. In the east there is some invading Sycamore ( <i>Acer pseudoplatanus</i> ).
Abbot's Grove	550	2.05	Ancient semi-natural coppiced woodland composed of Hornbeam ( <i>Carpinus betulus</i> ), Pedunculate Oak ( <i>Quercus robur</i> ), Ash ( <i>Fraxinus excelsior</i> ), Hazel ( <i>Corylus avellana</i> ), Wild Cherry ( <i>Prunus avium</i> ) and Field Maple ( <i>Acer campestre</i> ). The central areas have been replanted with species such as Beech ( <i>Fagus sylvatica</i> ) and conifers. The ground flora supports ancient woodland indicators, which is particularly rich below the semi-natural canopy around the edges. Bluebell ( <i>Hyacinthoides non-scripta</i> ) and Dog's Mercury ( <i>Mercurialis perennis</i> ) are abundant. There are some boundary coppice stubs and small wood banks in places. In the east there is some invading Sycamore ( <i>Acer pseudoplatanus</i> ).
Great Collens Wood	210	4.53	Ancient semi-natural broadleaf woodland replanted in places. The canopy is predominantly Hornbeam ( <i>Carpinus betulus</i> ) coppice with Ash ( <i>Fraxinus excelsior</i> ), Wild Cherry ( <i>Prunus avium</i> ) and Field Maple ( <i>Acer campestre</i> ) with a ground flora of Bramble ( <i>Rubus fruticosus</i> agg.), Bluebell ( <i>Hyacinthoides non-scripta</i> ) and Dog's Mercury ( <i>Mercurialis perennis</i> ). The middle and southern sections have largely been replanted with Pedunculate Oak ( <i>Quercus robur</i> ), Ash ( <i>Fraxinus excelsior</i> ) and Scots Pine ( <i>Pinus sylvestris</i> ), with standards occurring mainly to the woodland edge.
Pestcotts Spring & Wood	620	2.95	Ancient semi-natural woodland substantially altered by replanting throughout the wood, except at the very edges and to the far north. The main canopy is of planted Larch ( <i>Larix decidua</i> ), Beech ( <i>Fagus sylvatica</i> ) and some Wild Cherry ( <i>Prunus avium</i> ) with occasional Hornbeam ( <i>Carpinus betulus</i> ) and Ash ( <i>Fraxinus excelsior</i> ). The ground flora supports a number of ancient woodland indicators with Bluebell ( <i>Hyacinthoides non-scripta</i> ). The semi-natural canopy consists of Hornbeam coppice and standards plus some Ash and Wild Cherry standards.
Blacknells Spring	840	0.51	Thin strip of scrubby, ancient semi-natural woodland with a canopy typically of Hornbeam ( <i>Carpinus betulus</i> ), Ash ( <i>Fraxinus excelsior</i> ), Field Maple ( <i>Acer campestre</i> ) and Hawthorn ( <i>Crataegus monogyna</i> ). The ground flora supports wood grasses, Bramble ( <i>Rubus fruticosus</i> agg.), Bluebell ( <i>Hyacinthoides non-scripta</i> ) and Yellow Archangel ( <i>Lamium galeobdolon</i> ).
Wiltshire's Spring	480	0.73	Small remnant of ancient Hornbeam ( <i>Carpinus betulus</i> ) coppice with Ash ( <i>Fraxinus excelsior</i> ) and Pedunculate Oak ( <i>Quercus robur</i> ) standards. The western section is much altered and underplanted in places with Beech ( <i>Fagus sylvatica</i> ) and Scots Pine ( <i>Pinus sylvestris</i> ). The eastern section is more semi-natural with Hornbeam coppice and Ash standards plus an old pit to the north. The ground is heavily trampled but supports locally abundant Bramble ( <i>Rubus fruticosus</i> agg.) and Bluebell ( <i>Hyacinthoides non-scripta</i> ) with some woodland grasses and

Name	Distance from Site (m)	Area (ha)	Description
			other woodland indicators such as Yellow Archangel ( <i>Lamium galeobdolon</i> ).
Barnwell School and Rectory	770	0	Habitat important for protected species.

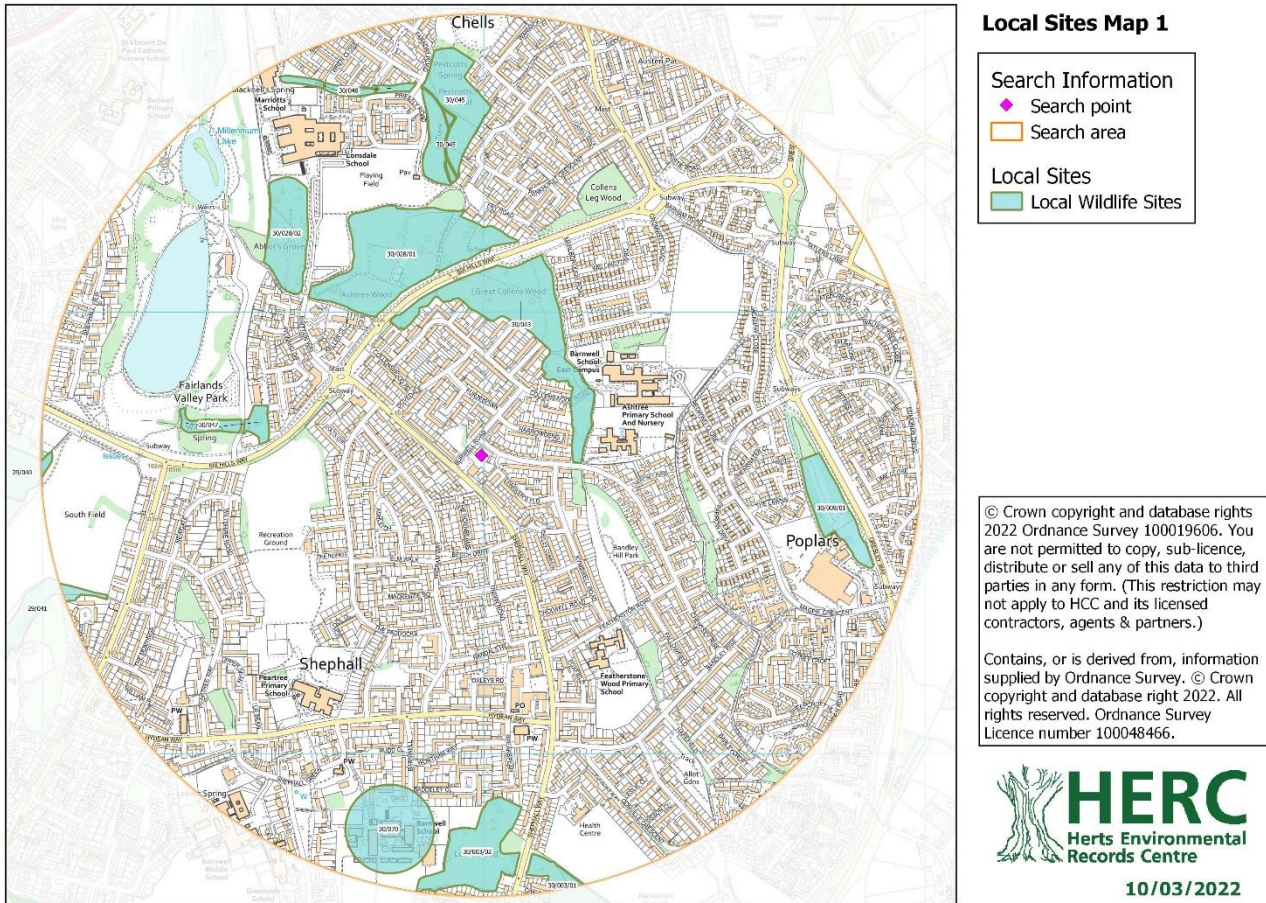


Figure 1. Non-statutory sites within 1km of the site.

## 4.2 Species Records

The following sections summarise pertinent information on species gathered from the Local Records Centre, given the nature of the habitats that are present within the site. Records analysed are from 1990 onwards.

### 4.2.1 Reptiles

The records centre holds no records of reptiles from a 1km radius of the site.

