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1. INTRODUCTION

1.1. Background Information

1.1.1. Bradley Murphy Design Limited (BMD) was commissioned by Spen Hill Developments Limited in October 2013 to undertake an ecological survey and assessment of an area of land located at Broadwater Road, Welwyn Garden City in Hertfordshire (see Plan 1: Site Location).

1.1.2. The proposals for the site are for a mixed-use development, with associated access, car-parking provision and landscape planting. It should be noted that the site is scheduled for phased re-development and in this regard alterations to the existing northern access road were brought forward under a separate planning application as the first phase of re-development. This application was subsequently granted full planning permission (Ref: N6/2013/2305/MA) by Welwyn Hatfield Borough Council, dated 27/01/2014, with associated mitigation measures regarding reptiles now complete in order to address Condition 4 of this planning permission (see Section 5).

1.1.3. It should be noted that in 2010/ 2011 Hurleypalmerflatt and other consultants undertook ecological survey and assessment in regards to proposed re-development of the site. The results of this previous ecological survey and assessment work are detailed within Hurleypalmerflatt's EcIA report entitled '*Broadwater Road West, Welwyn Garden City - Ecological Impact Assessment in Support of Planning Application'* (Ref: 00201, Issue 02), dated February 2011, and the results of this earlier survey work are detailed within this report where appropriate.

1.2. Site Location

1.2.1. The site is located approximately 350m to the east of Welwyn Garden City centre, within a mixed industrial /residential landscape (see Plan 1: Site Location). Bridge Road (B195) is situated adjacent to the northern boundary of the site, with land scheduled for regeneration and industrial units beyond. Situated immediately to the east of the site is Broadwater Road (A1000) with offices beyond. To the west is a railway-line, Welwyn Garden City railway station, with industrial premises located adjacent to the south-western site boundary. Located to the south of the site are new residential apartments.

1.2.2. The site is approximately 9.15ha in area and is now largely disused. It is dominated by former commercial buildings in the north (the former Shredded Wheat factory and associated offices), with the former Polycell factory building and habitats of recent origin that have colonized over areas of hardstanding and man-made earth /rubble piles in the south. Associated with these habitats are small strips of currently unmanaged amenity planting and amenity grassland, with a number of trees also present, including a line of semi-mature /mature trees situated along the south-western boundary of the site. In addition, within the north-western section of the site is an area comprising a mosaic of grassland, re-colonizing grassland, tall ruderal vegetation and

scattered and continuous scrub, which in turn is bordered by a steep embankment to the north that supports shrubs, ruderal vegetation and a line of semi-mature trees.

1.2.3. A road (Hyde Way) separates the buildings in the north of the site from the former Polycell factory building in the south. This is a minor road, but is an established pedestrian route, linking to a footbridge over the railway line in the western section of the site. In addition, a single-lane access road separates the mosaic of habitats in the north-western section of the site from an area of hardstanding associated with the former Shredded Wheat Factory. It is this access road and the consented alterations to it, which are the subject of planning permission N6/2013/2305/MA, as referred to above.

1.3. Purpose of this Report

1.3.1. The purpose of this report is to provide an assessment of the ecological interest of the site and adjacent habitats in order to inform the current development proposals. Where appropriate, the results of further survey work and /or mitigation measures are detailed so as to ensure any existing or potential ecological interest within or bordering the site is safeguarded. In addition, in line with the National Planning Policy Framework (NPPF), ecological enhancement and creation opportunities are highlighted where appropriate, with reference to local and national Biodiversity Action Plans (BAP's).

2. SURVEY METHODOLOGY

2.1. The ecological assessment of the site comprised a desktop study, a habitat survey, (including an invasive plant survey), and a general faunal survey. In addition, given the presence of suitable habitats to support Badger, reptiles and to a lesser extent roosting bats, detailed survey and assessment work was undertaken in regard to these faunal species /groups.

2.2. Desktop Survey

2.2.1. A desktop study was undertaken in November 2013 in order to obtain records of statutory and non-statutory designated sites of nature conservation importance, as well as pre-existing records of any protected, rare, notable or Biodiversity Action Plan (BAP) listed faunal species recorded within the site or within a specified 2km radius search area surrounding the site. In this regard, Hertfordshire Biological Record Centre (HBRC) was contacted, with the results obtained detailed within this report at Sections 3, 4 and 5 and highlighted on Plan 2: Ecological Designations, with the raw data shown at Appendix 1, where permitted.

2.2.2. In addition, a search was undertaken of the National Biodiversity Network (NBN) database in order to obtain records of any UK BAP-listed and International Union for Conservation of Nature (IUCN) listed botanical species as well as any protected, rare, notable or BAP-listed faunal species recorded within the last 20 years within the local vicinity of the site, with relevant information discussed at Sections 4 and 5 of this report [NOTE: The information obtained from the NBN database is not included as an appendix to this report in order to accord with the NBN's Terms and Conditions. Furthermore, it should be noted that the NBN Trust bears no responsibility for the interpretation of their data within this report].

2.3. Habitat Survey

2.3.1. The site was subject to an ecological survey in October 2013, with update botanical survey work undertaken in June and August 2014, based around the JNCC's standard Phase 1 survey methodology[1], as recommended by Natural England. Following this methodology, the habitat types present are identified and mapped, as shown on Plan 3: Habitats and Photographs /Faunal Survey Results. Particular attention was paid to the presence of any habitats likely to be of nature conservation value, which may need to be examined in more detail.

2.3.2. The higher plant species identified in each habitat were recorded and their abundances assessed using the DAFOR scale (D –Dominant, A -Abundant, F-Frequent, O - Occasional and R -Rare – i.e. very occasional). Any uncommon or species indicative of particular habitat types were noted. However, the survey did not aim to compile exhaustive species lists and in any event different species are apparent during

[1] Joint Nature Conservation Committee – JNCC - (2010) '*Handbook for Phase 1 Habitat Survey*.'

different seasons and therefore would not necessarily be apparent at the date of any given survey (see survey constraints, below).

2.3.3. In addition, a specific survey was undertaken to identify the potential presence of invasive plant species, with particular attention paid to the highly invasive species Japanese Knotweed, Giant Hogweed and Himalayan Balsam.

2.3.4. Common names of the botanical species referenced and/or recorded within the site are detailed within this report, with scientific names of these species listed at Appendix 2.

2.4. Faunal Survey

2.4.1. General faunal activity was recorded during the course of the survey work, including incidental sightings of birds, mammals and invertebrates, with particular attention paid to any potential use of the site by protected, rare, notable, or BAP-listed faunal species. Furthermore, given the habitats present, specific Phase 2 survey work was undertaken within /adjacent to the site in respect of Badger, roosting bats and reptiles, following the methodologies detailed below.

2.4.2. Common names of the faunal species referenced and/or recorded within the site are detailed within this report, with scientific names of these species listed at Appendix 2.

Badger

2.4.3. Badger survey was undertaken at the site in October 2013, with an update survey undertaken in October 2014. The survey comprised two main elements[2]. Firstly, searching thoroughly for evidence of Badger setts. For any setts that were encountered, each sett entrance was noted and plotted even if the entrance appeared disused. The following information was recorded:

- The number and location of well-used **active** entrances; these are clear from any debris or vegetation and are in regular use, with fresh spoil present adjacent to such entrances.
- The number and location of **recently active** entrances, (likely utilized within the preceding week or two, prior to survey)
- The number and location of **inactive** entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- The number and location of **disused** entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance.

2.4.4. Secondly, Badger activity such as well-worn paths and push-throughs, snagged hair, footprints, scratching posts, latrines, droppings and foraging signs were recorded so as to build up a picture of any use of the site by Badgers.

[2] Based on: Mammal Society (1989) "*Occasional Publication No. 9 – Surveying Badgers*"

Bats - Roosting Surveys

2.4.5. *Building Inspections:* All buildings present at the site were subject to internal and external surveys (where permitted) to search for bats and/or evidence of roosting bats during October /November 2013. In addition, an assessment was made of the potential of these buildings to support roosting bats. The survey work was undertaken by a Natural England licensed bat surveyor, following standard guidance set out within Natural England's publication entitled '*Bat Mitigation Guidelines*' (2004) and the Bat Conservation Trust's (BCT) publication entitled '*Bat Surveys –Good Practice Guidelines*' (2012).

2.4.6. Bats and evidence for the presence of bats was searched for during the surveys, with particular attention paid to internal loft voids (where present and accessible). Evidence for the presence of bats including bat droppings, which can indicate present or past use of a building as well as extent of use, presence of stained areas caused by urine or grease from bats' fur, bat claw marks, areas that are cobweb-free, and bat feeding remains were all searched for. Any bat droppings collected during the course of the surveys were visually assessed, and attributed to a bat species /genus where possible on the basis of their size/ shape /texture[3].

2.4.7. Exterior checks of all buildings were also undertaken in order to search for potential bat roosting and/or access points and any evidence of their use by bats (i.e. grease marks around/under potential entry/exit points and bat droppings under such points). Binoculars were used to inspect any inaccessible areas more closely.

2.4.8. The suitability of each structure present to be utilized by bats was also assessed, taking into consideration:

- the construction-type and materials utilized to build the structure,
- the state of repair of the building /structure,
- the potential bat roosting features the building supports (gaps under ridge tiles, roof tiles and lead-flashing, suitable cracks and crevices within stonework /brickwork, and potential bat access points at eaves, gable-end walls, chimneys and decorative features),
- the building's location within the immediate and wider landscape,
- and the level of disturbance that the building /structure is likely to be subject to.

2.4.9. Following this assessment buildings are assigned a value of negligible, low, moderate or high bat roosting potential.

2.4.10. *Tree Inspections*: An examination of all the trees within /bordering the site was undertaken to search for the presence of features such as cracks, splits, rot holes, old Woodpecker holes, dense coverings of Ivy, peeling bark or similar, which provide potential roosting opportunities for bats. The potential for trees to support roosting bats was ranked in accordance with the criteria set out within Bat Conservation Trust's publication entitled '*Bat Surveys -Good Practice Guidelines*' (2012), whereby individual

[3] Following: Stebbings, R.E., Yalden, D.W. and Herman, J.S. (2007). "*Which bat is it? A guide to bat identification in Great Britain and Ireland."* The Mammal Society.

trees are assigned to one of the following categories according to their apparent potential to support roosting bats:

- *Known or confirmed bat roost.*
- *Category 1** – trees with multiple highly suitable features capable of supporting larger roosts.
- *Category 1* – trees that have definite bat roosting potential, supporting fewer suitable features than Category 1* trees or with potential for use by single bats.
- *Category 2* – trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support roosting bats.
- *Category 3* – trees with no potential to support roosting bats.

2.4.11. A Natural England licensed bat surveyor undertook a survey of suitable bat roosting features (as detailed above), to try and determine any current use by roosting bats. Evidence for the presence of bats including bat droppings, the presence of stained areas caused by urine or grease from bats' fur were all searched for using torches and binoculars where necessary. Any bat droppings collected during the course of the survey were visually assessed, and attributed to a bat species /genus where possible on the basis of their size/ shape /texture.

Reptiles

2.4.12. Given the presence of suitable reptile habitat at the site, given that some of this habitat is connected to suitable off-site reptile habitat (i.e. the adjacent railway corridor) and given that a small population of reptiles was previously recorded at the site by Hurleypalmerflatt in 2011 (maximum count of 2 Slow-worm), update Phase 2 survey work was undertaken at the site between early April and early June 2014 to establish continued presence of reptiles and gauge likely size of any population present.

2.4.13. A total of 145 0.5m x 0.5m or 1m x 0.5m sheets of thick roofing felt were placed within areas of suitable reptile habitat across the site to act as artificial refugia (see Plan 4: Reptile Survey - Locations of Reptile Refugia /Reptiles Recorded). These refugia provide shelter and heat up more quickly than their surroundings in the morning and can remain warmer than their surroundings in the evening. As such, reptiles being ectothermic (cold blooded), use them to bask under and raise their body temperature which allows them to forage earlier and later in the day. Therefore, checking the refugia in the morning and/or late afternoon should reveal reptiles, if they are present at a site.

2.4.14. The refugia were left in place for 10 days in order to 'bed-in' and enable any reptiles present to find them prior to the first survey being undertaken. Subsequent to this the refugia were checked over 7 survey visits during suitable weather conditions, as recommended in Froglife's Advice Sheet 10[4] (NOTE: The survey protocol was agreed with Hertfordshire County Council's Ecology Advisor – see Appendix 3). In addition,

[4] Froglife Advice Sheet 10 - *Reptile Survey – An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation'*

careful visual observations were made during each survey visit to search for any basking or foraging reptiles present at the site, but not utilizing the artificial refugia.

2.5. Survey Constraints / Limitations

2.5.1. *Phase 1 Survey.* All of the botanical species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. Nevertheless, the survey work undertaken at the site falls within the recognized botanical survey window for sites situated within the south of England (as per the guidance detailed in JNCC's '*Handbook for Phase 1 Habitat Survey*' 2010), with the update June /August 2014 survey work undertaken during the optimal botanical survey window. Therefore, it is considered that a robust assessment of the ecological interest of the habitats / flora present within the site has be made.

2.5.2. *Badger Survey Work.* The vast majority of the site could be accessed in order to search for Badger setts and other evidence of Badgers in October 2013. Nevertheless, there were some areas of dense, impenetrable scrub /Bramble thicket situated within the north-western section of the site, which could not be thoroughly inspected during this initial survey. However, these areas of dense scrub were removed under ecological supervision from the north-western section of the site as part of the reptile mitigation works undertaken in September / October 2014 (see Section 5) and hence adequate survey of these areas for Badger could then undertaken.

2.5.3. *Bat Survey Work.* Internal access could be gained to all buildings, save for B1c, with external access gained to all of the buildings present at the site in order to carry out survey work for roosting bats. A number of sections of the buildings contain rubbish, debris and/or concentrations of bird droppings on some of their floors and these areas were difficult to inspect for evidence of bat droppings and bat feeding remains. Nevertheless, it should be noted that the vast majority of the buildings could be adequately inspected, with the buildings assessed as providing only negligible-to-low potential to roosting bats, such that this element of the bat survey work is considered sufficiently robust.

2.5.4. None of the trees at the site support dense coverings of Ivy and hence all trees could be adequately inspected and assessed for their potential to support roosting bats and any current use of such features by roosting bats assessed. Therefore, this element of the bat survey work is considered robust.

2.6. Principles of Ecological Evaluation

2.6.1. The methods for assessment followed within this ecological assessment report are based upon the principles set out within the Chartered Institute of Ecology and Environmental Management's (CIEEM) publication entitled '*Guidelines for Ecological*

Impact Assessment in the United Kingdom[5] and the Town and Country Planning Environmental Impact Assessment Regulations (2011) and subsequent amendments.

2.6.2. Habitats /Plant communities are assessed against standard selection criteria, where such criteria exist (e.g. SAC selection criteria, '*Guidelines for the Selection of Biological SSSIs*' and the '*Hedgerows Regulations'* 1997). However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based upon relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). Regard should also be given to whether a habitat can be re-created or restored. In addition, consideration should be given to habitats listed as priorities for conservation under the United Kingdom Biodiversity Action Plan (UK BAP) in accordance with Section 41 of the National Environment and Rural Communities (NERC) Act 2006, i.e. '*Habitats of Principal Importance'*. Certain habitats may also be listed within more regionally or locally specific BAPs. The LBAP relevant to the site is the Hertfordshire BAP.

2.6.3. Faunal species /populations are assessed using a combination of factors, including rarity, distribution, status and population size, with historical trends also taken into consideration. Particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species. For certain species /groups, e.g. waterfowl, there are established criteria that can be used for defining nationally and internationally important populations. Consideration should also be given to species listed as priorities for conservation under the UK BAP in accordance with Section 41 of the NERC Act 2006, i.e. '*Species of Principal Importance'*. Certain faunal species may also be listed within more regionally or locally specific BAPs.

2.6.4. *Secondary or Supporting Value.* Some habitats or features that are of no intrinsic biodiversity value may nonetheless perform an ecological function, e.g. as a buffer. In addition, certain features of the landscape which by virtue of their linear or continuous nature (e.g. rivers) or their function as "*stepping stones*" may be of value for the migration, dispersal and genetic exchange of wild species, for example small woods.

2.6.5. *Other Value.* Social and economic factors, as well as other tertiary factors may also be relevant in assessing the value of a particular ecological receptor.

2.7. Assessing Ecological Effects and Mitigation

2.7.1. In accordance with CIEEM guidelines, once the value of an ecological receptor has been established, any effects upon this receptor should be assessed within the relevant geographical frame of reference, namely '*international, national, regional, county (or metropolitan), district (or unitary authority, city of borough), local (or parish) or at the site level*'. The magnitude of any given effect can then be assessed against this reference frame and should take into account the extent, duration, certainty and

[5] Institute of Ecology and Environmental Management. (2006). *"Guidelines for Ecological Impact Assessment in the United Kingdom"* (version 7 July 2006).

reversibility of a potential effect on the integrity of a habitat /plant community and/or the favourable conservation status of a species /population.

2.7.2. Where the integrity and/or favourable conservation status of a habitat or species is undermined the effect is negative, whilst a positive effect could be defined as one that prevented or slowed an existing decline in the integrity and/or the favourable conservation status of a habitat or population as much as one that permitted a population or habitat area to increase.

2.7.3. Nevertheless, even where significant effects upon key ecological receptors are not identified, safeguards and mitigation /compensation measures may still be appropriate in line with legislative considerations, environmental plans and policies, animal welfare issues and best practice guidance. In this regard, the recommended five-point best practice approach[6,7,8] regarding potential effects is adopted within this assessment:

1. *Information* – gathering comprehensive baseline information in order to make sound decisions based on the evidence recorded
2. *Avoidance* – avoid adverse effects upon habitats and species wherever possible
3. *Mitigation* – where it is unavoidable, mitigation measures should be employed to minimise adverse effects
4. *Compensation* – where appropriate, provide compensation where residual effects remain after mitigation measures have been employed
5. *Enhancements* – the National Planning Policy Framework sets out that the planning system should enhance the natural environment by providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. The NPPF specifically states that opportunities to incorporate biodiversity in and around developments should be encouraged.

[6] Royal Town Planning Institute (1999) "*Planning for Biodiversity – Good Practice Guide*"
[7] ODPM (2006) "*Planning for Biodiversity and Geological Conservation – A Guide to Good Practice*"
[8] PAS (2010) "*Planning to Halt the Loss of Biodiversity, Biodiversity Conservation Standards for Planning in the United Kingdom – Code of Practice."*

3. ECOLOGICAL DESIGNATIONS AND EVALUATION

3.1. Statutory Designations

3.1.1. HBRC do not hold records of any statutory designated sites of nature conservation importance recorded within or situated immediately adjacent to the site. However, HBRC highlight the presence of 3 such designations recorded within the specified 2km radius search area surrounding the site (see Table 1 below, and Plan 2). The nearest of these statutory designations to the site is Sherrardspark Wood Local Nature Reserve (LNR), which is situated approximately 875m north-west of the site at its closest point. Sherrardspark Wood LNR, is an ancient semi-natural woodland. It should be noted that the majority of Sherrardspark Wood is also designated as a Site of Special Scientific Interest (SSSI), with the closest point of this designation to the site situated approximately 900m to the north-west (see Plan 2).

3.1.2. The third statutory designation situated within the specified 2km radius search area surrounding the site is The Commons LNR. This site supports a mosaic of ecologically important habitats (see Table 1), and at its closest point is situated 1.825km south-east of the proposed development site (see Plan 2).

3.1.3. **Evaluation:** Sherrardspark Wood LNR /Sherrardspark Wood SSSI and particularly The Commons LNR are all well separated from the site by significant areas of built-form, including Welwyn Garden City centre, residential areas, and a number of roads. Furthermore, given the nature of the proposals and given that there are no known hydrological links connecting any of these three designations with the proposed development site, then it is considered that none of these sites will be directly or indirectly affected by the proposals either during the construction or operational phases of the development. As such, no specific safeguards or mitigation measures beyond adoption of standard best working practices are considered necessary as part of the development with regard to these statutory designations, or any other statutory designated sites of nature conservation importance.

3.2. Non-statutory Designations

3.2.1. HBRC do not hold records of any non-statutory nature conservation designations recorded within or situated immediately adjacent to the site. However, 16 non-statutory designated sites of nature conservation importance are situated /partly situated within the specified 2km radius search area surrounding the site, including 14 County Wildlife Sites (CWS) and 2 areas of Ancient Woodland (AW), as detailed within Table 1 below. The closest of these non-statutory designations to the site is Twentieth Mile Bridge Allotments CWS (Ref: 57/055), which is situated approximately 220m south-southwest of the site (see Plan 2). This site is designated as a CWS because it supports protected faunal species namely Slow-worm and Common Lizard (pers. comm. Anita Parry HBRC). The next closest of these non-statutory designations to the site is Dismantled Railway East of Sherrardspark Wood CWS (Ref: 57/048), which is situated approximately 350m north-west of the site, at its closest point (see Plan 2). This site is designated as a CWS because it supports old /semi-natural woodland.

3.2.2. The remaining 14 non-statutory designated sites recorded within the specified 2km search area are all situated 600m or more from the proposed development site, with 11 of these sites situated 1km or more from the proposed development site (see Table 1, below).

3.2.3. The closest area of Ancient Woodland to the proposed development site is Sherrardspark Ancient Semi-natural Woodland, which at it closest point is situated approximately 900m to the north-west (see Plan 2).

3.2.4. **Evaluation.** Twentieth Mile Bridge Allotments CWS (Ref: 57/055) is separated from the site by new multi-storey residential development. Therefore, given the nature and extent of this separation, given the reasons why this site was designated, given the nature of the proposals, and given that there are no known hydrological links connecting this non-statutory designation with the proposed development site, then it is considered that Twentieth Mile Bridge Allotments CWS will not be directly or indirectly affected by the proposals either during the construction or operational phases of the development. Nevertheless, it is recommended that best practice measures be adopted to ameliorate potential light, noise and dust impacts emanating from the site, particularly during the construction phase of the development.

3.2.5. Given the extent of separation between the proposed development site and the remaining 15 non-statutory designations (i.e. 350m+), and given there are no known hydrological links connecting the site with any of these designations then it considered that none of these non-statutory designations will be directly or indirectly impacted by the proposed development either during the construction or operational phases of the development. As such, no specific safeguards or mitigation measures are considered necessary as part of the development with regard to these non-statutory designations or any other non-statutory designated sites of nature conservation importance.

Site Name /Code	Designation Type	Description / Reason for Designation	Approximate Distance and Direction from Site
Statutory Designated Sites			
Sherrardspark Wood	Local Nature Reserve (LNR)	Ancient semi-natural woodland dominated by mature Sessile Oak, with formerly coppiced Hornbeam and occasional Birch sp., Pedunculate Oak, Ash, Wild Cherry and Field Maple also present. Three uncommon Hertfordshire botanical species have also been recorded within the woodland, namely Broad-leaved Helleborine, Violet Helleborine and Moschatel.	875m NW
Sherrardspark Wood	Site of Special Scientific Interest (SSSI)	Ancient semi-natural woodland dominated by mature Sessile Oak, with formerly coppiced Hornbeam and occasional Birch sp., Pedunculate Oak, Ash, Wild Cherry and Field Maple also present. Three uncommon Hertfordshire botanical species have also been recorded within the woodland, namely Broad-leaved Helleborine, Violet Helleborine and Moschatel.	900m NW
The Commons	Local Nature Reserve (LNR)	A mosaic of habitats including fen, broadleaved woodland and meadow. In addition, an old hedgerow crosses the site and the wooded stream course is essentially ancient woodland with uncommon species present, including Moschatel. The mosaic of habitats is important for a variety of wildlife. Wildlife Site criteria: Grassland indicators; fen and swamp indicators.	1.825km SE
Non- Statutory Designated Sites			
Twentieth Mile Bridge Allotments (57/055)	County Wildlife Site (CWS)	Site important for protected species. Wildlife Site criteria: Species.	220m SSW
Dismantled Railway E. of Sherrardspark Wood (57/048)	County Wildlife Site (CWS)	Dismantled railway route with bank supporting old, possibly ancient woodland. Wildlife Site criteria: Old /ancient woodland with a semi-natural canopy; woodland indicators.	350m NW
Watch Mead Disused Railway (58/054)	County Wildlife Site (CWS)	Disused railway supporting unimproved neutral grassland plus abundant trees and shrubs, with a variety of woody species noted. The embankment is also important for reptiles. Wildlife Site criteria: Grassland indicators.	600m E
Blackfan Valley (58/039)	County Wildlife Site (CWS)	A public open space with areas of mown grassland, old secondary broadleaved and mixed woodland including some Pedunculate Oak /Hornbeam woodland, old scrub, tree planting and a concrete reservoir/lake. Wildlife Site criteria: Grassland indicators.	850m NE
Sherrardspark Wood	Ancient Semi-natural Woodland	Ancient woodland	900m NW
Temple Wood Vale Open Space (57/040)	County Wildlife Site (CWS)	A site supporting mainly mown amenity grassland with an area of rough grassland to the southern half, on a north facing slope, supporting more species-rich calcareous and neutral grassland. Wildlife Site criteria: Grassland indicators.	1.250km NW

Valley Road Open Space (57/041)	County Wildlife Site (CWS)	Public open space, which supports a mosaic of habitats. The northern half is of most interest with rough old semi-improved neutral grassland and clumps of mature Cherry trees. Wildlife Site criteria: Grassland indicators.	1.275km W
Sherardspark Wood	Ancient Re-planted Woodland	Ancient re-planted woodland	1.325kms NW
Bushey Leys (58/043)	County Wildlife Site (CWS)	Ancient semi-natural Hornbeam coppice with standards woodland. Wildlife Site criteria: Ancient woodland with a semi-natural canopy; >1 ha; shown on Bryant's map (1822); woodland indicators.	1.35km ESE
Digswell Place Park (57/018)	County Wildlife Site (CWS)	Site supporting two moderately species-rich semi-improved neutral grasslands. The northern field is the most diverse. Wildlife Site criteria: Grassland indicators.	1.475km NW
Digswell Place Meadow (57/045)	County Wildlife Site (CWS)	Semi-improved to unimproved grassland with the most diverse, slightly acidic sward occurring within the centre of the site. Wildlife Site criteria: Grassland indicators.	1.5km NW
Malm's Wood (57/017)	County Wildlife Site (CWS)	Ancient semi-natural Pedunculate Oak /Hornbeam coppiced woodland. The ground flora supports a good diversity of woodland indicator species. Wildlife Site criteria: Ancient woodland with some semi-natural canopy and field evidence suggesting an ancient origin; wood fragments shown on Bryant's map (1822); woodland indicators.	1.6km NW
Pasture S. of Malms Wood (57/047)	County Wildlife Site (CWS)	Two pastures on a gentle north-facing slope supporting neutral to somewhat acid grassland. The sward supports a number of species indicative of long standing unimproved grassland. Wildlife Site criteria: Grassland indicator species.	1.625km NW
Digswell Lake (57/007)	County Wildlife Site (CWS)	The area contains a range of habitats consisting of a large spring-fed lake with good aquatic flora, tall swamp, a small pond, semi-improved neutral grassland, ancient parkland trees and wet broadleaved woodland. The area is good for birds and Water Voles have also been noted. Wildlife Site criteria: Grassland indicators; fen & swamp indicators.	1.7km N
Creswick Plantation (57/046)	County Wildlife Site (CWS)	Old semi-natural broadleaf woodland divided by Mill Green Lane. Wildlife Site criteria Ancient woodland criteria.	1.7km S
The Commons (58/037)	County Wildlife Site (CWS)	A mosaic of habitats including fen, broadleaved woodland and meadow. In addition, an old hedgerow crosses the site, whilst the wooded stream course is essentially ancient woodland with uncommon species present, including Moschatel. The mosaic of habitats is important for a variety of wildlife. Wildlife Site criteria: Grassland indicators; fen and swamp indicators.	1.825km SE

Table 1: Statutory and Non-statutory Designated Sites of Nature Conservation Importance Situated within a 2km Radius of the Site

4. SITE DESCRIPTION, HABITATS AND EVALUATION

4.1. Site Description and Habitats

4.1.1. The site is located immediately to the east of Welwyn Garden City centre, situated within a mixed industrial /residential landscape. Bridge Road (B195) is situated adjacent to the northern boundary of the site, with a former industrial area beyond, which is now scheduled for re-development. Situated immediately to the east of the site is Broadwater Road (A1000), with offices and commercial properties beyond. Situated immediately to the south of the site are a number of new multi-storey residential apartments.

4.1.2. The survey area comprises a brownfield site, which is dominated by former commercial buildings in the north (the former Shredded Wheat building complex), with the former Polycell factory building and habitats of recent origin that have colonized over areas of hardstanding and man-made earth /rubble piles in the south. Associated with these habitats are small strips of currently unmanaged amenity planting and amenity grassland, with a number of trees also present, including a line of semi-mature trees situated along the south-western boundary of the site. In addition, within the north-western section of the site is an area comprising a mosaic of re-colonizing grassland, rank grassland, tall ruderal vegetation and scattered and continuous scrub, which in turn is bordered by a steep embankment to the north that supports shrubs, ruderal vegetation and a line of semi-mature trees.

4.1.3. The locations of these habitats and features are shown on Plan 3: Habitats and Photographs /Faunal Survey Results. They are also described in detail below.

4.2. Background Records

4.2.1. HBRC hold 63 records in all of 26, either county scarce, rare, vulnerable, near threatened or endangered plant species recorded within the specified 2km radius search area surrounding the site (see Appendix 1). None of these records was definitively recorded within or immediately adjacent to the proposed development site, although detailed grid reference information is not provided for all of the records received. Of those records for which detailed grid reference information is provided the closest to the site is that of the Hertfordshire Vulnerable /Hertfordshire Rare species Long Stalked Crane's-bill (as published status in 'Flora of Hertfordshire 2010'), which was recorded approximately 100m west of the site boundary in 1992.

4.2.2. HBRC also hold 58 records of important veteran and mature trees recorded within the specified 2km radius search area surrounding the site. None of these trees was recorded within or immediately adjacent to the proposed development site, with the closest such tree recorded approximately 250m south of the site (see Appendix 1).

4.2.3. In addition, HBRC also hold records of 2 important moss species, including one nationally scarce species (Smaller White Moss), as well as one nationally scarce

liverwort species, namely Minute Pouncewort. All 3 species were recorded within Sherrardspark Wood, at least 875m north-west of the site (see Appendix 1).

4.2.4. The NBN database holds records of 13 UK BAP listed plant species /Species of Principal Importance in England, namely Pheasant's-eye, Tower Mustard, Caraway, Cornflower, Basil Thyme, Darnel, Red-tipped Cudweed, Broad-leaved Cudweed, Red Hemp Nettle, Corn Buttercup, Shepherd's Needle, Annual Knawel, Spreading Hedge Parsley, which were recorded within the 10x10km grid square that encompasses the site for the period 1994 -2014. Of these plants the IUCN (2001) classifies 4 of these species as Critically Endangered (Darnel, Red Hemp Nettle, Corn Buttercup and Shepherd's Needle) and 7 as Endangered (Pheasant's-eye, Tower Mustard, Caraway, Red-tipped Cudweed, Broad-leaved Cudweed, Annual Knawel and Spreading Hedge Parsley), with 2 further plant species recorded in the 10x10km grid square also listed as Endangered (Field Gromwell and Narrow-fruited Cornsalad). Furthermore, the NBN database also holds records for 10 Near Threatened, 9 Vulnerable (including Basil Thyme), 6 Nationally Rare, and 16 Nationally Scarce plant species, as classified by the IUCN (2001), for the 10x10km grid square in which the site is located for the period 1994–2014. In addition, the NBN database holds records of 3 Wildlife and Countryside Act (1981) Schedule 8 listed plant species recorded within the 10x10km grid square encompassing the site, namely Bluebell, Red-tipped Cudweed and Broad-leaved Cudweed.

4.2.5. None of the NBN records provided were definitively recorded within the development site, although detailed grid reference information is not provided for the vast majority of these records and hence their exact locations in relation to the site cannot be determined. Nevertheless, none of the above species, including those detailed in the HBRC records, was recorded at the site during the survey work undertaken.

4.3. Habitats of Principal Importance for Biodiversity

4.3.1. Section 41 of the NERC Act 2006 places a duty on the Secretary of State to publish a list of habitats considered to be of principal importance for the purposes of conserving biodiversity.

4.3.2. The site does not contain any definitive examples of Habitats of Principal Importance in England listed under Section 41 of the NERC Act (2006). Nevertheless, the triangular-shaped area of land situated within the north-western section of the site does support a number of plant communities that are of fairly recent origin, as detailed within Criterion 3 of the UK BAP-listed habitat '*Open Mosaic Habitats (OMH) on Previously Developed Land*'. A number of the listed plant species occurring in such communities (Criterion 3 and 5) were recorded within this section of the site during the survey work undertaken, with this area recorded as being at least 0.25ha in size and thus fulfilling Criterion 1. However, the abundances of the qualifying plant species is low, with the majority recorded as being only occasionally or very occasionally present in this section of the site. Moreover, and importantly, the plant communities within this section of the site are largely more established than the ephemeral plant communities highlighted in the OMH criteria (Criterion 3), with very few areas of bare ground

present (Criterion 4) and significantly greater areas of scattered and continuous scrub present than detailed in the OMH criteria, whilst the extent of previous development in this section of the site is hard to determine, although some compaction of underlying substrate has occurred (Criterion 2). Therefore on balance it is considered that the habitat mosaic situated within the north-western section of the site is unlikely to qualify as being '*Open Mosaic Habitats (OMH) on Previously Developed Land'* following the UK BAP criteria. In the unlikely event that it does qualify, then it is considered that it would, at best, be a poor example of *'Open Mosaic Habitats on Previously Developed Land.'*

4.4. Buildings

4.4.1. The site supports two main building structures, which are situated north and south of Hyde Way, respectively (see Plan 3). Building B1 is a large complex of interlinked buildings, which occupy the north-eastern section of the site (see Photographs 1-8 on the Photosheets). These buildings comprise the former Shredded Wheat building complex and include the warehousing, offices, conference rooms, laboratories, canteens, toilets and storage areas, which are located around the boundaries of this area of the site (shown as Building B1a on Plan 3); the large factory area situated towards the centre of this area (shown as Building B1b on Plan 3); and the tall grain silos situated within the south-western section of this area (shown as B1c on Plan 3). Building B2 is a multi-storied, brick-built structure, formerly utilised by Pollycell, with the ground floor now in occupation as a storage centre. These buildings are described in more detail below.