### 4.2.2 Amphibians

The records centre holds two records of common toad *Bufo bufo* found 740m from the site.

### 4.2.3 Birds

A number of bird species have been recorded from the area surrounding the site (see Table 3).

Table 3. Bird records within 1km.

<b>Common Name</b>	<b>Scientific Name</b>
Arctic Tern	<i>Sterna paradisaea</i>
Barnacle Goose	<i>Branta leucopsis</i>
Black Swan	<i>Cygnus atratus</i>
Black Tern	<i>Chlidonias niger</i>
Black-headed Gull	<i>Chroicocephalus ridibundus</i>
Brambling	<i>Fringilla montifringilla</i>
Brant Goose	<i>Branta bernicla</i>
Buzzard	<i>Buteo buteo</i>
Canada Goose	<i>Branta canadensis</i>
Caspian Gull	<i>Larus cachinnans</i>
Common Gull	<i>Larus canus</i>
Common House Martin	<i>Delichon urbicum</i>
Common Merganser	<i>Mergus merganser</i>
Common Sandpiper	<i>Actitis hypoleucos</i>
Common Tern	<i>Sterna hirundo</i>
Curlew	<i>Numenius arquata</i>
Dunlin	<i>Calidris alpina</i>
Egyptian Goose	<i>Alopochen aegyptiaca</i>
Eurasian Bullfinch	<i>Pyrrhula pyrrhula</i>
Eurasian Wren	<i>Troglodytes troglodytes</i>
European Green Woodpecker	<i>Picus viridis</i>
European Herring Gull	<i>Larus argentatus</i>
Fieldfare	<i>Turdus pilaris</i>
Gadwall	<i>Mareca strepera</i>
Goldcrest	<i>Regulus regulus</i>
Goldeneye	<i>Bucephala clangula</i>
Goldfinch	<i>Carduelis carduelis</i>
Great Black-backed Gull	<i>Larus marinus</i>
Great Spotted Woodpecker	<i>Dendrocopos major</i>
Green Sandpiper	<i>Tringa ochropus</i>
Greenfinch	<i>Chloris chloris</i>
Grey Heron	<i>Ardea cinerea</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Greylag Goose	<i>Anser anser</i>
Hobby	<i>Falco subbuteo</i>
Kingfisher	<i>Alcedo atthis</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lesser Redpoll	<i>Acanthis cabaret</i>
Linnet	<i>Linaria cannabina</i>
Little Egret	<i>Egretta garzetta</i>
Little Gull	<i>Hydrocoloeus minutus</i>
Mallard	<i>Anas platyrhynchos</i>
Mandarin Duck	<i>Aix galericulata</i>
Moorhen	<i>Gallinula chloropus</i>
Mute Swan	<i>Cygnus olor</i>
Oystercatcher	<i>Haematopus ostralegus</i>
Peregrine	<i>Falco peregrinus</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Pochard	<i>Aythya ferina</i>
Red Kite	<i>Milvus milvus</i>
Red-crested Pochard	<i>Netta rufina</i>
Redshank	<i>Tringa totanus</i>
Redwing	<i>Turdus iliacus</i>
Ring-necked Parakeet	<i>Psittacula krameri</i>
Robin	<i>Erithacus rubecula</i>

Sand Martin	<i>Riparia riparia</i>
Shoveler	<i>Spatula clypeata</i>
Siskin	<i>Spinus spinus</i>
Song Thrush	<i>Turdus philomelos</i>
Sparrowhawk	<i>Accipiter nisus</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Swallow	<i>Hirundo rustica</i>
Swift	<i>Apus apus</i>
Tawny Owl	<i>Strix aluco</i>
Treecreeper	<i>Certhia familiaris</i>
Tufted Duck	<i>Aythya fuligula</i>
Water Rail	<i>Rallus aquaticus</i>
Waxwing	<i>Bombycilla garrulus</i>
Western Yellow Wagtail	<i>Motacilla flava</i>
Wigeon	<i>Mareca penelope</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Wood Warbler	<i>Phylloscopus sibilatrix</i>
Woodcock	<i>Scolopax rusticola</i>

A large proportion of the records pertain to species commonly found in wetland, river, woodland and garden habitats, being recorded predominantly in Fairlands Park approximately 750m north-west of the site. Bird species records date from 2010 to 2018.

#### 4.2.4 Bats

The records centre holds three records of *Plecotus* bats within 1km of the site.

#### 4.2.5 Other Mammals

Other mammals recorded within 1km of the site include badger *Meles meles*, hedgehog *Erinaceus europaeus*, eastern grey squirrel *Sciurus carolinensis* and Chinese muntjac *Muntiacus reevesi*. Mammal records (excluding bats) date from 2002 to 2017.

#### 4.2.6 Plants

A number of plant species have been recorded from the area surrounding the site (see Table 4).

Table 4. Plant records within 1km.

Common Name	Scientific Name
Bluebell	<i>Hyacinthoides non-scripta</i>
Common Cow-wheat	<i>Melampyrum pratense</i>
Water-soldier	<i>Stratiotes aloides</i>
Wild Strawberry	<i>Fragaria vesca</i>
Yellow Archangel	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>

A large proportion of the records pertain to species commonly found in woodland habitats. The records are found scattered throughout the local area, with the majority found within Ashtree Wood approximately 330m north of the site. Plant records date from 1993 to 2013.

#### 4.2.7 Invertebrates

A number of invertebrate species have been recorded from the area surrounding the site (see Table 5).

Table 5. Invertebrate records within 1km.

Common Name	Scientific Name
Small Skipper	<i>Thymelicus sylvestris</i>

Common Name	Scientific Name
Cinnabar	<i>Tyria jacobaeae</i>
Dot Moth	<i>Melanchra persicariae</i>
Essex Skipper	<i>Thymelicus lineola</i>
-	<i>Raglius alboacuminatus</i>
Small Heath	<i>Coenonympha pamphilus</i>
White-letter Hairstreak	<i>Satyrium w-album</i>

A large proportion of the records pertain to species commonly found in woodland, rough grassland and garden habitats. The majority of records are located within Ashtree Wood and Fairlands Park. Invertebrate records date from 2007 to 2017.

#### 4.2.8 Invasive Species

Invasive species recorded from within a 1km radius comprise variegated yellow archangel *Lamiastrum galeobdolon* subsp. *argentatum*, ring-necked parakeet *Psittacula kramera*, black swan *Cygnus atratus*, barnacle goose *Branta leucopsis*, Canada goose *Branta canadensis*, Egyptian goose *Alopochen aegyptiaca*, mandarin duck *Aix galericulata*, red kite *Milvus milvus*, red-crested pochard *Netta rufina*, Chinese muntjac *Muntiacus reevesi* and eastern grey squirrel *Sciurus carolinensis*.

### 4.3 Habitats

Photographs of the site are presented in Appendix 1. Appendix 2 illustrates the location of the site and provides an aerial photograph of the site within the surrounding landscape. Please see Appendix 3 for a habitat map.

#### 4.3.1 Buildings

##### 4.3.1.1 Dwelling (10a & 10b Burwell Road)

10a and 10b Burwell Road are semi-detached two-storey dwellings. The dwellings have brick walls and mono-pitched roofs of concrete interlocking tiles. There are flat roofed sections of bitumen felt on the south-western and north-eastern elevations. The dwellings have wooden boxed eaves on the western and eastern elevations.

Both of the dwellings have loft spaces that cover the two-storey pitched sections. The loft spaces are used for storage and were not accessed during the survey due to access requirements.

The external brick walls are solid, intact and in a good state of repair, with no gaps, cavities or crevices noted within the brickwork. The roof tiles are also intact and in a good state of repair, with no gaps or crevices between or under roof tiles. There are no external features, such as hanging tiles or wooden weatherboarding that could offer shelter to roosting bats and no gaps were noted at the eaves.

The buildings are assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.

##### 4.3.1.2 10a Shed

Within the south-eastern corner of 10a Burwell Road's garden, there is a wooden shed. The shed has horizontal wooden panel walls and a mono-pitched roof of bitumen felt. The shed has no eaves or loft space and windows illuminate the interior spaces.