Building B1a (former Shredded Wheat building complex)

4.4.2. Building B1a comprises a number of interlinked, multi-storeyed (1–4 storeys) structures, largely constructed of brick and concrete, supported by steel and concrete pillars. These structures predominantly support flat concrete roofs, some of which are externally felt-lined, although small sections of gently sloping, and one section of pitched, corrugated metal-sheet roof are also present. The external walls of most of these structures have been rendered. The brickwork, concrete and felt-lining associated with B1a are in a good state of repair (see Photographs 1 and 2 on the Photosheets).

4.4.3. Internally, the buildings have been sub-divided by brick and breezeblock walls, although large sections of the internal space are open-plan (see Photograph 3 on the Photosheets), with most rooms comprising large windows, which are present upon multiple elevations. These rooms are connected by concrete staircases, which also support a large number of windows. The majority of the structures comprise concrete floors and ceilings, although the smaller offices, canteens and toilets contain hanging-tiled ceilings, which are supported by metal frameworks. Small voids of approximately 0.3m to 0.75m are present between the ceilings tiles and the concrete roofs above, although virtually all of these features are missing tiles, with a large number missing the majority of their ceiling tiles. A number of these small voids support fibre-glass insulation, with wires and metal ventilation ducts /pipes also present (see Photograph

4 on the Photosheets). A single basement area is present, which comprises concrete ceiling and walls. The basement was recorded as flooded at the time of survey and contained approximately 30cms of water.

Building B1b (factory structure - former Shredded Wheat building complex)

4.4.4. Building B1b comprises a large building situated within the central section of the former Shredded Wheat building complex area (see Plan 3). The building is a large square-shaped, open-plan, single-storey concrete structure punctuated by steel and concrete support columns. The walls are in a reasonable state of repair, although some of the pipe-work has been removed. B1b supports a multi-pitched roof comprising mono-pitched sections of roof, with a sloping section with sarking boards beneath and a vertical section that is glazed. The roof is in tact, but is in a poor state of repair with significant water damage recorded throughout and pools of water recorded beneath (see Photographs 5 and 6 on the Photosheets).

Building B1c (grain silos - former Shredded Wheat building complex)

4.4.5. Building B1c comprises 15 large circular concrete grain silos situated within the south-western section of the former Shredded Wheat building complex area (see Plan 3). The concrete silos are approximately 30-35m in height and are supported by a steel framework (see Photograph 7 on the Photosheets). Externally the silos have been rendered, with the concrete and attached render in a good state of repair. No internal access was permitted into the silos.

4.4.6. A large single-storey structure is present across the top of the silos (see Photographs 7 and 8 on the Photosheets). This building comprises of a concrete construction, with a curved concrete roof also present, which has been weather-proofed. This structure does not support an enclosed loft void. The building contains a large number of windows along the northern and southern elevations, all of which were in place and closed at the time of survey. A wooden access door provides access into this structure, and is situated within the north-western corner of this building.

Building B2 (former Polycell factory building)

4.4.7. Building B2 is a large multi-levelled, brick-built structure, situated on the southern side of Hyde Way, towards the centre of the site (see Photographs 9 and 10 on the Photosheets). The building supports a flat, felt-lined roof, which was is the process of being repaired during the 2013 survey work. Externally the brickwork is largely in a reasonable state of repair, although some of the bricks around sections of pipe-work have experienced water damage, whilst a number of the window lintels are crumbling.

4.4.8. The majority of the building is single-storey, although 4 storey sections are present in the north-western, north-eastern and south-eastern sections of this structure. The single-storey section of the building is largely open-plan and was in use as a distribution /storage facility at the time of survey (see Photograph 11 on the

Photosheets). This part of the building comprises concrete floors and ceilings, which are supported by concrete pillars. A number of large windows are present on all elevations of this structure, although a small number have been smashed, whilst others have been filled-in with concrete. Two sets of large steel roller access doors are present upon the ground floor.

4.4.9. The multi-storeyed sections of B2 situated at the north-western, north-eastern and south-eastern sections of this structure, each comprise 4 storeys. Internally they are of a similar construction comprising concrete floors and ceilings, supported by concrete pillars, with large windows present upon 2 or 3 elevations. These sections of the building have been sub-divided into a number of smaller rooms, with some of these rooms supporting hanging ceilings. However, a large number of the ceilings tiles are now missing, which has exposed the concrete ceilings above. The 4th storey rooms situated upon the north-western and south-eastern sections of the building comprise rooms with flat roofs, supported by wooden beams (see Photograph 12 on the Photosheets). Both rooms have doorways leading out onto the roof structure, with the associated doors recorded as missing.

4.5. Hardstanding

4.5.1. Hardstanding is the dominant habitat type present at the site (see Plan 3). The largest area of hardstanding is situated within the southern section of the site and is in a varying state of repair (see Photograph 13 on Plan 3). A number of large buildings were formerly present in this area, although these have largely been demolished, save for the former Polycell factory (building B2), which is situated adjacent to Hyde Way. Nevertheless, a number of the building footprints are still visible, with tall ruderal vegetation, scattered scrub, and occasional continuous scrub delineating the outlines of these former structures, where the hardstanding has been most disturbed, thus facilitating vegetative succession. By comparison, the former car-parking areas and footpaths associated with these former buildings are in a better state of repair, although scattered ruderal vegetation and scrub has seeded within the cracks in and around the concrete slab, with significant areas of re-colonizing ground also present. In addition, a number of areas of rubble /rubble piles have been left following the demolition works, particularly in the western section of this area. Most of these areas of rubble and adjacent areas of hardstanding now support re-colonising habitats, although significant areas of bare ground are still present (see Plan 3), whilst some areas of shallow, ephemeral, pooled water are were present in the north-western section of this area at the time of survey.

4.5.2. Species recorded within this section of the site include dominant Buddleja scrub, with frequent Bramble and Goat Willow, occasional self-seeded Silver Birch saplings and very occasional Wild Privet, Elder, Sycamore and Poplar saplings, Field Rose and ornamental Rose are also present. The ground flora is dominated by early colonizing and ruderal vegetation, with a number of common herbs and rank grasses also present. Species present include frequent Mugwort, Canadian Fleabane and Ribwort Plantain, locally frequent Colt's-foot, occasional Common Nettle, Creeping Thistle, Bristly Ox-tongue, Red Clover, Prickly Sow-thistle, Ragwort, Dandelion, White Clover, Common Mallow, Cock's-foot, Yorkshire Fog, and very occasional Broad-leaved Dock,

Hawkweed sp., Spear Thistle, Lesser Burdock, *Poa* sp., Bird's-foot Trefoil, Redshank, Snapdragon, Herb Robert, Purple Toadflax, Spurge sp. and Greater Plantain.

4.5.3. The second largest area of hardstanding present at the site is formed by a triangular-shaped area of land situated immediately to the west of the former Shredded Wheat building complex, which was previously utilised for car-parking (see Plan 3). This area comprises a concrete base, which is largely in a good state of repair, save for a small number of cracks that have subsequently been colonised by very occasional Buddleja scrub, whilst mosses have established around the margins of this area of hardstanding. More frequent Buddleja scrub is present within the northern section of this area of hardstanding.

4.5.4. A third area of hardstanding is present, situated to the south of the former car-parking area described above and separated from this area by a line of semi-mature trees and a palisade fence. This area of hardstanding predominantly comprises concrete, which is largely in a good state of repair, although the compacted hardcore present around the margins of this seldom used area provide greater opportunities for vegetative establishment. Indeed, re-colonizing species as well as more established linear strips of rank grassland and tall ruderal vegetation are present along the northern, southern and eastern boundaries, as well as around the supports of the pedestrian footbridge that crosses over this area. In addition, scattered scrub is present along the western boundary of this area of harstanding, with dominant Buddleja scrub, occasional Bramble, and very occasional Goat Willow and self-seeded Poplar also present, whilst the invasive plant species Wall Cotoneaster is encroaching into the southern section of this area (see ground flora species at Bare /Re-colonizing Ground).

4.5.5. Hardstanding is also present around the large building complex situated within the northern section of the site and around the former Polycell Factory situated in the southern section of the site (see Plan 3). The hardstanding present in these areas largely comprises concrete slab and compacted hardcore, which are in varying states of disrepair, with mosses having colonised in some areas. Cracks are present throughout these areas of hardstanding, which have largely been colonized by ruderal vegetation; whilst more established scrub vegetation has seeded within the gaps between the concrete slabs. Species present in these areas include frequent Common Nettle, Crucifer sp., Mugwort and Great Willowherb, occasional Prickly Sow-thistle, Bristly Ox-tongue, Yarrow, Buddleja, Bramble, Elder and Goat Willow scrub, and very occasional self-seeded Silver Birch saplings.

4.5.6. In addition, 4 small areas of hardstanding are present within the grassland /ruderal /scrub mosaic situated within the north-western section of the site (see Plan 3). These areas of concrete hardstanding are largely in a reasonable state of repair, although have remained undisturbed for some time and hence have been significantly colonized by mosses, whilst frequent Buddleja and Bramble and occasional Dog Rose, Spurge sp., Mugwort, Common Nettle, Red Dead Nettle and Teasel are present within the cracks and around the margins of these areas of hardstanding.

4.6. **Grassland / Ruderal / Scrub Mosaic**

4.6.1. The largest area of semi-natural habitat present at the site is situated within the north-western section (see Plan 3). Although this area has previously been at least partially developed, the buildings have long-since been demolished, with only 4 small areas of hardstanding base now visible. Indeed, the vast majority of this triangular-shaped area of land now supports a grassland/ tall ruderal /scrub vegetation mosaic, with a small number of immature and semi-mature trees present around its margin (see Photograph 14 on Plan 3).

4.6.2. In the northern section of this area, the soil is thin and has formed over a compacted rubble base. This has lead to the patchy establishment of vegetation in the vicinity of the large steel access gates in the north-eastern corner, with re-colonising grassland dominant in this area. Nevertheless, more established grassland communities are present west and south of this area, although these communities have become heavily encroached by tall ruderal vegetation and scattered scrub. Indeed, some thickets of dense Bramble scrub have now formed, particularly around the margins and in the southern section of this area of the site, where frequent Buddleja scrub is also present. In addition, a man-made earth and rubble embankment is present along the eastern boundary of this area and this feature has also largely been colonized by scattered scrub vegetation, with patches of rank grassland /tall ruderal vegetation also present.

4.6.3. Species recorded within the habitat mosaic in the north-western section of the site include frequent Buddleja and Bramble scrub, Ribwort Plantain, Black Medick, Creeping Thistle; locally frequent Creeping Cinquefoil, Rosebay Willowherb, Silverweed, Tansy, Redshank, Common Nettle, Traveller's Joy and Ground Ivy (present around the margins); occasional Field Rose and Elder scrub, Cock's-foot, Rough Meadow Grass, Red Fescue, Yarrow, Ox-eye Daisy, Horsetail, Bush Vetch, Creeping Buttercup, Groundsel, Yorkshire Fog, Common Knapweed, Bristly Ox-tongue, Crucifer sp., Bird's-foot Trefoil, Field Forget-me-not, Ragwort, Common Mallow, Scentless Mayweed, Mugwort, Common Toadflax, Bee Orchid, Red Clover, Common Centaury and Teasel; and very occasional Dog Rose, Silver Birch and Goat Willow scrub, Japanese Knotweed, Smooth Meadow Grass, Prickly Sow-thistle, Spear Thistle, White Clover, Cut-leaved Crane's-bill, Greater Plantain, White Campion, Germander Speedwell, Daisy, Hemlock, Male Fern, Hedge Woundwort, Curled Dock, Perforate St. John's-wort, Dandelion, Lesser Burdock, Violet sp., Hogweed and Common Michaelmas Daisy.

4.7. **Shrub / Tree / Ruderal Mosaic (Northern Embankment)**

4.7.1. Situated immediately north of the grassland /ruderal /scrub mosaic described above, is another area of habitat mosaic largely comprising shrubs /immature and semi-mature trees /ruderal vegetation, with some limited patches of rank grassland present in more open areas (see Plan 3). The embankment upon which this habitat is located, is approximately 8m in width and rises steeply from the grassland /ruderal /scrub mosaic to the south, towards Bridge Road to the north.

4.7.2. Species recorded upon the northern embankment include a line of semi-mature Lime trees at the base of this feature (see Photograph 15 on Plan 3), with a semi-mature Cherry tree also present. Other tree species recorded as present include immature Cherry, Ash and Sycamore, with self-seeded saplings of these species also present. The understorey comprises both native and non-native species, with frequent Elder present within the eastern section of this feature, frequent Cherry Laurel present within the western section of this feature adjacent to the railway bridge, whilst occasional Hawthorn, Dogwood, Rose sp., Bramble and Cotoneaster sp. are occasionally present throughout. Ground flora is limited upon the embankment largely as a result of the dense shading caused by the Lime trees, nevertheless ruderal species are present at low abundance, including occasional Common Nettle, Spear Thistle, Creeping Thistle and Mugwort, and very occasional Teasel, Broad-leaved Dock and Mullein. Hedge Bindweed is occasionally present throughout, whilst common coarse grass species are present in more open areas, largely in the central /western extent of this feature.

4.8. **Scattered and Continuous Scrub**

4.8.1. Scattered scrub, and to a much lesser extent continuous scrub, is present across the majority of the site (see Plan 3). However, the extent to which scrub has colonized varies significantly across the site. The greatest extent of scrub is situated within the north-western section of the site adjacent to the railway line. In the southern section of this area the scrub is particularly established with tall, dense Bramble thickets and mature Buddleja scrub recorded as dominant, whilst occasional Field Rose, Cherry, Rose sp. and Elder are also present (see Photograph 16 on Plan 3). Frequent Buddleja and Bramble scrub has also colonized the man-made embankment present along the eastern boundary of this area, as well as along the northern and western boundaries. The remaining central area comprises more scattered scrub, which forms a habitat mosaic with areas of rank grassland, tall ruderal vegetation, and re-colonizing grassland. Scrub species present in this part of the site include frequent Buddleja and Bramble, locally frequent Goat Willow, occasional Elder, and very occasional Field Rose.

4.8.2. Scattered and occasionally dense Bramble scrub has also established within the linear strips of former amenity grassland situated along the south-western boundary of the site and between the buildings and associated car-parking area in the northern section of the site, with dense Buddleja scrub also present immediately to the north of this latter mentioned area. Furthermore, with the reduction of vegetation management at the site, the areas of amenity planting present along the northern and eastern boundaries of the former Shredded Wheat building complex and along the western boundary of the associated car-parking area have been encroached by scrub species, with frequent Buddleja and Bramble, and occasional Goat Willow, self-seeded Silver Birch, Sycamore, Cherry, Poplar and Ash saplings, all recorded as present.

4.8.3. In addition, scattered and continuous scrub is within the large area of hardstanding present within the southern section of the site, around the boundaries of the square-shaped area of land supporting the footbridge over the railway line, and within the northern embankment vegetation mosaic. These areas of scrub habitat have already

been described above.

4.9. **Bare / Re-colonizing Ground**

4.9.1. Small areas of bare re-colonizing ground are present across the site, which are largely situated at the margins of other habitat types, and hence these areas of habitat are rarely dominant. However, larger areas of bare /re-colonizing ground are also present at the site, with this habitat type particularly prevalent within the southern section of the site (see Photograph 13 on Plan 3). These areas of bare /re-colonizing ground have previously been described at 'Hardstanding' above.

4.9.2. In addition, two further notable areas of bare /re-colonizing ground are present at the site, as shown on Plan 3. One of these other areas is situated around the margins of the area of hardstanding in the western central section of the site, which supports the footbridge over the railway line. This square-shaped area of land is protected by palisade fencing, with the access gates into this area usually locked, which has enabled botanical species to colonize the cracks and loose gravel areas particularly within the northern and southern sections of this area. Furthermore, this area of bare /re-colonizing ground extends to the north of the palisade fence, along the southern section of the former Shredded Wheat car-park. The line of semi-mature trees along this boundary has largely shaded-out the ground flora with significant areas of bare ground present here, although occasional Crucifer sp., Herb Robert, Common Nettle, Feverfew, and Bristly Ox-tongue and very occasional Prickly Sow-thistle and Garlic Mustard are present. The second other notable area dominated by bare /re-colonizing ground is situated adjacent to the north-eastern corner of Building B2 in the central section of the site (see Plan 3). This area is subject to regular disturbance from pedestrians accessing the footbridge over the railway line at the other end of Hyde Way and hence establishment of vegetation is particularly patchy here.

4.9.3. Species recorded within these two areas of bare /re-colonizing ground include frequent Crucifer sp., Ribwort Plantain, locally frequent Creeping Cinquefoil, occasional Bristly Ox-tongue, Broad-leaved Willowherb, Fescue sp., Creeping Thistle, Bramble, Yarrow, Mugwort, Hawkweed sp., and very occasional Prickly Sow-thistle, Hedge Mustard, Ox-eye Daisy and Yorkshire Fog.

4.10. **Ruderal Vegetation**

4.10.1. Ruderal vegetation is present throughout the habitat mosaic present within the north-western section of the site, and occasionally is dominant here where the sub-surface has not been heavily compacted. Ruderal species present within this area have previously been described at 'Grassland /Ruderal /Scrub Mosaic' above.

4.10.2. The small, square-shaped, former amenity area situated adjacent to the north-western corner of the Shredded Wheat building complex is also dominated by ruderal vegetation, with occasional coarse grasses and scattered scrub also present here. Species recorded within this area include frequent Prickly Sow-thistle and Common Nettle, locally frequent Field Forget-me-not, occasional Bristly Ox-tongue, Cleavers,

Spear Thistle, Creeping Thistle, Broad-leaved Dock, Creeping Buttercup, Cock's-foot and False Oat-grass, and very occasional Teasel, Ox-eye Daisy, Yorkshire Fog and Prickly Lettuce. Buddleja scrub is starting to encroach around the margins of this area, whilst Bramble and a limited number of common coarse grass species are also present.

4.10.3. The eastern margin of the former car-parking area associated with Building B1 has also been colonized by ruderal vegetation. Frequent Buddleja scrub is present here, although the ground flora is dominated by ruderal vegetation including frequent Crucifer sp., locally frequent Creeping Cinquefoil, occasional Common Nettle, Cleavers, Teasel, Creeping Thistle and Ribwort Plantain and very occasional Common Mallow, Hogweed, Hedge Bindweed, Prickly Lettuce, White Dead Nettle and Perforate St. John's-wort.

4.10.4. Ruderal vegetation is also present across the majority of the other habitats present at the site, including the areas of hardstanding, re-colonizing grassland, within and around the areas of scrub, amenity planting and former amenity grassland, and scattered within a number of the areas of bare /re-colonizing ground. However, the occurrence of ruderal vegetation within these habitats is largely at low abundance, although locally frequent Great Willowherb, Common Nettle, Colt's-foot and Rosebay Willowherb is present. Ruderal species recorded within the areas of hardstanding have been detailed above (see 'Hardstanding'), whilst those present within the other habitats, include occasional Mugwort, Hogweed, Broad-leaved Willowherb, Prickly Sow-thistle, Bristly Ox-tongue, Ragwort, Creeping Thistle, and very occasional Spear Thistle, Teasel, Lesser Burdock, Broad-leaved Dock and Great Mullein.

4.11. Trees

4.11.1. Overall the site supports few trees, with those that are present being largely semi-mature in age and in a reasonable state of health (see BMD's tree report entitled '*Arboricultural Implications Assessment and Arboricultural Method Statement, Broadwater Road, Welwyn Garden City*', dated December 2014 (Ref: BMD.219.RP.AIA.004). The trees are largely distributed around the boundaries of the site and are predominantly associated with unmanaged areas of amenity planting and amenity grassland (see Plan 3). Tree species recorded within these areas include frequent Common Lime and Sycamore, occasional Hybrid Black Poplar and Norway Maple and very occasional Yew, Swedish Whitebeam, Bird Cherry, Horse Chestnut, English Elm, Goat Willow, European Larch, Red Oak, Lombardy Poplar, Hornbeam and Copper Beech.

4.11.2. Within the areas of amenity planting /amenity grassland are 3 distinct tree belts. The largest tree belt is situated along the south-western boundary of the site and comprises largely Hybrid Black Poplar, Bird Cherry and Sycamore, with occasional Horse Chestnut, Whitebeam sp., Ash, English Elm and Red Oak also present (see Photograph 17 on Plan 3). A second tree belt is situated along the northern boundary of the site, which screens the site from Bridge Road (see Photograph 15 on Plan 3). This tree belt is dominated by semi-mature Lime, with a single semi-mature Bird Cherry also present. The remaining tree belt is situated along the southern boundary

of the former car-parking area associated with the Shredded Wheat building complex in the central northern section of the site. Species recorded within this line of trees include semi-mature Sycamore, Norway Maple, Hornbeam, Horse Chestnut and an immature Copper Beech.

4.11.3. A small number of both mature and immature trees are also present situated within /immediately adjacent to the site, with 2 mature Horse Chestnut trees located at the juncture of Hyde Way and Broadwater Road, a mature Hybrid Black Poplar and a mature Lime situated within the central northern section of the site, a mature Lime situated along the south-western boundary of the site, and mature Cherry Laurel, Bird Cherry and Horse Chestnut trees situated along the southern boundary of the site.

4.12. **Amenity Grassland (Rank)**

4.12.1. A number of small, linear strips of former amenity grassland are present at the site, which have been left unmanaged for some time and now comprise rank swards. A number of these grassland strips have also been colonised by ruderal vegetation and scattered and continuous scrub (see Plan 3).

4.12.2. The largest area of rank grassland follows a north-south axis through the centre of the site, with a sward height of approximately 20-40cms. Species recorded within this grassland sward include frequent Perennial Rye-grass, with more occasional Yorkshire Fog, Smooth Meadow Grass, Cock's-foot and False Oat-grass and very occasional Tufted Hair-grass, Red Fescue, Timothy and Tall Fescue, also present. Herbs are scattered throughout the grassland including frequent Ribwort Plantain, Bird's-foot Trefoil and Creeping Buttercup, locally frequent Red Dead Nettle and Crucifer sp., occasional Groundsel, Creeping Cinquefoil, Ox-eye Daisy, Germander Speedwell, Knotgrass, Greater Plantain and Yarrow and very occasional Herb Robert, Daisy, Common Mallow, Perforate St. John's-wort, Mouse-eared Hawkweed, Common Toadflax, Cut-leaved Crane's-bill, Chickweed, Columbine, White Dead Nettle, Pansy, and Wood Avens, with Ground Ivy recorded within the more shaded areas under the tree /scrub canopies. Ruderal vegetation is more prevalent within the northern section of the central grassland sward and in the north of this area is dominant, with frequent Common Nettle, Creeping Thistle and Great Willowherb, locally frequent Colt's-foot and Mugwort, occasional Hogweed, Teasel, Cleavers, Ragwort, Spear Thistle and Broad-leaved Dock and very occasional Lesser Burdock recorded as present. Bramble scrub is scattered throughout the grassland strip and at the margins forms a number of small thickets, with a number supporting Bittersweet and/or Clemantis sp., whilst occasional Goat Willow, Rose sp., Elder and Buddleja scrub is also present, with self-seeded Silver Birch, Oak, Cherry and Sycamore saplings recorded as present. A number of small stands of Wall Cotoneaster are also present at the edges of the grassland sward.

4.12.3. The remaining areas of former amenity grassland present at the site are situated north and east of the former Shredded Wheat complex of buildings adjacent to the northern and north-eastern boundaries of the site, along the eastern and southern boundaries of the area of hardstanding supporting the footbridge over the railway line, and either

side of Hyde Way towards the centre of the site (see Plan 3). These strips of former amenity grassland are significantly smaller than the area described above, although they are also unmanaged and hence supported rank swards at the time of survey (see Photograph 18 on Plan 3). Species diversity within these grassland swards is limited compared to the central grassland area, although the linear strips situated along the northern boundary of the site support a greater diversity than those situated along Hyde Way. Species recorded within these areas of former amenity grassland include frequent Perennial Rye-grass and Red Fescue, locally frequent Yarrow and Colt's-foot, Creeping Thistle and Creeping Buttercup, occasional Cock's-foot, Smooth Meadow-grass, Ribwort Plantain and Bird's-foot Trefoil and very occasional Daisy, Dandelion, Perforate St. John's-wort, Broad-leaved Dock, Wood Avens and Cleavers. The abundance of Yorkshire Fog, Ribwort Plantain, Creeping Cinquefoil and Bramble is highly variable between the different grassland swards, whilst occasional Cuckoo Flower was only recorded within the linear strips of grassland situated immediately north of the Shredded Wheat building complex.

4.13. Amenity Planting

4.13.1. Small areas of amenity planting are present at the site, which are largely situated along the northern and southern boundaries of the former Shredded Wheat building complex and along the northern and eastern boundaries of Building B2 (see Plan 3). These areas of habitat are now subject to only limited management and hence this vegetation has started to encroach into adjacent areas of habitat. The areas of amenity planting are dominated by non-native ornamental species, although a number of native species are also present, with scrub, ruderal vegetation and early colonizing botanical species established within the ground flora.

4.13.2. Species recorded within the areas of amenity planting include frequent *Choisya ternata*, locally frequent Rhododendron and Blackthorn adjacent to the north-western corner of B1, occasional Cherry Laurel, Garden Privet, ornamental Rose, Buddleja, *Pyracantha* sp., Cotoneaster sp., Elder, Tutsan, Broome, Variegated Ivy, Snowberry, Ivy and very occasional *Ceanothus* sp., *Fatsia japonica*, *Euonymous fortunei*, *Euonymus* sp., Wall Cotoneaster, *Mahonia* sp., non-native Honeysuckle and Pampas Grass. In addition, a number of immature trees are present within the areas of amenity planting including Silver Birch, Ash, Hawthorn, Apple and Plum, and self-seeded Ash, Alder and Sycamore saplings.

4.14. Amenity Hedgerows

4.14.1. Three amenity hedgerows are present at the site, which are shown as H1 to H3 on Plan 3. The largest of these hedgerows (H1) is situated along the north-eastern boundary of the site, adjacent to Broadwater Road (see Photograph 18 on Plan 3). This hedgerow is approximately 2 –2.5m in height and 1 –1.5m in width and is subject to some limited management. Species recorded within this hedgerow include dominant Garden Privet and very occasional Sycamore, with a small number of immature trees also present.

4.14.2. The second largest section of hedgerow is situated along the western boundary of the

former car-parking area associated with the Shredded Wheat building complex in the central northern section of the site. This hedgerow (i.e. H2) is subject to less management than H1 and has become somewhat tall and leggy, approximately 2.5-3.5m in height and 1.5-2m in width. This hedgerow comprises frequent Garden Privet, occasional Forsythia and *Euonymous fortunei*, and very occasional Elder, Ash, and Rose sp., with a 6 immature Sycamore trees and Bramble scrub scattered throughout its length. In addition, a single immature Whitebeam tree is present at the northern extent of this feature, with scattered Buddleja scrub beyond.

4.14.3. A significantly smaller section of amenity hedgerow (i.e. H3) is situated on the northern side of Hyde Way, close to the junction with Broadwater Road. This hedgerow is approximately 1.5-2m in height and 1m in width and is still subject to some limited management. H3 is dominated by Garden Privet.

4.15. Invasive Plants

4.15.1. Five stands of the highly invasive plant species Japanese Knotweed were recorded at the site during the October 2013 / May 2014 survey work undertaken. The locations of these stands are shown as JK1 – JK5 on Plan 3, and are detailed in Table 2 below:

Stand No.	Approx. Area of Stand	Approx. Number of Stems	Location	Comments
JK-1	0.5 x 1m	9	Within north-eastern triangular-shaped area of land, upon man-made embankment, adjacent to access road	Some evidence of former chemical treatment programme, with a number of mature dead stems recorded. However, some limited re-growth (i.e. 9 live stems)
JK-2	1 x 2m	6	Within north-eastern triangular-shaped area of land, partly upon man-made embankment, adjacent to access track. 2 stems have encroached through palisade fence onto access road	Stand is situated approximately 4m north of JK-1 and hence is considered likely to be a separate stand. Some evidence of former chemical treatment programme, with a number of mature dead stems recorded. However, some limited re-growth (i.e. 6 live stems)
JK-3	0.5 x 1m	9	Within north-eastern triangular-shaped area of land, approximately 5m west of access road	JK-3 situated approximately 5m north-west of JK-2 and hence is considered likely to be a separate stand.
JK-4	1 x 2m	1	Within north-eastern triangular-shaped area of land, upon man-made embankment, adjacent to access road	Some evidence of former chemical treatment programme, with 15-20 mature dead stems recorded. However, some limited re-growth (i.e. 1 live stem).
JK-5	0.5 x 1m	15	Within north-eastern triangular-shaped area of land, upon man-made embankment, adjacent to access road	JK-4 and JK-5 approximately 1m apart and hence considered likely to be one stand.

Table 2: Details of Japanese Knotweed Stands recorded within the Site

4.15.2. No evidence of the highly invasive plant species Giant Hogweed or Himalayan Balsam was recorded at the site during the survey work undertaken. Nevertheless, a small number of stands of the invasive plant species Cotoneaster sp., including Wall Cotoneaster, were recorded within the areas of amenity planting around the boundaries of the former Shredded Wheat factory, upon the northern embankment

area, within the strip of rank grassland /scrub /trees along the southern-western boundary of the site, and within the area of hardstanding, which supports the footbridge over the railway line in the central section of the site. In addition, a number of stands of Rhododendron are present within the area of dense amenity planting situated adjacent to the north-western corner of Building B1.

4.16. **Miscellaneous Habitats**

4.16.1. Three large vegetation /earth / log / rubble piles are present at the site (see Plan 3). Common coarse grass and ruderal species have colonized these features with Cock's-foot, Perennial Rye Grass, Common Nettle, Teasel, Creeping Thistle, Spear Thistle and Willowherb sp. recorded as present. These features provide suitable hibernation opportunities to reptiles and amphibians (see Section 5).

4.17. **Habitat Evaluation**

4.17.1. Trees. The trees present within the site include both native and non-native species, although no notable or veteran tree species are present. The trees provide a number of potential opportunities to a range of faunal species /groups, particularly birds, bats and invertebrates. However, these opportunities vary and are dependant upon the age, condition, and tree species present. Given the presence of a number of semi-mature trees at the site, these are not easily replaced in the short-term, but are easy to replace over the medium term. Therefore overall, it is considered that the semi-mature trees present at the site are of moderate ecological value within the context of the site. As such, it is recommended that the semi-mature trees be retained and safeguarded as part of the proposals wherever possible, particularly the Lime trees present along the northern embankment and the semi-mature specimens present within the tree-belt situated along the south-western site boundary (see Section 6). However, should this not be possible then it is recommended that new native tree species be planted at the site in compensation, such that there is no net loss in this habitat as a result of the proposals.

4.17.2. In addition, a number of immature trees are also present at the site. These trees are relatively easy to replace and hence are considered of low ecological value. Nevertheless, it is recommended that such specimens be retained wherever possible.

4.17.3. Grassland /Ruderal /Scrub Mosaic /Northern Embankment. The mosaic of habitat present within the north-western section of the site and upon the adjacent northern embankment comprises a range of largely common native botanical species, with a small number of common non-native species also present, particularly Buddleja scrub. Moreover, although these areas of habitat are semi-natural, such habitats are still common in both a local and national context and are easily re-created or restored. These habitats do provide some opportunities to faunal species, particularly birds, reptiles and invertebrates, although this potential is somewhat limited given the extent of the habitat present and given the encroachment of scrub within this section of the site. Nevertheless, these habitat mosaics are situated adjacent to a wildlife corridor (the railway line and associated habitats) and hence this does increase their ecological value, although only to a limited extent, given their small size. Therefore, overall the

mosaic of habitats situated within the north-western section of the site and upon the adjacent embankment area are considered to be of low-to-moderate ecological value at the local level. As such, a number of recommendations are made at Section 6 of this report regarding the new landscape proposals in order that alternative opportunities for faunal species /groups are provided at the site as part of the proposals.

4.17.4. Other Habitats. The other habitats present at the site are very common habitats both at a local and national level and are easily re-created or restored. Furthermore, these habitats support only limited botanical species diversity, with the species recorded as present being common and widespread both at a local and national level and/or non-native in origin and hence of no particular ecological value. Moreover, these habitats provide limited opportunities for faunal species and as such have negligible secondary ecological value, (save for the scattered Buddleja scrub and some of the mature areas of amenity planting, which provide a suitable foraging resource for butterflies and bees). Therefore, it is considered that these habitats are of low to negligible ecological value and hence the loss of these habitats to the proposals is considered of negligible ecological significance. In any event, new buildings, areas of hardstanding and amenity habitats are scheduled to be provided as part of the proposals.