The walls and roof are in good condition and intact, with no gaps, cavities or crevices noted. There are no external features, such as hanging tiles or wooden weatherboarding that could offer shelter to roosting bats.

The shed is assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.



#### 4.3.1.3 10b Shed

Within the south-eastern corner of 10b Burwell Road's garden, there is a metal shed. The shed has metal walls and a wooden mono-pitched roof with a plastic covering. The shed has no eaves or loft space and the interior space is devoid of natural light.

The walls and roof are in moderate condition and intact, with no gaps, cavities or crevices noted. There are no external features, such as hanging tiles or wooden weatherboarding that could offer shelter to roosting bats.

The shed is assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.

#### 4.3.1.4 Garages

Within the south-eastern area of the site, there is a row of garages. The garages have brick walls and sloping roofs of bitumen felt. The garages have no eaves or loft space and the interior spaces are devoid of natural light.

The walls and roof are in moderate condition and intact, with no gaps, cavities or crevices noted. There are no external features, such as hanging tiles or wooden weatherboarding that could offer shelter to roosting bats.

The garages are assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.

### 4.3.2 Garden Habitats

#### 4.3.2.1 Amenity Grassland (Lawn)

Within the garden spaces of 10a and 10b Burwell Road, there are areas of amenity grassland that are managed as formal lawns and appear to be subject to regular mowing with a sward height of approximately 2-3cm. The grassland is very species-poor and dominated by grasses including perennial ryegrass *Lolium perenne* and annual meadow grass *Poa annua*. Herbaceous species noted include daisy *Bellis perennis*, common dog-violet *Viola riviniana*, snowdrop *Galanthus nivalis*, nettle *Urtica dioica*, cow parsley *Anthriscus sylvestris*, red deadnettle *Lamium purpureum*, dandelion *Taraxacum officinale* and yarrow *Achillea millefolium*.

The amenity grassland does not meet the criteria for a habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006, and is considered to be of negligible ecological value.

#### 4.3.2.2 Scattered Trees

Throughout the site, but predominantly along the boundaries there are scattered trees including Poplar *Populus* sp., ash *Fraxinus excelsior*, cherry *Prunus* sp., sweet chestnut *Castanea sativa* and apple *Malus* sp. The trees are all semi-mature with a maximum height of approximately 25m.

The trees are considered of ecological value within the context of the site.

#### 4.3.2.3 Hard-standing

Surrounding the dwellings and garages in the form of a driveway and walkways, there are areas of paving and asphalt hard-standing. Areas of hard-standing are considered of negligible ecological value.

#### 4.3.2.4 Hedges

Along the south-western and north-eastern boundaries of the garden of 10b Burwell Road, there are two Leyland cypress hedges *Cupressus x leylandii*. The hedges are approximately 15m in length and 2m high, being trimmed in a squared-off shape. There is also a low-lying *Cotoneaster* sp. hedge within the north-western area of the garden of 10a Burwell Road.

The hedges are not considered to meet the criteria for 'hedgerows', a habitat of principal importance as listed within Section 41 of the NERC Act 2006, and are considered to be of negligible ecological value.

#### 4.4 Species

##### 4.4.1 Plants

No rare or scarce plants are present within the site. The gardens of 10 & 10b Burwell Road are dominated by amenity grassland, hard-standing and scattered trees.

##### 4.4.2 Reptiles

The gardens of 10a & 10b Burwell Road are not considered to provide suitable foraging habitat for reptiles, with there being a lack of suitable habitat such as tussocky grassland that could support adequate prey numbers and shelter. There are two log piles within the south-eastern corner of the garden of 10a Burwell Road that could potentially provide shelter for reptiles, however, this shelter is considered limited.

It is considered likely that reptiles are absent from the site. The lack of reptile records within 1km of the site could also indicate the absence of reptiles within the surrounding landscape.

##### 4.4.3 Amphibians

There are no ponds or standing open waterbodies within the site that amphibians could use for breeding. There are two log piles within the south-eastern corner of the garden of 10a Burwell Road that could potentially provide shelter for amphibians, however, this shelter is considered limited. Habitats including mown lawns and hard-standing offer no obvious shelter to amphibians whilst on land.

Study of Ordnance Survey maps shows no ponds or standing waterbodies within a 500m radius of the site. The records centre only holds two records of common toad, found further than 500m from the site which could also indicate the absence of amphibians within the surrounding landscape.

##### 4.4.4 Birds

The hedges and trees of the gardens offer potential nesting opportunities to breeding birds. It is considered likely that the site supports a typical breeding bird assemblage for garden habitats.

The local assemblage may include species of 'principal importance' as listed within Section 41 of the NERC Act 2006, such as dunnock and song thrush. The site is unsuitable for ground nesting bird species such as skylarks *Alauda arvensis*, and no skylarks were observed or heard during the survey.

No evidence of nesting birds was found in association to the buildings or trees within the site.

##### 4.4.5 Bats

No bats, or evidence of bats, was found in association to the buildings within the site and all buildings are assessed as having 'negligible' roosting potential for bats (Collins, 2016).

Bats will choose to roost within different locations within the summer and winter periods (see Figure 2), favouring dark, enclosed, humid and cool locations for hibernation such as caves and cellars. These locations must maintain a constant low temperature (2-8°C), but temperatures must also not go below freezing. Bats favour places that are undisturbed and retain relatively high humidity during the winter period in order to avoid desiccation when in a state of torpor.

The buildings within the site are unlikely to maintain the constantly cool, humid conditions which are required by overwintering bats. It is, however, possible that bats could use the mature oak tree for hibernating if the rot hole feature creates a deep passage into the lower parts of the tree.

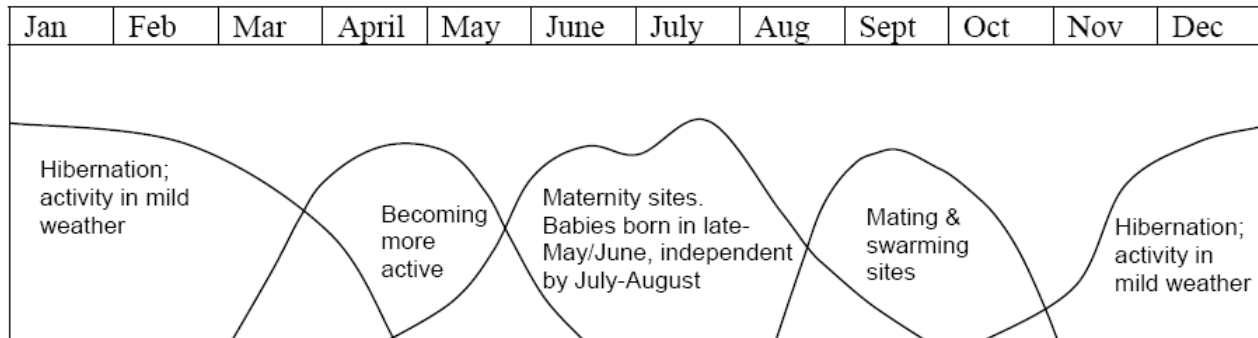


Figure 2. Diagram showing the yearly life cycle of a bat. Taken from the Bat Mitigation Guidelines by Mitchell-Jones 2004.

The site itself is considered to offer limited habitat to foraging bats, with only the hedges and trees offering some potential foraging habitat.

#### 4.4.6 Invertebrates

Habitats within the site are of limited botanical diversity and are considered unlikely to support a diverse or uncommon assemblage of invertebrates.

However, the log piles within the south-eastern corner of the garden of 10a Burwell Road is likely to offer habitat to invertebrates.

#### 4.4.7 Hedgehogs

The garden habitats may offer some foraging opportunities to hedgehogs *Erinaceus europaeus*. However, shelter for this species is very limited and it is unlikely that the site is used for breeding.

#### 4.4.8 Other Species

No evidence of badgers *Meles meles*, was recorded during the survey. No badger setts, faeces, dung pits or tunnels were noted.

## 5 Discussion

### 5.1 Legislative & Policy Guidance

#### 5.1.1 Nesting Birds

Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. The nesting season for most species is between March and August inclusive.

#### 5.1.2 Bats

As with many animal species within the UK, declines in the abundance and distribution of many bat species have been documented through recent decades. The reasons for these declines are various and complex but it is considered that the major factors are changes in land use and agriculture, the loss of woodlands and hedgerows and the loss of suitable roosting sites.

Bats are particularly sensitive to human activity due to the fact that they roost within buildings, trees and underground structures such as mines, and the availability of suitable roost sites is considered to be a key factor in the conservation of bats within the UK. As a consequence, all species of bat and their roost sites are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and under The Conservation of Habitats and Species Regulations 2017. Taken together, these make it an offence to:

- (a) Deliberately capture or intentionally take a bat
- (b) Deliberately or intentionally kill or injure a bat
- (c) To be in possession or control of any live or dead wild bat or any part of, or anything derived from a wild bat
- (d) Damage or destroy a breeding site or resting place of such an animal or intentionally or recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection
- (e) Intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection
- (f) Deliberately disturb any bat, in particular any disturbance which is likely
  - to impair their ability;
  - (i) to survive, breed, reproduce or to rear or nurture their young; or
  - (ii) in the case of hibernating or migratory species, to hibernate or migrate; or
  - to affect significantly the local distribution or abundance of the species to which they belong

A bat roost may be any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected whether or not the bats are present at the time.

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogation) under The Conservation of Habitats and Species Regulations 2017 through the issuing of licences. Where a lawful operation is required to be carried out, but which is likely to result in one of the above offences, a licence may be obtained from Natural England (the statutory body in England with responsibility for nature conservation) to allow the operation to proceed. However, in accordance with the requirements of The Conservation of Habitats and Species Regulations 2017, a licence can only be issued where the following requirements are satisfied:

- The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- 'There is no satisfactory alternative';
- The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

### 5.1.3 *The Natural Environment and Rural Communities Act 2006*

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving English biodiversity.

It also requires the Secretary of State to take, and promote the taking of, steps to further the conservation of the listed organisms and habitats. This is important in the context of planning decisions as the National Planning Policy Framework (paragraph 117) affords planning policy protection to the habitats of species listed by virtue of Section 41.

There are no habitats listed within Section 41 of the NERC Act 2006 that are considered to be relevant to the site.

Species listed within Section 41 of the NERC Act 2006 that are considered to be potentially relevant to the site include:

- Bird species such as dunnock and song thrush (trees, introduced shrubs and hedgerow provide potential nesting opportunities).
- Hedgehog (garden offers potential foraging habitat).
- Bats such as brown long-eared (hedges and trees offering some potential foraging habitat).

#### 5.1.4 *The National Planning Policy Framework (NPPF)*

The National Planning Policy Framework was revised on 20<sup>th</sup> July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012, revised in July 2018 and updated in February 2019.

The NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.

When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

- the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and
- any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.

To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should apply the following principles:

- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons, and a suitable compensation strategy exists; and
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

The following should be given the same protection as habitats sites:

- ❖ Potential Special Protection Areas and possible Special Areas of Conservation;
- ❖ Listed or proposed Ramsar sites; and

- ❖ Sites identified, or required, as compensatory measures for adverse effects on a habitats site, (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitat’s site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

## 5.2 Impact Assessment

### 5.2.1 Sites of Nature Conservation Importance

There are no foreseeable direct or indirect impacts on sites of nature conservation importance as a result of the proposals.

### 5.2.2 Habitats

The proposals will result in the loss of all buildings and replacement of all existing habitats excluding the majority of scattered trees. The habitats to be lost are considered to be of negligible to low ecological value, and there are no significant ecological impacts as a result of this habitat loss.

The proposals will not result in any impacts on habitats of ‘principal importance’, as listed within Section 41 of the NERC Act 2006, as such habitats are not present within the site.

The NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by minimising impacts to existing habitats and providing net gains for biodiversity. It is considered that a gain in biodiversity could be achieved within the site through new native planting and planting of species of known value to wildlife within the existing garden. Species-specific measures such as bat and bird boxes could also contribute to biodiversity net gain.

### 5.2.3 Biodiversity Impact (Net Gain) Assessment

The biodiversity impact calculation is presented below. The calculation is based off the habitats within the development area and the proposal plan in Appendices 4 and 5. See Appendix 7 for the biodiversity calculation.

#### 5.2.3.1 Site Habitat Status Before Development

Habitats within the development area were inputted into the Small Sites Metric using a Phase 1 to UKHab conversion.

The habitat conversion is presented in Table 6 below. Table 7 presents the areas of each habitat and Table 8 presents the lengths of each linear habitat.

Table 6. Habitat conversion table.

Phase 1 Habitats	UKHab Equivalent
Amenity grassland	Modified grassland
Hardstanding	Developed land; sealed surface
Scattered trees	Urban trees
Ornamental hedges	Hedge ornamental non-native

Table 7. On-site habitat areas prior to development.

Habitat UKHab	Total Area (m2)
Modified grassland	589
Developed land; sealed surface	879
Urban trees	330

Table 8. On-site linear habitat lengths prior to development

Habitat UKHab	Total Length (m)
Hedge ornamental non-native	44

### 5.2.3.2 Habitat Condition Assessment

Habitat condition was assessed according to the criteria developed by Panks *et al.* (2021), using the results of the Phase 1 Habitat Survey.

The condition assessments for on-site habitats are presented in Table 9.

Table 9. On-site habitat condition assessment.

Habitat	Condition Assessment	Justification
Modified grassland	Moderate	Within the Small Sites Metric, modified grassland is fixed at a <b>moderate</b> condition assessment.
Developed land; sealed surface	N/A – other	Within the Small Sites Metric, developed land; sealed surface is fixed at a <b>N/A – other</b> condition assessment.
Urban trees	Moderate	Within the Small Sites Metric, urban trees is fixed at a <b>moderate</b> condition assessment.
Hedge ornamental non-native	Poor	Within the Small Sites Metric, hedge ornamental non-native is fixed at a <b>poor</b> condition assessment.

### 5.2.3.3 Habitat Strategic Significance

The entire site is located within a 'Network Enhancement Zone 2'. Network Enhancement Zone 2 comprises "land connecting existing patches of primary and associated habitats which is less likely to be suitable for creation of the primary habitat. Action in this zone that improves the biodiversity value through land management changes and/or green infrastructure provision can be targeted here."

Given this, all the habitats within the site are assessed as being 'within area formally identified in local strategy' (Edwards *et al.*, 2020)



#### 5.2.3.4 Habitat Status After Development

The proposed development will result in the loss of all existing habitats, excluding 6 trees. The creation of developed land; sealed surface and other neutral grassland are included within the proposals.

The proposed habitat areas after development are presented in Table 10. The proposed linear habitat lengths after development are presented in Table 11.

Table 10. On-site habitat areas after development.

Habitat	Retained Area (m <sup>2</sup> )	Enhanced Area (m <sup>2</sup> )	New Area (m <sup>2</sup> )
Developed land; sealed surface	-	-	1040
Other neutral grassland	-	-	426
Urban tree	244	-	-

Table 11. On-site linear habitat lengths after development

Habitat UKHab	Total Length (m)
Native hedgerow	90

#### 5.2.3.5 Habitat Condition Assessment

The condition assessments for expected on-site habitats can be seen in Table 12.

Table 12. On-site expected habitat condition assessment

Habitat	Condition Assessment	Justification
Developed land; sealed surface	N/A – other	Within the Small Sites Metric, developed land; sealed surface is fixed at a <b>N/A – other</b> condition assessment.
Other neutral grassland	Moderate	New areas of grassland will be sown with a flowering lawn mixture to create other neutral grassland with a species diversity of 17 species per m <sup>2</sup> . The grassland is predicted to pass 3 of the condition assessment criteria, resulting in a <b>moderate</b> condition assessment. The grassland is predicted to pass 3 criteria with the cover of bare ground <5%, cover of bracken <20% and cover of scrub <5% and the absence of invasive non-native or undesirable species.
Urban tree	Moderate	The retained trees will be kept and maintained within the new site, preserving the <b>moderate</b> condition assessment.
Native hedgerow	Good	The newly planted native hedgerows are expected to fail two attributes, but do not fail both attributes in more than one functional group, resulting in a <b>good</b> condition assessment. The hedgerows are expected to fail two attributes due to having <1.5m height average along the length and >10% of the hedgerow disturbed by human activities.