4.18. Invasive Plants. Japanese Knotweed, Rhododendron and Cotoneaster sp. are non-native, invasive plant species, which are listed upon Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Section 14 of the Act applies to these species, which means that it is illegal to plant them in the wild or otherwise cause them to grow in the wild. The habitats containing these species will be disturbed if development is consented at the site. Therefore, in order to avoid a potential offence under Schedule 9 and in line with best practice, it is recommended that these species be eradicated in a controlled manner from the site as part of the proposals (see Section 6).

5. FAUNAL SURVEY RESULTS AND EVALUATION

5.1. During the survey work, general observations were made of any faunal use of the site, including incidental sightings of birds, mammals and invertebrates, with particular attention paid to any potential use of the site by protected, rare or notable faunal species. In addition, given the habitats present, specific Phase 2 survey work was undertaken within the site in respect of Badger, roosting bats and reptiles.

5.2. **Species of Principal Importance**

5.2.1. Section 41 of the NERC Act 2006 places a duty on the Secretary of State to publish a list of the living organisms (species) considered to be of Principal Importance for the purposes of conserving biodiversity.

5.2.2. Three faunal species listed as being 'Species of Principal Importance in England' were recorded within the site during the 2013 /2014 survey work undertaken, including 2 bird species, namely House Sparrow and Starling; and 1 reptile species, namely Slow-worm. In addition, it is considered likely that common species of bat that are often found in urban areas are likely to utilize the grassland /ruderal / scrub habitat mosaic and the semi-mature and mature trees situated within the north-western section and along the south-western boundary of the site for foraging purposes, including Soprano Pipistrelle and possibly Noctule and/or Brown Long-eared bat, which are all listed as Species of Principal Importance in England. In addition, it is considered likely that Hedgehog occasionally utilizes the site, with this species also listed as being of Principal Importance in England. Nonetheless, given the habitats present within the site, it is considered highly unlikely that local populations of these species would be reliant upon the site (if indeed the latter mentioned species are actually present). Furthermore, it should be noted that only small numbers of House Sparrow and Starling were intermittently recorded at the site, whilst the small population of Slow-worm recorded within the north-western section of the site has subsequently been translocated outside the development footprint following best practice methodology (as fully detailed at 'Reptiles', below).

5.3. **Mammals**

Badger

5.3.1. *Legislation.* Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take Badgers or to interfere with a Badger sett.

5.3.2. *Background Records.* HBRC hold 2 records of Badger recorded within the specified 2km radius search area surrounding the site. However, full grid reference information is not provided for either of these records and hence their exact locations in relation to the site cannot be determined (see Appendix 1).

5.3.3. The NBN database holds 8 records of Badger recorded in the last 20 years, within the

10x10km grid square that encompasses the site. Full grid reference information is not provided for any of these records and hence their exact locations in relation to the site cannot be determined.

5.3.4. *Survey Findings.* No Badger setts were recorded at the site during the specific Badger survey work undertaken in October 2013 and October 2014. However, two large mammal excavations were recorded at the site in October 2013, with the locations of these features shown on Plan 3. The tunnel entrances associated with these excavations were subsequently monitored between April and October 2014, with all entrances recorded as inactive throughout this period. As such these features are considered inactive /disused.

5.3.5. The larger of these two excavations comprises 2 entrances and is situated within a small man-made earth and rubble embankment along the eastern boundary of the triangular-shaped area of land located within the north-western section of the site (see Plan 3). No definitive mammal hairs were recorded within either of the tunnel entrances, whilst the associated spoil heaps were noted as compacted (i.e. no fresh spoil), indicating that neither tunnel was in active use at the time of the 2013 and 2014 survey /monitoring work.

5.3.6. The smaller of the two mammal excavations is situated adjacent to the south-western corner of the site within the linear strip of trees /scrub and rank grassland present within this area (see Plan 3) and comprises two entrances. No definitive mammal hairs were recorded within either of the tunnel entrances during the survey /monitoring work. Furthermore, there are no large spoil heaps associated with the tunnel entrances, whilst one of the tunnels narrows significantly, suggesting that it is unlikely to be attributable to Badger.

5.3.7. *Evaluation.* The vast majority of the site comprises buildings and hardstanding, which provide negligible opportunities to Badger. Nevertheless, the rank grassland /scrub mosaic present within the north-western section of the site, and to a lesser extent, the linear strip of semi-natural habitat present along the south-western boundary of the site, do provide some suitable habitat for Badgers to create setts within, especially as these areas of habitat are situated in close proximity to a likely dispersal corridor, i.e. the off-site railway line and associated habitats. However, given that the site is largely flat and is situated within an urban landscape, these opportunities are considered, at best, sub-optimal, with no definitive Badger setts recorded during the survey work undertaken. In addition, the habitats present at the site also provide some opportunities for foraging Badgers, although given the rank nature of the grassland, these opportunities are also largely considered sub-optimal, with Badgers often favouring short-sward grassland for foraging purposes. Therefore, as no definitive evidence of Badger was recorded at the site and as the habitats present are largely unsuitable for this species, with only small areas of sub-optimal habitat present, no further survey work or specific mitigation measures with regards to the proposed development are considered necessary regarding Badgers.

Bats

5.3.8. *Legislation.* Bats are European Protected Species and all British bats are classified as such under the Conservation of Habitats and Species Regulations 2010. In addition, all bats are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Therefore, both bats and their roosts (breeding sites and resting places) receive full protection under both European and national legislation.

5.3.9. *Background Records.* HBRC provided 31 records of bats recorded within the specified 2km radius search area surrounding the site (see Appendix 1). Records include 2 generic records of 'bats', with a number of genus /species specific records also provided, including Pipistrelle sp. (12 records), Brown Long-eared bat (5 records), Noctule bat (4 records), Common Pipistrelle (4 records), Serotine (3 records) and Leisler's bat (1 record). None of these records was definitively recorded within the site, with the closest record being that of a Pipistrelle sp. bat, which was recorded within the 1km grid square that incorporates the majority of the site.

5.3.10. The NBN database holds 79 generic records of '*bats*' recorded within the last 20 years in the 10x10km grid square, which encompasses the site. None of these records was definitively recorded within the site, although detailed grid reference information is not provided for a large number of these records and hence their exact locations in relation to the site cannot be determined. In addition, the NBN database holds a number of genus /species specific records of bats, including Pipistrelle sp. (28 records), Daubenton's bat (21 records), *Pipistrellus pipistrellus sensu lato* (14 records), Natterer's bat (11 records), Common Pipistrelle (8 records), Soprano Pipistrelle (5 records), Brown Long-eared bat (4 records), Noctule bat (3 records) and Noctule /Leisler's (2 records). None of these records was definitively recorded within the site, although detailed grid reference information is not provided for a number of the records and hence their exact locations in relation to the site cannot be determined. Of those records which could be determined, or partially determined, a number of the generic bat records were recorded within the 1km grid square situated immediately west of the site, whilst Soprano Pipistrelle was recorded within the 1km grid square situated immediately north-east of the site.

5.3.11. *Survey Findings /Evaluation – Roosts.* Internal and external inspections were undertaken of buildings B1a, B1b and B2, with external inspection undertaken of building B1c to search for bats /evidence of roosting bats. Furthermore, an assessment was made of the potential of these structures to support roosting bats. The results of this survey work are shown in Table 3 below. In addition, an inspection was made of all the trees present within /bordering the site to search for evidence of any use by roosting bats, with an assessment also made of their potential to support roosting bats. The results of this survey work are shown in Table 4 below.

Buil. No.	Evidence Recorded (internal / external survey)	Potential of Building to Support Roosting Bats / Comments on evidence Recorded	Bat Roosting Potential
B1a	No evidence	- The majority of B1a is somewhat isolated within the wider landscape from suitable bat foraging and commuting corridors by areas of hardstanding, with main roads situated to the north and east. However, the NW corner of B1a is situated adjacent to a suitable bat foraging /commuting corridor. - The majority of the structures which comprise B1a, are of construction types and materials that are not favoured by roosting bats, with few areas of wood or suitable crevices present. The external brickwork, concrete and rendered sections of these structures are largely in good states of repair with few suitable cracks or gaps recorded between materials, which would provide roosting opportunities to bats. Nevertheless, there are some small sections of pipe-work missing /gaps around pipe-work, and gaps under sections of corrugated metal sheet roof, which could be utilized as temporary roost sites by single /small numbers of bats, although these are considered sub-optimal /highly sub-optimal. - The majority of the structures comprising B1a support flat concrete roofs with no internal loft voids present. As such, these features provide negligible opportunities for roosting bats. Nevertheless, a small number of the roofs have wooden sarking boards beneath, and the small gaps between the external roof structure and the sarking boards provide some limited opportunities to crevice-dwelling bats. However, no suitable points for bats to access these areas were recorded during the site survey. - A number of the windows have been smashed, although these areas have largely been boarded-up. Those that have not been boarded-up are isolated from suitable bat corridors and hence are unlikely to be utilized by bats to gain access into the building. Nevertheless, where numbers of windows have been boarded-up in close proximity this has created dark, draught-free areas, and hence more suitable conditions for bats. - The basement area is dark and secluded, but is damp throughout and flooded, with approximately 30cms of water recorded in the base of this structure. In any event, this structure does not contain any suitable crevices or 'hang-up' points for bats.	Negligible / Low
B1b	No evidence	- B1b is isolated within the wider landscape from suitable bat foraging /commuting corridors by Buildings B1b and B1c and areas of hardstanding, - The roof structure of the former factory building is in a poor state of repair, with significant damp and water damage recorded, as such it is considered unlikely that bats would utilize the gaps between the sarking boards and the sloping external sections of the roof. - The large extent of glazing associated with the roof structure, results in this section of the building being light throughout and hence less suitable to roosting bats. - There are some gaps around pipe-work within the walls and where pipe-work has been removed, these provide only limited opportunities to roosting bats, and given the constraints associated with the roof of B1b and the general isolation of these features, it is considered highly unlikely that these features would be utilized by roosting bats.	Negligible / Low
B1c	No evidence	- B1c is somewhat isolated within the wider landscape from suitable bat foraging /commuting corridors by areas of hardstanding, - Externally the silos are in as good state of repair, with no suitable cracks or gaps into these structures recorded for roosting bats. No internal access into these structures was permitted. - The structure situated on top of the silos supports only a few sub-optimal crevices or 'hang-up' points for bats. This structure is isolated from suitable bat foraging and commuting corridors. Internally, it is light and draughty, with no enclosed loft void present, as such this structure is considered to provide negligible /low potential to roosting bats.	Negligible / Low
B2	No evidence	- B2 is surrounded by hardstanding, with no adjacent bat foraging /commuting corridors present, which reduces the likelihood of this building being utilized by roosting bats. - Some sections of the external brickwork and window lintels are in a poor state of repair, with some small gaps recorded. However, these gaps /cracks do not extend far back into structure and hence are considered too exposed /damp to support roosting bats and do not provide potential access points for bats into the building. The only potential access points for bats into the building are provided by the very few windows /doors, which have been left open /removed upon the upper storeys. These potential access points are considered sub-optimal for bats. - Some ventilation bricks are present along the northern elevation of B2. However, the gaps within these features are too small for bats to utilize. - The roof of B2 is flat throughout, with no loft-void present, whilst the external felt lining is	Negligible / Low

		in a good state of repair. Hence the roof structure provides negligible opportunities to roosting bats. - Weatherboarding is present upon the NE and SE orientated multi-storied sections of B2. However, the weatherboarding is of a metal construction and hence, at best, provides sub-optimal opportunities to crevice-dwelling bats. - The main section of the warehouse and adjacent ground-floor storage areas are still in use and hence subject to regular disturbance. These areas have concrete ceilings throughout, with significant strip lighting and many windows present in the main warehouse. Hence the ground-floor section of B2 provides negligible potential for roosting bats. - The multi-storied sections of B2 largely comprise concrete floors and ceilings, supported by concrete pillars, with large windows present on a number of elevations resulting in most rooms being light, and those with open or smashed windows, draughty. These conditions provide negligible opportunities to roosting bats. A small number of rooms do support false ceilings, with gaps of 0.3m – 0.75m between the hanging tiles and the ceilings above. However, the metal construction supporting the hanging tiles and the concrete ceilings above, which are supported by concrete pillars, do not provide suitable roosting or 'hang-up' points for bats. In any event, a large number of these ceilings are missing some of their tiles, with some rooms missing the majority of their ceiling tiles, which results in these small voids being light, and hence even less suitable for roosting bats. - The rooms on the 4th storeys of both the NW and SE orientated multi-storied sections of B2 are currently unused and hence not subject to disturbance. Both have missing doors, providing potential access points for bats into these structures. Furthermore, both rooms have internal roof structures comprised of wood, with small gaps recorded between a number of the wooden beams, or at the edges of the wooden beams, which potentially provide opportunities to roosting bats. However, large windows are present upon two elevations within both structures, whilst the missing doorways result in these structures being draughty. Furthermore, both rooms are utilized by relatively large numbers of Feral Pigeons. Therefore, these rooms are considered to provide, at best, negligible-to-low opportunities to a single /small numbers of bats.	

NOTE: See building descriptions at Section 4

Table 3: Results of Internal and External Inspections of Buildings for Evidence of Bats / Results of Assessment of Buildings to Support Roosting Bats

5.3.12. No evidence of roosting bats was recorded within any of the buildings present at the site (see Table 3 above). Furthermore, both buildings B1 and B2 are of construction types, which are seldom favoured by roosting bats, with flat concrete roofs present and no enclosed loft voids. Moreover, both buildings are somewhat isolated within the wider landscape from suitable bat foraging and commuting corridors. Therefore, it was not considered that further bat survey work was warranted at the site, such as bat emergence or dawn swarming surveys. Nevertheless, there are some minor features recorded on both buildings B1 and B2, such as weather-boarding and holes in walls where pipe-work has been removed (see Table 3) and these features do provide some limited /very limited potential to support single or small numbers of roosting bats. As such, it is recommended that these features be removed /demolished under a Watching Brief for roosting bats (see Section 6). It should be noted that the above approach was agreed in principle with Hertfordshire's Ecology Advisor (see Appendix 2).

5.3.13. Trees. Four trees at the site comprise features suitable to support roosting bats, which are shown as T1 to T4 on Plan 3 (see Table 4, below). However, no evidence of any use of the suitable bat roosting features associated with trees T1 to T4 was recorded during specific survey work undertaken in June 2014 (such as droppings or staining from bats' fur around splits, peeling bark, rot holes or old Woodpecker holes); with no constraints to this survey work recorded (i.e. no dense Ivy present preventing

inspection). In any event, all four trees are considered to provide no more than sub-optimal opportunities to roosting bats, i.e. suitable to support a single, or at best, a small number of bats in a roost of low ecological value over the summer months (e.g. a transitional roost, a night roost, a day roost, or a feeding roost). Nevertheless, given that bats often utilize trees supporting such features of low roosting potential on a short-term and irregular basis, a number of precautionary safeguards are detailed at Section 6 of this report should any of the 4 trees highlighted need to be felled or require significant arboricultural works to facilitate the proposals. In addition, a number of enhancement measures are proposed for roosting bats at the site (see Section 6).

Tree I.D	Species	Age	Feature Suitable to Support Roosting Bats	BCT Category
T1	Poplar	Semi-mature	Split in limb and a Woodpecker hole	1 / 2
T2	Cherry	Semi-mature	Snapped trunk and a Woodpecker hole	1 / 2
T3	Cherry	Semi-mature	Peeling bark and damage to trunk	1 / 2
T4	Poplar	Semi-mature	Significant split in trunk. Split is somewhat exposed to the elements, hence only likely to provide limited opportunities to crevice-dwelling bats over the summer months	1 / 2

Table 4: Trees with Potential to Support Roosting Bats

5.3.14. The remaining trees present at the site /situated immediately adjacent to the site do not support features which are favoured by roosting bats, such as cracks, splits, rot-holes or a dense covering of Ivy, and as such are considered BCT Category 3 trees. Therefore, given that these trees provide negligible potential to support roosting bats, it is considered that these features can be safely felled without the need for further survey work or specific mitigation measures regarding roosting bats (if indeed felling is required, and subject to the satisfaction of any other potential conditions /constraints regarding these trees e.g. TPO's etc.).

5.3.15. *Survey Findings /Evaluation – Foraging and Commuting Features*. The majority of the site comprises buildings and hardstanding, with scattered scrub present across much of the hardstanding. These habitats provide only limited opportunities to foraging bats. Nevertheless, the semi-mature /mature trees and scrub situated along the south-western boundary of the site, and the mosaic of scrub, rank grassland and tall ruderal vegetation situated within the north-western section of the site, and the adjacent semi-mature trees and scrub present upon the northern embankment, provide greater opportunities to foraging bats. As such, it is considered likely that small numbers of common urban species of bats such as Common Pipistrelle and Soprano Pipistrelle would utilize these areas of the site for foraging purposes. However, it is considered highly unlikely that any local bat populations would be reliant upon the site for foraging purposes given the small extent of the suitable habitat present and given the plethora of alternative, and indeed superior, foraging opportunities present within the local vicinity, especially Sherrardspark Wood to the north-west and Blackfan Valley CWS to the north-east (see Plan 2), with optimal bat foraging habitat also provided by the railway corridor immediately to the north-west. Therefore, it is not considered that any further survey work or mitigation measures regarding foraging bats are warranted at

the site. Nevertheless, measures are proposed at Section 6 of this report, such that the site continues to provide some opportunities to foraging bats, post-development.