#### 5.2.3.6 Calculation

The result of the calculation is a decrease of 0.0117 habitat units and an increase of +0.4050 hedgerow units. **This results in a net loss of -2.19% habitat units and net gain of +0.4050 hedgerow units.**

#### 5.2.4 Species

##### 5.2.4.1 Plants

There are no foreseeable impacts on rare or protected plant species.

##### 5.2.4.2 Reptiles & Amphibians

There are no foreseeable impacts on reptile or amphibian species or their habitats.

##### 5.2.4.3 Birds

There are no foreseeable impacts on bird species or their habitats.

##### 5.2.4.4 Bats

All buildings and trees within the site are assessed as having 'negligible' potential to support roosting bats. Given this, the proposed development is unlikely to result in any significant impacts on bats or the places that they use for breeding, shelter and/or protection (roosts) and no specific compensation measures are considered necessary (Mitchell-Jones 2004).

Since no significant impacts on bats are predicted under The Conservation of Habitats and Species Regulations 2017, a European Protected Species (bat) licence will not be required for the proposed works to proceed. Since there are no predicted impacts on bats or their habitats, it is not necessary to consider the 'three tests' of The Conservation of Habitats and Species Regulations 2017 in this instance.

Loss of amenity grassland, two trees and three ornamental hedges is unlikely to result in a significant loss of foraging habitats for the local bat populations. There are considered to be more suitable areas of habitat within the wider locality, particularly areas of woodland habitat.

External lighting can have an impact on bats by affecting their activity and behaviour. Certain species of bat have been shown to be attracted to mercury vapour lamps which emit light over a very broad-spectrum including UV light to which insects are particularly sensitive. Insects can be attracted in large numbers to mercury lamps and so can bats of the genera *Nyctalus* and *Pipistrellus*, including noctules *N. noctula* and common pipistrelles *P. pipistrellus* (Rydell and Racey, 1993). Lighting has shown to have an opposite effect on certain other species, such as the lesser horseshoe bat *Rhinolophus hipposideros*, which have been shown to avoid areas of artificial light (Stone *et al.* 2009).

New external lighting with the site could therefore have an adverse effect on foraging or commuting bats, partially foraging and dispersal behaviour along the site boundaries. Although disturbance by lighting is unlikely to result in significant impacts under the legal protection afforded to bats (and thus will not require a Bat Licence), lighting may result in a change in bat activity which is not desirable.

##### 5.2.4.5 Invertebrates

There are no foreseeable impacts on rare or protected invertebrates.

##### 5.2.4.6 Other Species

Although there are no predicted impacts on badgers or hedgehogs, there is potential for building activity to inadvertently create habitats that badgers or hedgehogs could use. Without mitigation measures, there is a possibility that badgers and hedgehogs are at risk of injury and trapping due to inadvertent pitfall hazards.

## 6 Recommendations

### 6.1 Further Surveys

No further surveys are considered necessary.

### 6.2 Habitats

#### 6.2.1 Protection of Existing Habitats

It is recommended that retained trees are protected in accordance with British Standard 5837:2012, through the establishment of appropriate root protection zones.

#### 6.2.2 Landscape/Garden Planting

It is recommended that any new areas of garden are designed, planted and managed to maximise their value to wildlife. One key element of this would be the species used within the planting, which should comprise native species where possible, as well as ornamental plants of known value to wildlife. The key will be to provide a variety of flowers and fruits throughout the year in order to provide food for insects and birds, as well as providing potential nest sites through the planting of trees and shrubs.

Appendix 6 recommends a number of suitable species for landscape and garden planting schemes, including non-native species for more formal areas, although the species mix should by no means be limited to this list. Planting should aim to provide ground cover for animals such as hedgehogs and invertebrates, and so low-growing ground cover should be encouraged. Native species such as bugle, ivy and periwinkle could be used for this purpose, or ornamental species such as lady's mantle, elephant's ears or perennial geraniums may also be suitable for formal areas of ornamental planting. A diversity of structure should also be encouraged through the planting of small trees, with shrubs and herbaceous plants species established below.

##### 6.2.2.1 Flowering Lawn Creation

It is recommended that flowering lawns are created within the areas of proposed open space. It is recommended that the grassland will be sown with an appropriate seed mix, such as Emorsgate EL1 seed mix or similar. The following species should be included within the mix (Table 13), which will aim to create flowering lawns:

Table 13. Flowering lawn species mix.

Scientific Name	Common Name
<i>Betonica officinalis</i> - ( <i>Stachys officinalis</i> )	Betony
<i>Centaurea nigra</i>	Common Knapweed
<i>Galium verum</i>	Lady's Bedstraw
<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Lotus corniculatus</i>	Bird's-foot Trefoil
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Primula veris</i>	Cowslip
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Silaum silaus</i>	Pepper Saxifrage
<i>Vicia cracca</i>	Tufted Vetch
<i>Agrostis capillaris</i>	Common Bent
<i>Carex flacca</i>	Glaucous Sedge
<i>Cynosurus cristatus</i>	Crested Dog's-tail
<i>Festuca rubra</i>	Red Fescue
<i>Phleum bertolonii</i>	Smaller Cat's-tail
<i>Medicago lupulina</i>	Black Medick (Ag)
<i>Trifolium repens</i>	Small Leaved White Clover (Ag)

It is recommended that the flowering lawns should be managed by mowing regularly as a lawn but not too short (25-40mm).

To permit flowering, mowing can be relaxed from late June. The lawn should then be cut again when the sward gets untidy (after 4-8 weeks). Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed from the site.

#### 6.2.2.2 Hedgerow Creation

It is recommended that hedgerows to be created should be native species-rich and include the following species:

- Hawthorn *Crataegus monogyna*
- Blackthorn *Prunus spinosa*
- Hazel *Corylus avellana*
- Spindle *Euonymus europaeus*
- Field maple *Acer campestre*
- Wayfaring tree *Viburnum lantana*
- Dog rose *Rosa canina*
- Guelder rose *Viburnum opulus*

#### 6.2.3 Biodiversity Net Gain

As previously discussed, the proposals are likely to result in an overall net loss in biodiversity at the site level. This will likely require compensation, as well as habitat enhancement to achieve measurable biodiversity net gain. Based on current proposal plans, achieving biodiversity net gain within the site is not considered achievable. Using biodiversity off-setting is deemed to be the most appropriate method of securing a net gain for biodiversity. If a 10% biodiversity net gain is to be required, a contribution to an offsetting scheme for +0.0652 habitat units is considered reasonable.

In this circumstance, with biodiversity accounting within Hertfordshire being in development, the offsetting should be securable via a Section 106 legal agreement.

### 6.3 Species

#### 6.3.1 Birds

##### 6.3.1.1 Bird Boxes

The erection of bird nesting boxes is recommended in order to provide suitable nest sites for species within the local area, as nest boxes can be excellent substitutes for the nesting potential of trees. Over 60 species are known to adopt nest boxes including blue tits, great tits, starlings, robins and sparrows. The location and nature of the nest box depends on the species it is designed for; boxes for tits, sparrows or starlings should be fixed two to four metres up a tree or a wall; open-fronted boxes for robins and wrens need to be low down, below 2m, and well-hidden in vegetation. Unless there are trees or buildings which shade the box during the day, boxes should be faced between north and east, thus avoiding strong sunlight and the wettest winds.

On new buildings, the integration of bird boxes is particularly recommended as species such as the house sparrow *Passer domesticus* will readily adopt such features as nest sites, with new integrated nesting features securing a biodiversity enhancement in the long term.

Recommended integrated boxes are:

- Bird Brick Houses Standard Box or Sparrow Box

- Schwegler Brick Box Type 24

Other recommended boxes are:

- 1B Schwegler Nest Box
- 2H Schwegler Robin Box

### 6.3.2 *Bats*

#### 6.3.2.1 *Roosting Opportunities*

The erection, or integration, of bat boxes on new buildings is recommended as an enhancement measure, and to provide gain for biodiversity under the NPPF.