5.3.16. *Commuting*. The majority of the site comprises buildings and hardstanding, with colonizing scattered scrub. These habitats seldom form parts of wider bat commuting corridor, with linear features such as hedgerows, canals and railway lines often favoured. In this regard, the north-western boundary of the site does form part of a wildlife corridor (i.e. the adjacent railway line and its associated habitats), and hence mitigation measures are detailed at Section 6 of this report, such that potential impacts upon this likely bat commuting corridor are ameliorated.

Hazel Dormouse

5.3.17. *Background Records.* HBRC hold 2 records of Hazel Dormouse recorded within the specified 2km radius search area, which incorporates the site. Both of these records were recorded within Sherrardspark Wood over 850m north-west of the site, with the latest record recorded in 2008 (see Appendix 1).

5.3.18. The NBN database does not hold any records of Hazel Dormouse recorded in the last 20 years, within the 10x10km grid square that encompasses the site.

5.3.19. *Survey Results.* No incidental sightings or other evidence of Hazel Dormouse was recorded at the site during the 2013 /2014 survey work undertaken.

5.3.20. *Evaluation.* Hazel Dormouse is an arboreal species, which favours deciduous woodland, species-rich native hedgerows and areas of dense scrub, although Dormice are also occasionally found in other habitats. Only the areas of dense Bramble scrub situated within the north-western section of the site provide suitable habitat for Dormouse. These areas of scrub are small in extent, largely low-lying, and isolated within the site by more open habitats and habitats unsuitable to support Dormouse (i.e. grassland, re-colonizing grassland and hardstanding, which Dormouse is unlikely to cross). Furthermore, these habitats are largely isolated within a local context, with the site surrounded by built-form on three sides, (although a habitat corridor for this species is present situated adjacent to the north-western site boundary i.e. the railway corridor). Therefore, given the small extent and sub-optimal nature of the habitat present at the site, and given that there is no suitable habitat corridor connecting the site with Sherrardspark Wood, then it is considered highly unlikely that Hazel Dormouse utilizes the site and no further survey work or mitigation measures are considered necessary regarding this species. Indeed, it should be highlighted that no Dormice nests were recorded within the areas of dense Bramble thicket during the removal of this habitat, as part of the reptile mitigation works in September /October 2014, which were overseen by a suitably qualified ecologist.

Other Mammals

5.3.21. *Background Records.* HBRC hold 16 records of 'other' protected, rare, notable or BAP-listed mammal species recorded within the specified 2km radius search area

surrounding the site (see Appendix 1). Records include that of Brown Hare (6 records), Hedgehog (6 records), Water Vole (3 records) and Harvest Mouse (1 record). None of these 16 records was definitively recorded within the site, although detailed grid reference grid reference information is not provided for the majority of these records and hence their exact locations in relation to the site cannot be determined. The closest record to the site which can be determined is that of a Water Vole, which was recorded along the River Mimram approximately 2km north-east of the site.

5.3.22. The NBN database holds 191 records of five 'other' protected, rare, notable or BAP-listed mammal species recorded in the last 20 years, within the 10x10km grid square that encompasses the site, namely Hedgehog (102 records), Water Vole (59 records), Brown Hare (20 records), Otter (6 records) and Polecat (4 records). None of these records was definitively recorded within the site; although, detailed grid reference information is not provided for a large number of these records and hence their exact locations in relation to the site cannot be determined. Of those records which were provided with detailed grid reference information, the closest to the site is that of Hedgehog, which was recorded within the 1km grid square in which the site is situated.

5.3.23. *Survey Results and Evaluation.* No evidence of any 'other' protected, rare, notable or BAP-listed mammal species was recorded at the site during the survey work undertaken in October 2013 or April to October 2014. Indeed, given the location of the site within a highly urbanised landscape, given that the site is dominated by buildings and hardstanding, and given that the site is situated approximately 2kms from a suitable watercourse, then it is considered that the site provides negligible opportunities for Brown Hare, Polecat, Harvest Mouse, Water Vole and Otter. As such, no further survey work or mitigation measures are considered necessary regarding these species.

5.3.24. By contrast, the site does provide some suitable opportunities for the UK BAP-listed species Hedgehog, especially the mosaic of habitat present within the north-western section of the site, which is directly connected to a potential dispersal route (i.e. the adjacent railway corridor). However, the extent of this suitable habitat at the site is relatively small, such that it is considered that any local population of Hedgehog is highly unlikely to be reliant upon this habitat (if indeed this species actually utilises the site). Nevertheless, given the UK BAP status afforded to Hedgehog it is recommended that as a precautionary measure clearance of the denser areas of scrub /rank grassland /tall ruderal and unmanaged amenity planting at the site be carried out under a Watching Brief for Hedgehog, as detailed at Section 6.

5.3.25. In addition, common and widespread mammal species such as Rabbit, Fox, Rat, Grey Squirrel, Field Vole and Common Shrew are known to utilize the site. In this regard, small numbers of active Rabbit burrows /Rabbit droppings were recorded in the northern and south-western sections of the site; whilst Fox was recorded commuting across the site and lying-up in areas of scrub in the north-western section of the site on a number of occasions during the 2013 and 2014 survey work, with extensive Fox scat recorded within this area, and hence the mammal pathways and push-throughs in this area are also considered likely attributable to Fox. Rat was recorded throughout

building B1a. Grey Squirrel was recorded within the trees along the south-western site boundary; whilst small numbers of Field Vole and a single Common Shrew were recorded under the artificial refugia during the reptile presence /absence surveys and during the reptile mitigation works undertaken in 2014. These six species receive no specific legislative protection and hence no further surveys or mitigation measures are necessary. Nevertheless, it is possible that a Fox Earth may be present within the few remaining areas of dense scrub present within the north-western section of the site and hence suitable safeguards regarding animal welfare issues are detailed at Section 6 of this report.

5.4. **Birds**

5.4.1. *Legislation.* Section 1 of the Wildlife & Countryside Act 1981 (as amended) is concerned with the protection of wild birds. With certain exceptions, all wild birds are protected such that is an offence to intentionally kill, injure or take any wild bird; take damage or destroy the nest of any wild bird whilst in use or being built; or take or destroy an egg of any wild bird.

5.4.2. Species listed under Schedule 1 of the Act receive greater protection such that they are also protected against intentional or reckless disturbance whilst building a nest or whilst they are in, on, or near a nest containing eggs or young. The dependent young of Schedule 1 birds are also protected against intentional or reckless disturbance. Offences in respect of Schedule 1 species are subject to greater penalties.

5.4.3. *Conservation Status.* The RSPB categorise British bird species in terms of conservation importance based on a number of criteria including the level of threat to a species population status. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (50% over the past 25 years).

5.4.4. *Background Records.* HBRC hold 91 records of 40 different bird species recorded within the specified 2km radius search area surrounding the site (see Appendix 1). However, none of these records was recorded within the site. The closest records to the site are of 21 different bird species, which were all recorded approximately 750m to the east.

5.4.5. The NBN database holds records of a number of protected, rare, notable or BAP-listed bird species recorded in the last 20 years within the 10x10km grid square which encompasses the site, including:

- 6 bird species listed upon Schedule 1 Part I of the Wildlife and Countryside Act 1981 (as amended), namely Brambling, Fieldfare, Redwing, Red Kite, Whooper Swan and Hobby. None of these records was recorded within the site, although Hobby was recorded within the 2km tetrad that encompasses the site.
- 1 bird species listed upon Schedule 1 Part II of the Wildlife and Countryside Act 1981 (as amended), namely Greylag Goose, which was recorded over 3.5km

north-west of the site.

- 21 RSPB Red-listed bird species of Conservation Concern. None of these records was definitely recorded within the site, although a large number of records of House Sparrow and Starling were recorded within close proximity to the site, whilst records of Sky Lark, Lesser Spotted Woodpecker and Turtle Dove were all recorded within the 2km tetrad that encompasses the site.
- 29 RSPB Amber-listed bird species of Conservation Concern.
- 15 (2007) Species of Principal Importance in England listed bird species.
- 14 UK BAP listed bird species.
- 4 bird species listed upon Annex 1 of the Birds Directive[9].
- 10 bird species listed upon Annex 2.1 of the Birds Directive.
- 23 bird species listed upon Annex 2.2 of the Birds Directive.
- 37 bird species listed upon Appendix 2 of the Bern Convention.
- 15 bird species listed upon Annex II of the Convention on Migratory Species.
- 20 bird species listed upon Appendix 2 of the Convention of Migratory Species.
- 9 bird species listed upon EC CITES Annex A.
- 1 bird species listed upon EC CITES Annex D.

5.4.6. *Survey Findings.* The multi-storied buildings present at the site provide nesting opportunities to a relatively small number of bird species. In addition, the small number of semi-mature trees and denser areas of mature scrub within the site also provide some potential nesting sites, although these opportunities are largely considered of low value, save for the tree /scrub belts situated along the northern and south-western boundaries of the site, which are considered of low-to-moderate value within a local context. It should be noted that the majority of the scrub habitat present at the site is relatively low-lying and hence largely unsuitable to support nesting birds, whose nests would be subject to predation from ground predators. Furthermore, the grassland /ruderal /scrub mosaic situated within the north-western section of the site is considered unsuitable to support ground nesting birds as this habitat area is situated in close proximity to semi-mature trees and buildings, which can be utilized by species such as Crow as observation posts in order to predate the eggs of ground-nesting birds, whilst Fox is also known to regularly inhabit this section of the site. Furthermore, the vast majority of the habitats within the site provide only limited opportunities to foraging birds. Nevertheless, the grassland /ruderal /scrub mosaic present within the north-western section of the site, the adjacent embankment to the north, the rank grassland /scrub and mature trees situated along the south-western site boundary, and the former areas of amenity planting and amenity grassland, provide some suitable foraging habitat for birds at the site, although this habitat is limited in extent.

5.4.7. A limited number of bird species were incidentally recorded at the site during the Phase 1 survey work in 2013 and/or during the update survey work undertaken between April and October 2014, as shown in Table 5 below:

[9] Directive 2009/147/EC on the Conservation of Wild Birds

Species	Wildlife & Countryside Act 1981 Sch. 1 Part 1	RSPB Red List	RSPB Amber List	RSPB Green List	UK BAP Priority Sp./ Sp. of Principal Importance
Blackbird				X	
Blackcap				X	
Chaffinch				X	
Carrion Crow				X	
Feral Pigeon*				X	
Goldfinch				X	
Great Tit				X	
House Sparrow		X			X
Jay				X	
Long-tailed Tit				X	
Magpie				X	
Peregrine Falcon **	X			X	
Pied Wagtail				X	
Robin				X	
Starling		X			X
Wood-pigeon				X	
Wren				X	

* Large numbers of Feral Pigeon were recorded throughout Buildings B1a / B1b and within the rooms on the upper storey of B2
** Peregrine Falcon was recorded nesting on top of silos on a section of walkway situated adjacent to the roof-top building

Table 5: Status of Birds Recorded within the Site

5.4.8. *Evaluation.* The vast majority of the 17 bird species recorded at the site are not listed as having any special conservation status, as shown in Table 5 above. However, a single species, namely Peregrine Falcon, listed upon the Wildlife and Countryside Act Schedule 1 Part 1, was recorded nesting upon the northerly-facing walkway near the top of the concrete grain silos during spring 2014. Indeed, this pair of Peregrine Falcons was first recorded at the site in 2013 by local bird watchers (Barry Trevis, British Trust for Ornithology – pers. comm.). Although there is good evidence that the pair of Peregrines attempted to breed during spring 2014 no evidence of any young was recorded. Nevertheless, given that nest failure at newly occupied sites is not uncommon a detailed mitigation strategy to safeguard the Peregrines, both during and post development, has been drafted by the Wildlife Conservation Partnership (WCP)

(see Section 6).

5.4.9. In addition, two bird species listed as UK BAP species /Species of Principal Importance and also upon the RSPB's Red List of Birds of Conservation Concern (2009) as a result of declines in UK breeding populations, were incidentally recorded at the site, namely House Sparrow and Starling (see Table 5). However, these two species are still common and widespread, both locally and nationally, and there is no evidence to suggest that the site is of particular importance to local populations of either of these species, especially given the small numbers recorded at the site. Nevertheless, given the legal protection afforded to nesting birds, a number of safeguards /mitigation measures, as well as enhancements are detailed for nesting birds at Section 6 of this report, with specific enhancement measures proposed for House Sparrow and Starling.

5.5. Reptiles

5.5.1. *Legislation.* All six native reptile species (namely Sand Lizard, Smooth Snake, Adder, Grass Snake, Slow-worm and Common Lizard) receive some degree of legal protection in Great Britain, under Schedule 5, Section 9 of the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004.

5.5.2. The rarer, more threatened species, namely Sand Lizard and Smooth Snake, are also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010 and hence both species are classed as 'European Protected Species'. This strict level of protection means it is an offence to kill or injure, capture, disturb or possess, or trade in individuals of these species. In addition, it is an offence to damage or destroy the places they use for resting or breeding.

5.5.3. The remaining four species (namely Adder, Grass Snake, Slow-worm and Common Lizard) are relatively widespread species and hence these are protected against killing, injuring and unlicensed trade only. Nevertheless, because of their partial protection, disturbing or destroying their habitat whilst they are present may lead to an offence.

5.5.4. *Background Records.* HBRC hold 8 records of reptiles recorded within the specified 2km radius search area surrounding the site, including Slow-worm (5 records) and Common Lizard (3 records) (see Appendix 1). However, none of these records was definitively recorded within the site, with the closest definitive records to the site being of Slow-worm and Common Lizard, which were both recorded approximately 220m south-west of the site at Twentieth Mile Bridge Allotments in 1997. In addition, two of the other Slow-worm records were recorded within the 1km grid square in which the most northerly section of the site is situated. However, detailed grid reference information is not provided for either of these records and hence their exact locations in relation to the site cannot be determined.

5.5.5. The NBN database holds 2 records of reptiles recorded in the last 20 years within the 10x10 km grid square that encompasses the site, including Slow-worm (1 record) and

Common Lizard (1 record). Neither of these records is provided with detailed grid reference information and hence the exact locations of these records in relation to the site cannot be determined.

5.5.6. *Survey Findings and Evaluation.* No incidental sightings of reptiles were recorded at the site during the October 2013 Phase 1 survey work undertaken, with a number of potential refuges inspected for these species. Furthermore, the vast majority of the site comprises buildings and hardstanding, which in turn abut off-site areas supporting similar habitats, including main roads situated immediately north and east of the site. These habitats provide negligible opportunities to reptiles, with the main roads forming likely barriers to reptile dispersal. However, the triangular-shaped area of land in the north-western section of the site comprises a mosaic of habitat, including rank grassland, re-colonizing grassland, tall ruderal vegetation and scrub. This mosaic of semi-natural habitat provides the complexity of habitat structure often favoured by common reptiles, with a potential hibernacula also present, whilst bordering a likely reptile dispersal corridor to the west in the form of a railway-line with associated semi-natural habitats bordering this feature. Therefore, the north-western section of the site was considered suitable to support common reptiles. Indeed, a very small population of Slow-worm was recorded within this area of the site by Hurleypalmerflatt in 2011 (maximum count of 2 individuals). As such, update reptile presence /absence surveys were considered necessary in this part of the site, following Froglife's Advice Sheet 10 reptile survey guidance as detailed at Section 2, with this survey methodology agreed with Hertfordshire County Council's Ecology Advisor (see Appendix 3).

5.5.7. In addition, given that the linear areas of former amenity grassland situated north and south of Hyde Way, within the central section of the site, along the northern boundary of the site, and along the south-western boundary of the site, are no longer managed and hence support rank grassland swards, with a potential reptile hibernacula also present within one of these areas (see Plan 3), it was considered prudent to also undertake reptile presence /absence surveys of these areas of suitable reptile habitat despite their somewhat isolated locations within the wider site from other areas of suitable reptile habitat (see Plan 4 – Reptile Survey - Locations of Reptile Refugia /Reptiles Recorded).

5.5.8. The results of the detailed reptile presence /absence survey work undertaken at the site between early April – early June 2014 are shown in Table 6 below:

Survey No.	Survey Date	Weather Conditions	Air Temp. ^{0}C	Reptile Refugia	Com-mon Lizard	Grass Snake	Slow-worm	Adder	Other Species
1	04.04.14	Sunny intervals / still	14.5	Majority warm	0	0	2 adults	0	-
2	10.04.14	Sunny intervals / light breeze	15.5	Warm	0	0	4 adults +1 juv.	0	Evidence of small mammals
3	18.04.14	Cloudy with sunny spells / still	13	Majority warm	0	0	4 adults +2 juv.	0	-
4	07.05.14	Sunny intervals / light breeze	16	Majority warm /some hot	0	0	3 adults +4 juv.	0	1 Field Vole
5	14.05.14	Cloudy with sunny spells / light breeze	16 - 17	Some warm / some hot	0	0	4 adults +2 juv.	0	1 Field Vole / 1 Common Shrew
6	01.06.14	Sunny intervals / still	18	Majority hot /some warm	0	0	6 adults +1 juv.	0	-
7	05.06.14	Sunny intervals (after heavy shower) / Breezey	17	Majority warm /some hot	0	0	7 adults +3 juv.	0	Evidence of small mammals
PEAK ADULT COUNT					**0**	**0**	**7**	**0**	**N/A**

Table 6: Results of Reptile Presence /Absence Survey Work Undertaken at the Site during April - June 2014

5.5.9. Following the guidance detailed within Froglife's Advice Sheet 10, the site did not qualify as a 'Key Reptile Site', with a 'Low' population of Slow-worm (i.e. <5 adults) recorded during 5 of the 7 surveys and a 'Good' population of Slow-worm (i.e. 5- 10 adults) recorded during 2 of the 7 surveys, with no other reptile species recorded as present at the site. However, and importantly, it should be noted that the population scores detailed within Froglife's Advice Sheet 10 are based upon a refugia density of 10 per hectare, whilst at the site a much higher refugia density was utilised, with 71 refugia distributed over the north-western triangular-shaped area of land (see Plan 4), which covers an area of approximately 0.85ha (i.e. a refugia density over 7 times higher than that detailed within Froglife's Advice Sheet 10). The main reason for utilising such a high refugia density is that it is BMD's experience that small populations of reptiles can potentially be missed when using low refugia coverage and given that Hurleypalmerflatt had recorded a maximum count of 2 Slow-worm in 2011 it was considered prudent to significantly increase the number of refugia at the site to ensure Slow-worm was not mistakenly recorded as absent, whilst in fact being present, but only at very low numbers. Nevertheless, with such a significant increase in refugia density utilised at the site compared to that detailed within Froglife's Advice Sheet 10 it is acknowledged that the refugia density utilised likely resulted in an over-estimation of the Slow-worm population size present and hence it was considered that the site likely supported, at best, a 'Low' population of Slow-worm, prior to the translocation exercise commencing. Indeed, it should be noted that the HGBI guidelines denote a 'Low' population of Slow-worm as being <50/ha and hence following this guidance the population recorded at the site prior to translocation could be considered as being very low.

5.5.10. Nevertheless, given the legal protection afforded to Slow-worm and given the consented alterations to the site access road under Planning Permission N6/2013/2305/MA are scheduled to be undertaken during winter 2014 /2015 a translocation exercise was considered necessary to avoid potential killing or injury of Slow-worm as a result of these works. As per best practice guidance, the aim of the translocation exercise was to capture and remove a significant majority of the Slow-worm population present from the development footprint to a suitable receptor area and/or receptor site.

5.5.11. *Reptile Mitigation Strategy, Results and Evaluation.* In accordance with the relevant legislation and best practice guidance, especially the 1998 HGBI guidance note[10], and taking the findings and analysis of the reptile presence /absence survey work undertaken at the site by BMD in spring 2014 and by Hurleypalmerflatt in 2011 into consideration, a **proportional** reptile mitigation strategy for the site was drafted. The main considerations affecting this strategy are summarised below and fully detailed within BMD's report entitled '*Reptile Survey and Mitigation Report to Address Condition 4 of Planning Permission Ref: N6/2013/2305/MA, Land at Broadwater Road, Welwyn Garden City'*, dated 02/12/14.

- It was considered that translocating the low /very low on-site Slow-worm population to a receptor area outside of the development footprint, but adjacent to the railway corridor and within the client's landholding was a viable option providing only low numbers of Slow-worm were captured, as was indicated as likely by the reptile survey data obtained. The adjacent railway corridor is bordered by habitats suitable to support Slow-worm and is considered highly likely to be the point of Slow-worm ingress /egress linking the site with other areas of suitable Slow-worm habitat and other populations of Slow-worm present in the local area. Indeed, Twentieth Mile Bridge Allotments CWS is situated approximately 220m to the south-west of the site along this railway corridor and this site was recorded as supporting Slow-worm in 1997. Given the connectivity of the development site with this CWS and given its close proximity to the site, enquiries were made to Hertfordshire and Middlesex Wildlife Trust (HMWT) in mid-August 2014 into the viability of using this CWS site as an off-site reptile receptor or another suitable site they could recommend as a back-up receptor site should larger than expected numbers of Slow-worm be captured at the site. However, the need for a further receptor site was not required with only low numbers of Slow-worm captured from the site. Therefore, the Slow-worm captured during the translocation exercise were released within the client's landholding, outside the reptile exclusion fence, adjacent to the railway corridor.

- 274m of reptile exclusion fencing was installed in all, along the entire western and northern boundaries of this section of the site and along a small section of the south-eastern boundary of this area. The reptile exclusion fencing enabled all reptiles captured within the development site to be released in very close-proximity to the development site (as recommended in the HGBI guidelines), within areas of suitable reptile habitat, along a likely reptile dispersal corridor.

- The HGBI guidelines recommend that 60 suitable trapping days be undertaken for a 'Low' population of Slow-worm (i.e. <50 adults), based upon refugia at a density of 50 per

[10] Herpetofauna Groups of Britain and Ireland (HGBI 1998) – 'Evaluating Local Mitigation /Translocation Programmes: Maintaining Best practice and Lawful Standards'

hectare being checked once a day. However, there is scope to proportionally reduce the overall number of days of capture by increasing the trapping effort on the days of capture. This can be achieved by increasing the number of reptile refugia at a site and in this regard 215 refugia were distributed across the north-western section of the site (i.e. representing 5 times the recommended number of refugia for this area of suitable habitat). Furthermore, trapping effort can also be increased by checking the refugia more than once on days with suitable weather conditions, and in this regard the refugia were checked twice on 6 of 32 days on which trapping was undertaken.

- As stated in the HGBI guidance note determining when the target of '*reasonable effort*' has been satisfied for a reptile translocation exercise varies and should be assessed on a case-by-case basis. At the site '*reasonable effort'* was considered to have been achieved after habitat manipulation works had been completed (3 days of strimming works overseen by an ecologist), subsequent to which 4 consecutive days of reptile no capture were completed. Given the low /very low numbers of Slow-worm present within the site it is BMD's experience that under such circumstances it is more effective to significantly increase trapping effort during one of the two optimal reptile survey /translocation windows (i.e. April /May or September/ mid-October – i.e. the latter in this case) than to adopt the standard capture effort per trapping day and incorporate further trapping days over the summer months when reptile use of artificial refugia is significantly reduced, with a corresponding decrease in the effectiveness of reptile capture.

5.5.12. The results of the Slow-worm translocation exercise undertaken at the site between August and mid-October 2014 are shown in Table 7 below:

Translocation Day No.	Survey Date	Slow-worm			Other Species
		Adult	Sub-adult	Juvenile	
1	05.09.14	-	-	1	-
2	07.09.14	-	-	-	-
3	08.09.14	1 (f)	-	2	-
4	09.09.14	-	-	1	-
5	10.09.14	-	-	-	-
6*	11.09.14	2 (1m / 1f)	-	1	-
7	12.09.14	-	-	-	1 Field Vole
8	13.09.14	-	-	-	-
9	14.09.14	-	-	4	-
10	15.09.14	-	-	-	-
11	17.09.14	-	-	1	-
12	19.09.14	-	1	-	-
13	20.09.14	1 (f)	-	1	-
14	21.09.14	-	-	-	-
15	22.09.14	-	-	-	-
16	23.09.14	-	-	2	-
17	25.09.14	1 (f)	-	-	-
18	26.09.14	-	-	-	-
19	27.09.14	-	1	-	-
20	28.09.14	-	-	-	-
21*	29.09.14	-	-	-	-
22	01.10.14	-	-	1	1 Field Vole
23	02.10.14	-	-	-	-
24	03.10.14	1 (m)	-	-	-
25*	04.10.14	-	-	-	-
26*	05.10.14	-	-	1	-
27*	06.10.14	-	-	-	-
28*	07.10.14	-	1	-	-
29	08.10.14	-	-	-	-
30	10.10.14	-	-	-	-
31	11.10.14	-	-	-	-
32	12.10.14	-	-	-	-
TOTALS		**6**	**3**	**15**	**N /A**

* = Days during which two trapping rounds were undertaken
xx = Days during which habitat manipulation works were undertaken (strimming works)
f = female m = male

Table 7: Results of Reptile Translocation Exercise Undertaken at the Site Between late August and mid-October 2014

5.5.13. A small population of Slow-worm was captured within the north-western section of the site during the late August to mid-October 2014 reptile translocation exercise. 24 Slow-worm were captured in total, including 6 adults, 3 sub-adults and 15 juveniles (see Table 7 above). The majority of Slow-worm were captured within the western section of this part of the site, which abuts the railway corridor. No other reptile species were seen or captured at the site during the reptile translocation exercise.

5.5.14. The reptile translocation exercise was undertaken between late August (distribution of refugia at the site) and mid-October 2014, i.e. during one of the two optimal survey /translocation windows for reptiles available throughout the year. Temperatures throughout September 2014 remained high, with largely sunny days with clouds and/or hazy sunshine and this resulted in trapping days being suitable, and indeed optimal, to search for and capture reptiles during the early morning period. However, the warm,

sunny conditions that were prevalent during much of September 2014 meant that it was unlikely that reptiles would utilise the artificial refugia later in the day and hence secondary trapping rounds were largely confined to the latter part of the trapping exercise, when the temperatures had dropped. Overall, it is considered that the weather conditions at the site were suitable /optimal to undertake a reptile translocation exercise.

5.5.15. Following the guidance detailed within the HGBI guidance note the Slow-worm population captured at the site is considered a 'Low' population. Indeed the HGBI guidance note measures population size-class based upon numbers of adults present /caught, with <50 adults considered a 'Low' population. In this regard, only 6 adults were caught during the trapping exercise at the site and hence the population can be considered as being very small, following this categorisation.

5.5.16. Given the small population of Slow-worm captured at the site, particularly the very small number of adults captured, it is considered that translocating this population to the adjacent suitable habitat present along the railway corridor ensures that this small population remains connected with the larger meta-population present in the local area, with the railway corridor not only providing suitable basking, foraging and over-wintering opportunities to Slow-worm, but also, and importantly, providing a suitable wildlife corridor that connects with other off-site areas of suitable Slow-worm habitat and other off-site Slow-worm populations in the local area.

5.5.17. **Conclusion.** It is considered that the vast majority of the small Slow-worm population that inhabited the north-western section of the site has been captured and translocated out of the development footprint. Indeed, when the results of the reptile survey work are taken into consideration, the numbers of Slow-worm caught during the translocation exercise seem to reflect the survey numbers, given that some level of Slow-worm ingress /egress will have occurred throughout the period of reptile activity during the summer. Therefore, given the suitable /optimal weather conditions present throughout the translocation exercise, given that 5 times the HGBI recommended number of refugia were utilised during the exercise, given that 2 trapping rounds were undertaken upon 6 of the 32 trapping days, given that extensive strimming works were undertaken to search for and corral any remaining reptiles into the small pockets of retained vegetation over a 3 day period, and given that the trapping exercise was only considered complete after 4 days of no reptile capture, then it is considered that '*reasonable measures*' as per the HGBI guidance note and legislation protecting this species have been satisfied and hence it is considered that the consented works to the site access road can proceed. Furthermore, it is considered that no further reptile survey or mitigation works are necessary at the site prior to commencement of further development after completion of the new access road, although it is recommended that careful consideration be given to the timing of the removal of the reptile exclusion fence at the site, as detailed at Section 6. In addition, recommendations to enhance the site for reptile species as part of the proposals are detailed within Section 6 of this report.

5.6. Amphibians (Great Crested Newt)

5.6.1. *Legislation.* All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is fully protected under Schedule 5 of this legislation, and is also classified as a European Protected Species under the Conservation of Habitats and Species Regulations 2010. As such, both Great Crested Newt and habitats utilized by this species are afforded full protection. Great Crested Newt is also listed as a UK BAP species.

5.6.2. *Background Records.* HBRC does not hold any records of Great Crested Newt recorded within or immediately adjacent to the site. However, HBRC hold a single record of this species recorded within the specified 2km radius search area surrounding the site (see Appendix 1). This record was recorded within the 1km grid square situated to the east of the 1km grid square that incorporates the site in 1995; at least 500m east of the site. In addition, HBRC hold 4 records of the UK BAP listed species Common Toad, which were recorded within the specified 2km radius search area surrounding the site. However, detailed grid reference information is not provided for any of these records and hence their exact locations in relation to the site cannot be determined.

5.6.3. The NBN database holds 4 records of Great Crested Newt recorded in the last 20 years, within the 10x10 km grid square that encompasses the site. However, detailed grid references are not provided for any of these 4 records and hence their exact locations in relation to the site cannot be determined. In addition, the NBN database also holds records of other amphibian species recorded in the last 20 years, within the 10x10 km grid square that encompasses the site, including Smooth Newt (3 records), Palmate Newt (2 records), Common Toad (2 records) and Common Frog (2 records). However, detailed grid references are not provided for any of these records and hence their exact locations in relation to the site cannot be determined; with the closest known records being of Common Toad and Common Frog, which were both recorded approximately 1km north of the site.

5.6.4. *Survey Findings*. No incidental sightings of Great Crested Newt (GCN) or any other amphibian species was recorded at the site during the October 2013 Phase 1 ecology survey, with a number of potential refuges inspected to help establish presence of these species. Furthermore, no Great Crested Newt or other amphibian species were recorded under the artificial refugia during the detailed reptile Phase 2 survey work undertaken at the site in early April to early June 2014 (7 survey days) or during the Phase 3 reptile mitigation works undertaken at the site in September 2014 to mid-October 2014 (32 trapping days). Although not a categorical result, it is BMD's experience that amphibians are regularly encountered under such artificial refugia when present at a site.

5.6.5. *Evaluation.* For breeding purposes GCN favours large, deep waterbodies, which have little or no flow, with significant aquatic and emergent vegetation present around their margins. They also require areas of suitable terrestrial habitat for foraging and dispersal purposes, which optimally would include rank, tussocky grassland, marshy

grassland, woodland and hedgerows. In addition, Great Crested Newt requires suitable places that remain frost-free and undisturbed in order to hibernate over the winter period.

5.6.6. The site does not contain any waterbodies, nor are there any suitable waterbodies situated within 300m of the site boundary (following OS Explorer Map 182). As such, it is considered that the site does not provide any suitable breeding opportunities for amphibians. Furthermore, the site largely supports buildings and hardstanding; habitats which do not provide suitable foraging opportunities for amphibians during their terrestrial phase. Nevertheless, the linear area of rank grassland and scrub situated along the south-western boundary of the site, the overgrown areas of amenity planting and amenity grassland situated around the boundary of the northern section of the site, and in particular the scrub /ruderal /grassland habitat mosaic situated within the north-western section of the site, provide suitable foraging opportunities for amphibians. Furthermore, a number of small rubble and log piles are also present within these areas, which provide suitable hibernation opportunities for amphibians. In addition, the main area of suitable amphibian terrestrial habitat situated in the north-western section of the site is situated directly adjacent to a suitable amphibian dispersal route, namely a railway corridor. However, the extent of suitable amphibian habitat present at the site is small, with this habitat somewhat isolated within the wider landscape by significant areas of buildings and hardstanding, which act as barriers to amphibians accessing the site on three sides.

5.6.7. Therefore, given the distance of the small areas of suitable amphibian terrestrial habitat present at the site from potential suitable amphibian breeding ponds, it is considered unlikely that Great Crested Newt or other amphibian species would cross significant areas of sub-optimal and unsuitable habitat to utilize these small areas. Indeed, no amphibians were recorded under the refugia during the 2013 Phase 1 survey or during the reptile presence/ absence surveys and mitigation works undertaken at the site in 2014, including the 3 day strimming exercise of suitable amphibian terrestrial habitat. As such, it is considered that amphibians, particularly the more specialised species Great Crested Newt, are likely absent from the site and hence no further survey or mitigation measures are considered necessary in regard to this group.

5.7. Invertebrates

5.7.1. *Background Records.* HBRC hold 118 records of invertebrate species recorded within the specified 2km radius search area surrounding the site. Records include those of 40 different moth species (87 records in all) and 6 different butterfly species (31 records in all). Of these records none were recorded within the site, with the closest definitive record to the site being that of the UK BAP-listed butterfly species White Admiral, which was recorded adjacent to the north-eastern site boundary in 2003.