Bat brick (sometimes also referred to as 'bat tubes') features can be obtained pre-fabricated and integrated directly into the fabric of the exterior walls of a building. The bricks/tubes have an external entrance slot which leads to an internal cavity for roosting (e.g. the Schwegler 1FR bat tube). The brick/tube can be concealed behind external cladding, brickwork, stonework or render. For example, bat bricks/ bat tubes can easily be installed into traditional or modern buildings with external wooden weatherboarding; the brick/tube being concealed behind the overlapping wooden boards with access via a gap under a lifted board which leads to the entrance slot of the brick/tube. Bats can fit through very small gaps and so a crevice of 2-2.5cm should be sufficient to allow access to the slot of the bat brick/tube.

Alternatively, conventional bat boxes could be installed; these could be traditional wooden boxes, or longer lasting woodcrete boxes (e.g. Schwegler boxes) specifically designed for buildings and houses (e.g. the Schwegler 1FQ or 1WQ bat boxes). If these boxes are adopted, it is recommended that they are installed as high as possible on the exterior walls, just under the eaves. South-facing façades should be favoured. Bat boxes can also be erected on trees.

#### 6.3.2.2 *External Lighting*

It is recommended that external lighting should be avoided within the site, unless it is necessary for reasons of security and safety. In particular, light spillage should be avoided so that a dark corridor is created around the peripheries of the site in order to facilitate the movement of bats, as well as other nocturnal wildlife.

Where external lighting is required, it should be kept at low level and a low intensity, with hoods and baffles used to direct the light to where it is required (Bat Conservation Trust, 2018; Emery, 2008). To minimise the impact on bats, the use of low pressured sodium lamps is recommended in preference to mercury or metal halide lamps which have a UV element that can affect the distribution of insects and attract bats to the area, affecting their natural behaviour (Bat Conservation Trust, 2018).

The key principals for choosing a suitable type of lamp are:

- Avoid blue-white short wavelength lights: these have a significant negative impact on the insect prey of bats. Use alternatives such as warm-white (long wavelength) lights as this will reduce the impact on insects and therefore bats.
- Avoid lights with high UV content: (e.g. metal halide or mercury light sources) or reduce/completely remove the UV content of the light. Use UV filters or glass housings on lamps which filter out a lot of the UV content.

Selecting an appropriate lamp unit that is designed to be environmentally friendly will minimise light spill, but further controls can be imposed by installing directional accessories such as baffles, hoods and louvres on lamps to direct light away from ecologically sensitive areas.

LED (Light Emitting Diode) units are an effective way to direct the light into small target areas and are recommended for lighting parking and turning areas. Composite LEDs can be switched off to reduce/direct the light beam to specific areas.

### 6.3.3 Hedgehogs

It is recommended that any garden fences or walls erected within and around the development (that could act as a barrier to hedgehog movement) be made permeable for hedgehogs. This can be achieved by cutting or leaving a 13cm-by-13cm hole within the fence or wall; this is sufficient for any hedgehog to pass through and is too small for nearly all pets (see Figure 3). In order to allow free access to all of the new gardens, at least one suitable hole should be provided within each row of fence panelling.



Figure 3. An example of a hole cut within a fence, creating a 'hedgehog highway' Source: <https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/>

## 7 References

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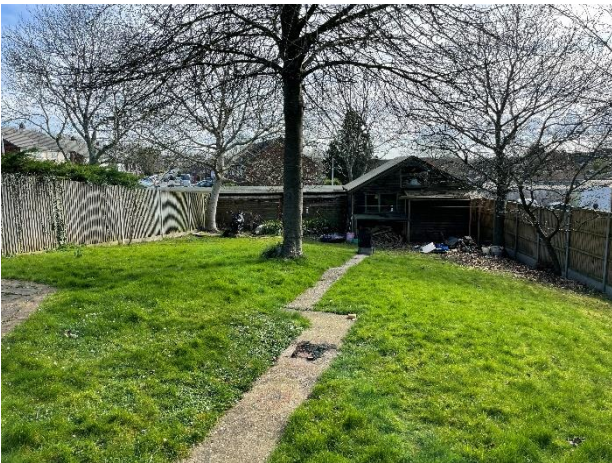
8 Appendix 1. Photographs



Photograph 1. 10a Burwell Road viewed from the west.



Photograph 2. 10a Burwell Road viewed from the south-east.



Photograph 3. The garden of 10a Burwell Road.



Photograph 4. The shed within the garden of 10a Burwell Road.



Photograph 5. 10b Burwell Road viewed from the west.



Photograph 6. The garden of 10b Burwell Road.





Photograph 7. The shed within the garden of 10b Burwell Road.

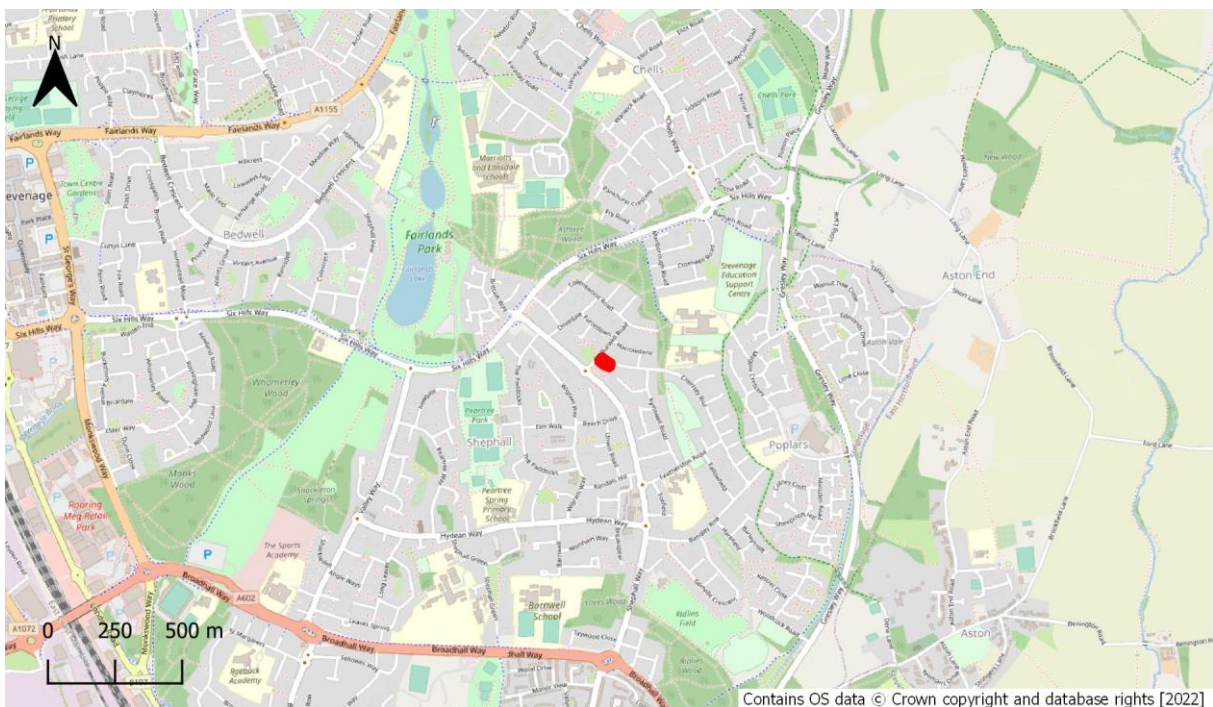


Photograph 8. The garages located within the south-eastern area of the site.

## 9 Appendix 2. Site Location Plans

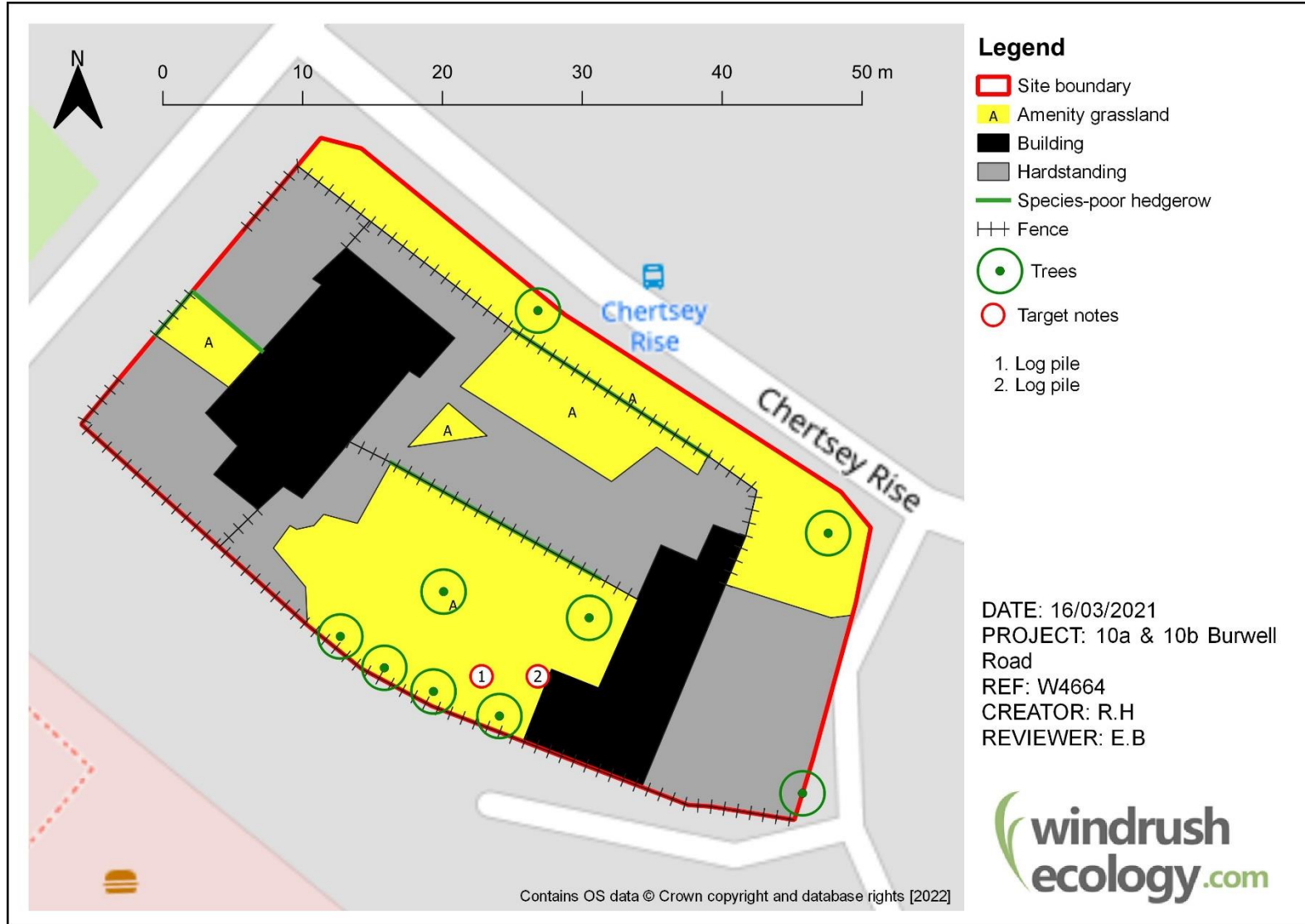


Aerial photograph showing the location of the site, outlined in red. Source: *Google Satellite*

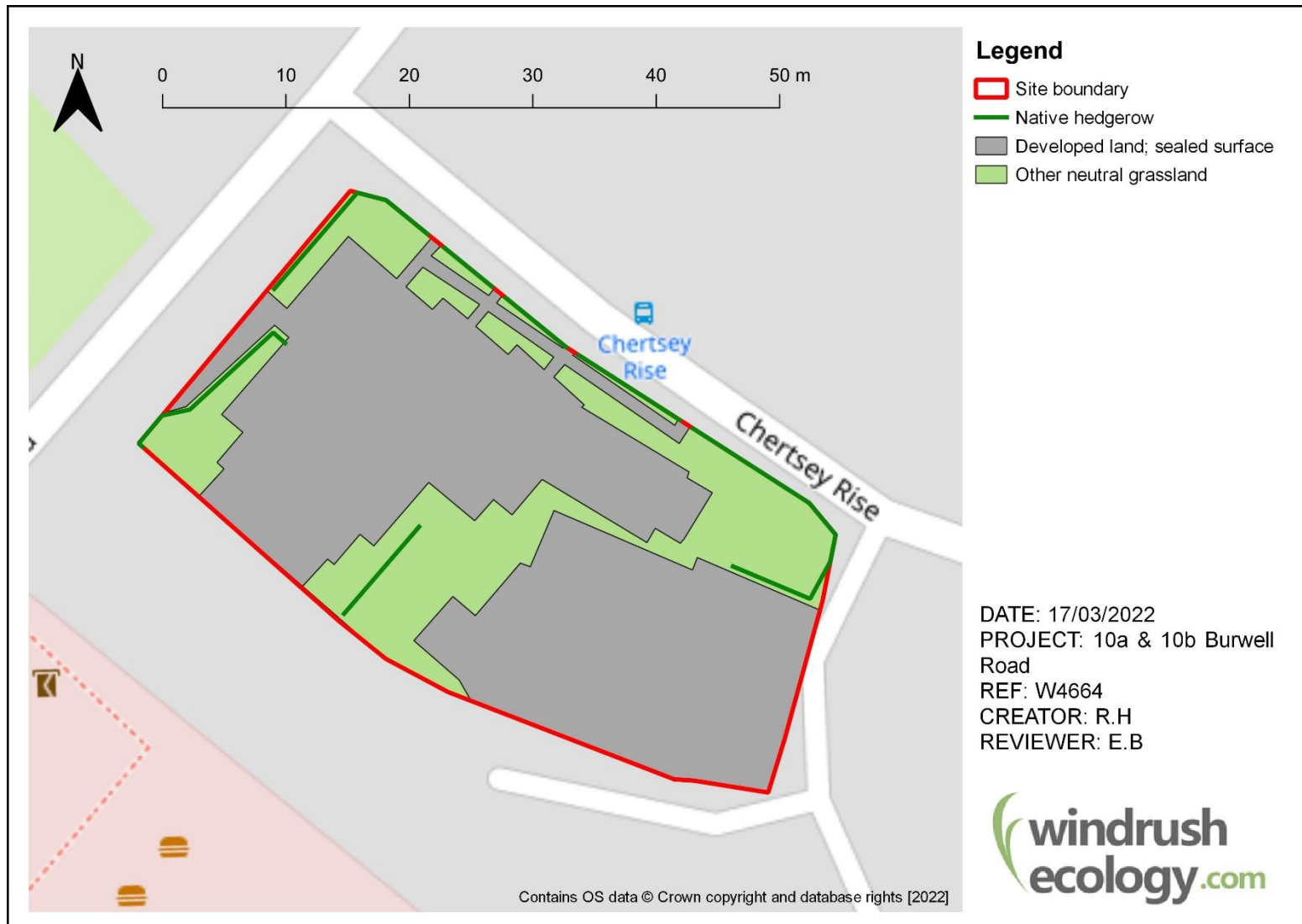


Map showing the location of the site, outlined in red, within the local area. Source: *OSM Standard*

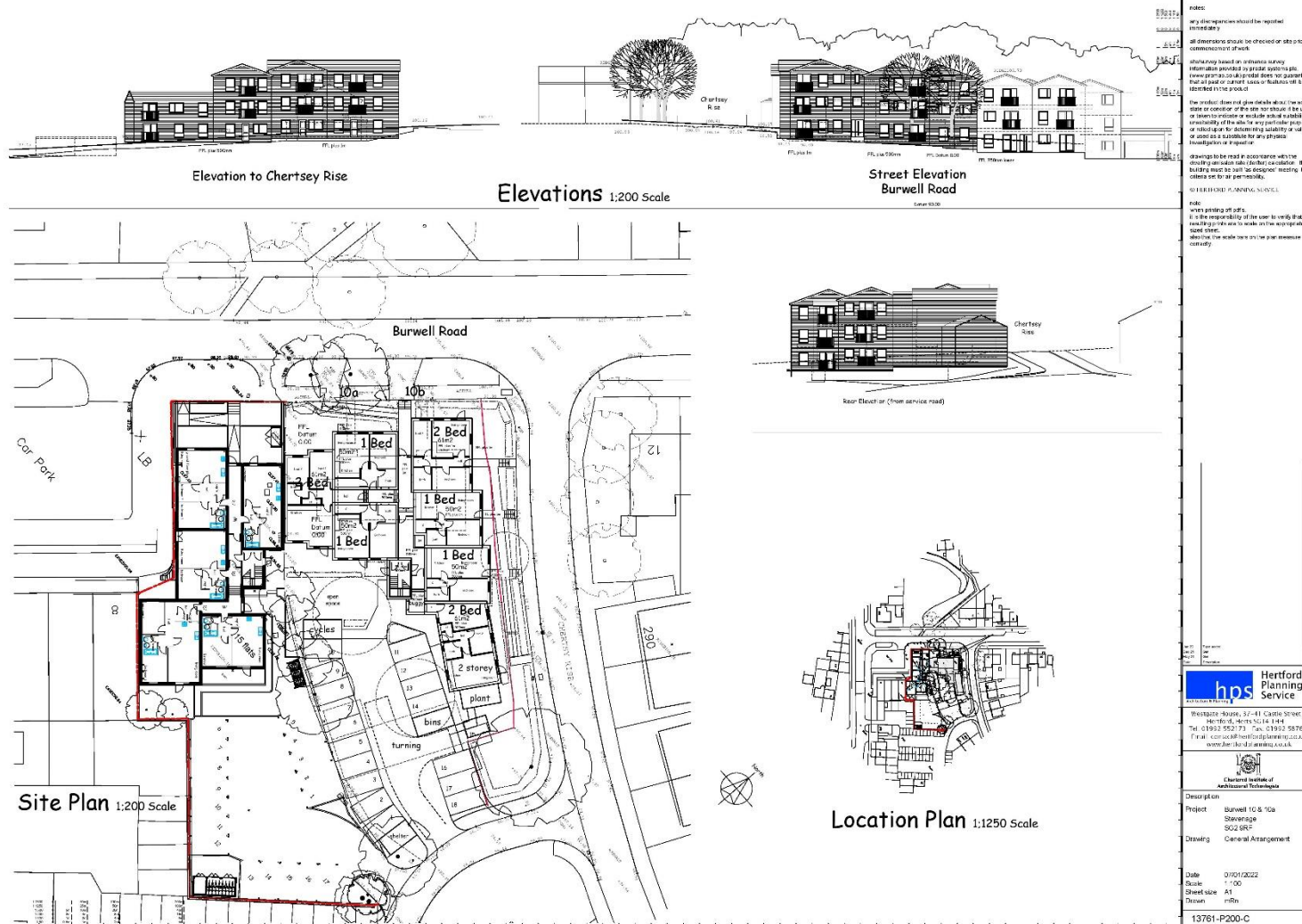
10 Appendix 3. Phase 1 Habitat Plan



### 11 Appendix 4. Proposal Habitat Plan



12 Appendix 5. Proposal Plan



**13 Appendix 6. Species for Landscape & Ornamental Planting**

Common Name	Botanical Name
<b>Trees</b>	
Field maple*	<i>Acer campestre</i>
Beech*	<i>Fagus sylvatica</i>
Hornbeam*	<i>Carpinus betulus</i>
Willow*	<i>Salix sp.</i>
Silver birch*	<i>Betula pendula</i>
Rowan*	<i>Sorbus aucuparia</i>
Whitebeam*	<i>Sorbus aria</i>
Alder*	<i>Alnus glutinosa</i>
Wild cherry*	<i>Prunus avium</i>
Flowering cherry	<i>Prunus sp.</i>
Flowering pear	<i>Pyrus calleryana</i>
Crab apple*	<i>Malus sylvestris</i>
Fruiting apple	<i>Malus sp.</i>
English oak*	<i>Quercus robur</i>
Elm*	<i>Ulmus sp.</i>
Small-leaved lime*	<i>Tilia cordata</i>
<b>Shrubs</b>	
Holly*	<i>Ilex aquifolium</i>
Hazel*	<i>Corylus avellana</i>
Wayfaring tree*	<i>Viburnum lantana</i>
Wild service tree*	<i>Sorbus torminalis</i>
Buckthorn*	<i>Rhamnus cathartica</i>
Guelder rose*	<i>Viburnum opulus</i>
Hawthorn*	<i>Crataegus monogyna</i>
Hebe	<i>Hebe sp.</i>
Rosemary	<i>Rosmarinus</i>
Ceanothus	<i>Ceanothus sp.</i>
Weigela	<i>Weigela sp.</i>
Dog rose	<i>Rosa canina</i>
Dogwood*	<i>Cornus sanguinea/alba</i>
Rose (single flowered varieties)	<i>Rosa sp.</i>
Wild privet*	<i>Ligustrum vulgare</i>
Garden privet	<i>Ligustrum ovalifolium</i>
Lilac	<i>Syringa vulgaris</i>
Escallonia	<i>Escallonia sp.</i>
Lavender	<i>Lavandula sp.</i>
Flowering currant	<i>Ribes sp.</i>
Honeysuckle*	<i>Lonicera periclymenum</i>
Mexican orange blossom	<i>Choisya sp.</i>
Spiraea	<i>Spiraea sp.</i>
Amelanchier	<i>Amelanchier lamarckii/canadensis</i>
Cotoneaster	<i>Cotoneaster sp.</i>
Yew*	<i>Taxus baccata</i>
Broom	<i>Cytisus sp.</i>

<b>Common Name</b>	<b>Botanical Name</b>
Rose of Sharon	<i>Hypericum calycinum</i>
Firethorn	<i>Pyracantha sp.</i>
Butterfly bush	<i>Buddleia davidii</i>
Clematis	<i>Clematis sp.</i>
<b>Perennials</b>	
Elephant's ears	<i>Bergenia cordifolia</i>
Sage	<i>Salvia sp.</i>
Lamb's ears	<i>Stachys byzantia</i>
Periwinkle*	<i>Vinca major &amp; Vinca minor</i>
Ivy*	<i>Hedera helix</i>
Bugle*	<i>Ajuga reptans</i>
Lady's mantle	<i>Alchemilla mollis</i>
Geraniums	<i>Geranium sp.</i>
Globe thistle	<i>Echinops ritro</i>
Monk's hood	<i>Aconitum sp.</i>
Yarrow*	<i>Achillea millefolium</i>
Teasel*	<i>Dipsacus fullonum</i>
Oriental poppy	<i>Papaver orientalis</i>
Michaelmas daisy	<i>Aster sp.</i>
Bear's breeches	<i>Acanthus spinosus</i>
Montbretia	<i>Crocsmia sp.</i>
Purple coneflower	<i>Echinacea purpurea</i>
Ornamental onion	<i>Allium sp.</i>
Catmint	<i>Nepeta sp.</i>
Verbena	<i>Verbena sp., Verbena bonariensis</i>
Marjoram	<i>Origanum majorana</i>
Thyme	<i>Thymus sp.</i>
Crocus	<i>Crocus sp.</i>
Daffodil	<i>Narcissus sp.</i>
Snowdrop	<i>Galanthus nivalis</i>
Summer Snowflake*	<i>Leucojum aestivum</i>
Winter aconite	<i>Eranthis sp.</i>
Bluebell*	<i>Hyacinthoides non-scripta</i>
Primrose*	<i>Primula veris</i>
Forget-me-not*	<i>Myosotis sp.</i>
Grape hyacinth	<i>Muscari botryoides</i>
Hollyhock	<i>Althaea rosea</i>
Lenten rose	<i>Helleborus orientalis</i>
Foxglove*	<i>Digitalis purpurea</i>
Greater knapweed*	<i>Centaurea scabiosa</i>
Great mullein*	<i>Verbascum thapsus</i>
Toadflax*	<i>Linaria vulgaris</i>
Meadow crane's-bill*	<i>Geranium pratense</i>
*indicates native species	

## **14 Appendix 7. Biodiversity Impact (Net Gain) Calculation**

Please refer to separate Excel document.