5.7.2. The NBN database holds a number of protected, notable, rare and/or BAP-listed invertebrate species recorded in the last 20 years within the 10x10km grid square that encompasses the site, including:

- *Beetles.* (109 species in all), including 1 species listed upon the Bern Convention Appendix 3, the Habitats Directive Annex 2 (non-priority species), and the Wildlife Countryside Act 1981 Schedule 5 Section 9.5a and 9.5b (i.e. Stag Beetle); 1 Nationally Notable A beetle species; 3 Nationally Notable B listed beetle species; 2 Species of Principal Importance in England /UK BAP listed beetle species; and 5 Nationally Scarce beetle species.
- *Butterflies.* (33 species in all), including 1 IUCN (2001) Endangered listed butterfly species / the Wildlife Countryside Act 1981 Schedule 5 Section 9.5a and 9.5b listed butterfly species (i.e. White-letter Hairstreak); 2 IUCN (2001) 'Lower Risk' (Near-threatened) listed butterfly species (i.e. Small Heath and Wall); 3 IUCN (2001) Vulnerable listed butterfly species; and 5 Species of Principal Importance in England /UK BAP listed butterfly species.

5.7.3. In addition, the NBN database holds a number of records of 120 other invertebrate species recorded in the last 20 years within the 10x10km grid square that encompasses the site, including Hymenopteran (43 species), True Bugs - Hermiptera (21 species), Dragonflies - Odonata (19 species), Caddisflies - Trichoptera (19 species), True Flies - Diptera (7 species), Orthopteran (6 species), Mayflies – Ephemeroptera (1 species), Moths - Lepidoptera (1 species), Earwig - Dermaptera (1 species), Fleas - Siphonaptera (1 species), and Stoneflies – Plecoptera (1 species). It should be noted that the vast majority of these records are not detailed with full grid reference information and hence their exact locations in relation to the site cannot be determined.

5.7.4. *Survey Findings and Evaluation*. Significant areas of the site comprise buildings and hardstanding, which largely provide negligible opportunities for invertebrates, although fairly extensive Buddleja scrub has colonized within the cracks in the hardstanding, which provides a foraging resource for butterflies and bees. In addition, the grassland /scrub /tall ruderal vegetation mosaic present within the north-western section of the site, the linear area of grassland, scrub and mature trees situated along the south-western site boundary, and the small areas of unmanaged amenity grassland and amenity planting across the site, provide suitable opportunities (although limited in extent) to a range of common invertebrate species, and indeed Peacock, Small Tortoiseshell, Meadow Brown and very occasional Common Blue butterflies, along with occasional Burnet Moth, 7-spot ladybird, a number of ground beetles (Carabidae), Red Soldier Beetle, Banded Demoiselle damselfly, two species of Honey-bee and a crane-fly (Tipulidae) were incidentally recorded during the 2013 /2014 site survey work. In addition, small numbers of Garden Snail, Devil's Coach-horse, millipedes, earthworms (Lumbricina), ground beetles, spiders, snails (Gastropoda) and woodlice (Oniscidea) were noted when searching under the artificial refugia during the reptile presence /absence surveys and reptile mitigation works undertaken during April - October 2014.

5.7.5. Nevertheless, it is considered unlikely that any invertebrate species would be reliant upon the small areas of suitable habitat present at the site, especially given the extent of suitable /optimal habitat present in the local vicinity, particularly that provided by the railway corridor, which is situated immediately adjacent to the north-western boundary

of the site and that provided by Sherrardspark Wood approximately 850m north-west of the site. Indeed, given the absence of any ancient woodland, species-rich grassland or wetland features within the site, it is considered unlikely that any protected, rare or notable invertebrate species inhabit the site and no further survey work or mitigation measures are considered necessary in regard to this group.

5.7.6. It is noted that a White Admiral butterfly (UK BAP-listed species) was recorded adjacent to the north-eastern site boundary in 2003; however, as acknowledged by HBRC (see Appendix 3), this is a woodland species and hence highly unlikely to be reliant upon the small areas of habitat at the site, which are, at best, sub-optimal for this species. Indeed, HBRC acknowledge that further survey for this butterfly species or any other invertebrate species at the site is not warranted given the habitats present (see Appendix 3). Nevertheless, given the nature of the development, and in-line with Section 40 of the NERC Act 2006, it is recommended that a number of enhancement measures be provided for invertebrates as part of the development proposals (see Section 6).

6. RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENTS

Recommendations / Mitigation Measures

6.1. The vast majority of the site contains habitats, which are considered of negligible /low ecological value. Nevertheless, a number of semi-mature trees and an area comprising grassland /ruderal /scrub mosaic are present situated within the north-western section of the site and along the northern embankment and south-western site boundary, and these features are considered of raised ecological value within the context of the site. Given the raised ecological value of the trees, and to a lesser extent the grassland /ruderal /scrub mosaic, it is recommended that these features be retained wherever possible, or compensated for when lost to facilitate the proposals. In this regard a number of safeguards /mitigation measures regarding the trees are detailed below, whilst compensation measures are detailed in case any semi-mature trees have to be lost to facilitate the proposals. Furthermore, measures are detailed for the eradication of the Schedule 9 listed invasive plant species, Japanese Knotweed, Rhododendron and Cotoneaster sp. (including Wall Cotoneaster), which are present at the site. In addition, a number of recommendations are made regarding the landscape proposals and management of the new habitats to compensate for the loss of the area of grassland /ruderal /scrub mosaic (see 'Enhancements').

6.2. The majority of the site provides only limited opportunities to protected faunal species. Nevertheless, the northern embankment and south-western boundary vegetation and the grassland /ruderal /scrub mosaic situated within the north-western section of the site support habitats that provide some opportunities for bats, birds, common small mammals, reptiles and invertebrates, whilst the ledges on top of the silos are utilized by the Schedule 1 Part 1 listed bird species Peregrine Falcon. Therefore, mitigation measures /precautionary safeguards are detailed below regarding the presence /potential presence of these species /groups, where appropriate.

6.3. **Semi-mature Trees**

6.3.1. Given the raised ecological value of the semi-mature trees within the context of the site, it is recommended that these features be retained and safeguarded as part of the proposals wherever possible, subject to professional arboricultural advice. However, if any of these trees need to be felled to facilitate the proposals or for other reasons then it is recommended that these features should be replaced with native tree species of local provenance, such that there is no net loss of this habitat at the site as a result of the proposals. For the semi-mature trees which are scheduled to be retained as part of the proposals it is recommended that these features be safeguarded during the ground clearance, site preparation, and construction works as per arboricultural best practice ('BS 5837:2012 '*Trees in Relation to Design, Demolition and Construction*').

6.4. **Invasive Plants**

6.4.1. Japanese Knotweed, Rhododendron and Cotoneaster sp. (including Wall Cotoneaster) are present within the site. These species are non-native, invasive plant species,

which are listed upon Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), which means that it is illegal to plant them in the wild or otherwise cause them to grow in the wild. Therefore, in order to avoid a potential offence under Schedule 9 during ground clearance /earthworks and in line with best practice, it is recommended that Japanese Knotweed, Rhododendron and Cotoneaster sp. be eradicated in a controlled manner from the site as part of the proposals.

6.4.2. There are a number of methods for eradicating Japanese Knotweed, with the 2 main methods detailed below:

- *Chemical Treatment*. A range of treatment options are available for Japanese Knotweed, with chemical treatment usually being by far the cheapest method. However, this form of treatment requires the longest time to achieve eradication (i.e. multiple visits).

- *'Dig and Dump*' involves excavating all above ground plant material as well as all contaminated soil containing Japanese Knotweed rhizomes and disposing of it at an Environment Agency registered landfill site. Costs for 'dig and dump' can be very high, depending on the amount of plant material /contaminated soil that requires disposal, as Japanese Knotweed plant material is classified as controlled waste.

6.4.3. Given the locations of the 5 stands of Japanese Knotweed close to the eastern palisade fence within the north-western section of the site, chemical treatment is considered appropriate at the site, as none of these 5 stands will be impacted by the new site access road works. Indeed, it is understood that a specialist contractor is currently undertaking these treatment works. Nevertheless, it is recommended that no earthworks be undertaken within 3m of these 5 stands until this chemical treatment programme has been successfully completed.

6.4.4. Rhododendron plants expand their area of occupation either by vegetative spread through stem layering or by seed dispersal and seedling establishment. The rate of spread by stem layering is relatively slow, as it requires the constant collapse and rooting of branches on the periphery of the bush. Nevertheless, a mature Rhododendron bush growing in ideal conditions with space to expand can produce up to one million seeds per year. Therefore, if conditions are favorable for seed germination and seedling growth, invasion of a site through seed dispersal can be rapid.

6.4.5. The most efficient methods of controlling Rhododendron depend upon the size, life stage and accessibility of the target bush. Nevertheless, in general, to eradicate Rhododendron all vegetative growth should be cut back and the stumps treated with herbicide or uprooted. It is important to ensure all stumps are included as Rhododendron re-grows vigorously when cut. Furthermore, all habitats cleared of Rhododendron must be regularly and systematically re-visited to remove any seedlings that have germinated and become established. Where there is no access to treat the stems, an overall foliar spray is the next option, although this not effective on larger bushes. It should be noted that the most successful operators kill Rhododendron

bushes *in situ* with one visit by stem treatment using cordless drills rather than other techniques that require several visits.

6.4.6. Cotoneaster. Removal of *Cotoneaster* sp. /Wall Cotoneaster by mechanical means can be undertaken at any time of the year, but preferably when the soil is moist to lessen disturbance. Berries should be carefully collected and disposed of in a bin. To remove larger plants, branches should be cut off first and then the roots dug-out with a shovel. It is important to entirely remove stumps and roots as both are capable of re-sprouting. Alternatively, chemical treatment with a glyphosphate herbicide can be undertaken when plants are actively growing between spring and autumn, or applied to cut stumps or abraded bark for larger specimens.

6.5. **Bats**

6.5.1. *Buildings.* Buildings B1 and B2 are considered to provide negligible-to-low opportunities to roosting bats, with no evidence of bats recorded during the detailed internal /external survey work undertaken of these structures. Therefore, no further survey work or specific mitigation measures need to be carried out to safeguard bats prior to demolition of these buildings. Nevertheless, in line with best practice, it is recommended that a 'Watching Brief' be maintained for bats during the demolition /removal of the few sensitive features associated with these buildings, (as highlighted in Table 3), which provide some limited /very limited **potential** to support roosting bats. In the unlikely event that bats are encountered during these works, it is recommended that all works immediately cease, and a suitably qualified ecologist contacted for advice.

6.5.2. *Trees.* Four trees present at the site (Trees T1–T4) provide some, albeit limited, potential to support roosting bats. However, no evidence of bats utilizing the suitable roosting features provided by these trees was recorded during the June 2014 site survey. Nevertheless, given that bats often utilize trees supporting such features of low roosting potential on a short-term and irregular basis it is recommended that should any of these four trees need to be felled or significant arboricultural works undertaken upon them to facilitate the proposals, then these works should be undertaken during the bat active season (i.e. during April to October), but only following the negative result of an update inspection and/or bat emergence survey undertaken by a suitably qualified bat ecologist to confirm absence of roosting bats. It is recommended that this update survey be undertaken immediately prior to any proposed tree surgery / felling works commencing. Should any bats be encountered prior to, or during, tree surgery /felling works, then works should cease immediately and a suitably qualified ecologist consulted.

6.5.3. *Foraging and Commuting.* The site provides some suitable opportunities to foraging and commuting bats, although the habitat is limited in extent and largely sub-optimal. Nevertheless, the site is situated adjacent to a likely bat foraging /commuting corridor (i.e. the railway line and associated habitats). It is acknowledged that given Highways requirements and public health and safety requirements that new artificial lighting columns will be required at the site including in the immediate vicinity of the railway

corridor. Nevertheless, in line with best practice guidance, it is recommended that careful consideration be given to the locations, aspect, and /or type of new artificial lighting columns installed, particularly in this section of the site, in order to try and minimise potential lighting impacts upon foraging /commuting bats. In this regard it is recommended that consideration should be given to:

- The type of lamps utilized.
- The size and number of the lighting columns utilized.
- The luminaire and light spill (i.e. could hoods, cowls, louvers or shields be utilized)
- The timing of the lighting (i.e. could the new lighting columns be switched off during part of the night to provide some dark periods over the summer months).

6.6. **Hedgehog**

6.6.1. No evidence of the UK BAP-listed species Hedgehog was recorded at the site during the survey work undertaken. Nevertheless, a large number of Hedgehog records were obtained for the search area surrounding the site and hence given the presence of suitable habitats within the site to support this species it is recommended that a 'Watching Brief' be maintained for Hedgehog during vegetation clearance works. In particular, it is recommended that care be taken during any clearance works undertaken within the north-western habitat mosaic and within the south-western boundary vegetation, especially whilst removing the large log, brash and rubble piles present within these areas, as these features provide the most suitable resting habitats for Hedgehog at the site.

6.7. **Fox**

6.7.1. Fox was regularly recorded within the habitat mosaic situated within the north-western section of the site, with extensive Fox scat and a number of mammal pathways and push-throughs present within this area. This species does not receive any specific legislative protection and hence in this regard no further surveys or mitigation measures are necessary. Nevertheless, it is recommended that a 'Watching Brief' be maintained for Fox during clearance of dense scrub vegetation in this area. Should a Fox Earth be recorded as present during these works, and should this feature prove to be in active use, then it is recommended that Fox be excluded from this feature following best practice guidance regarding animal welfare issues, prior to earthworks commencing in this part of the site.

6.8. **Birds**

6.8.1. *Peregrine Falcon.* Peregrine Falcon, listed upon the Wildlife and Countryside Act Schedule 1 Part 1, was recorded nesting upon the northerly-facing walkway near the top of the concrete grain silos during spring 2014. Although there is good evidence that the pair of Peregrines attempted to breed during spring 2014, no evidence of any young was recorded. Nevertheless, given that nest failure at newly occupied sites is not uncommon a detailed mitigation strategy to safeguard the Peregrines, both during and post development, has been drafted by the Wildlife Conservation Partnership

(WCP), with the strategy based upon that successfully employed by WCP at Battersea Power Station. The proposed mitigation strategy was sent to the Local Planning Authority, the local Wildlife Trust and Herfordshire's Ecology Adviser for comment, with the strategy reproduced at Appendix 4 of this report. In summary, WCP propose that:

- A temporary mitigation site (TMS) will be located on the cleared area of land to the south of Hyde Way within the site boundary and installation of a nest-tray /nestbox /artificial substrate and erection of a high tower on a pre-installed concrete plinth will be positioned close to the centre of the TMS;
- Suitable Peregrine nesting substrate currently present upon the silos will be cleared immediately after the installation of the TMS to encourage the birds to favour the TMS on their anticipated return to the site in the next breeding season;
- Longer term, an integrated nesting platform will be designed alongside the renovation of the silos to provide a long term nesting site for the birds should they continue to return after the completion of the renovation works to the silos and the removal of the TMS.

6.8.2. It is should be noted that it is considered unlikely that demolition of part of the silo stack or adjacent processing plant will occur between February and August of 2015 and hence the Peregrines should remain undisturbed during this period should they choose to return to the silos to breed in spring 2015. Nevertheless, as a precautionary measure and to provide some flexibility to both the works and mitigation programmes, the temporary tower containing the artificial Peregrine nestbox /nest-tray is currently being installed at the site (early February 2015), with the silo ledges scheduled to be cleared of substrate by mid-February 2015.

6.8.3. *General.* The site offers some opportunities to foraging and nesting birds. Therefore, as all birds are protected whilst nesting it is recommended that in line with best practice and to avoid any potential offence under the Wildlife & Countryside Act 1981, any clearance of suitable nesting habitat (particularly the mature scrub /semi-mature and mature trees) should be undertaken outside of the nesting season (outside of late February–August inclusive). If this is not practicable, then it is recommended that all suitable nesting habitat scheduled to be removed, first be inspected by a suitably qualified ecologist. Should any active nests be found to be present, these should be cordoned off and protected until the end of the nesting season or until the chicks have fully fledged.

6.9. Reptiles

6.9.1. It is considered that the vast majority of the small Slow-worm population that inhabited the north-western section of the site has been captured and translocated out of the development footprint and that '*reasonable measures*' as per the HGBI guidance note and legislation protecting this species have been satisfied and hence it is considered that the consented works to the site access road can proceed. Furthermore, it is considered that no further reptile survey or mitigation works are necessary at the site prior to commencement of further development after completion of the access road works, although it is recommended that careful consideration be given to the timing of the removal of the reptile exclusion fence at the site.

6.9.2. *Removal of Reptile Exclusion Fence*. It is understood that the consented works to the access road are scheduled to begin during winter 2014 /2015. If these timescales are achieved then the risk of Slow-worm re-colonising the site once the exclusion fencing is removed is negligible as this species hibernates over the winter period. No areas of suitable hibernation habitat are present along the proposed road corridor and hence there is negligible risk of disturbing hibernating Slow-worm, and in any event the vast majority of the Slow-worm population has already been removed off-site. Nevertheless, even if the works proceed to the proposed timetable it is recommended that the reptile exclusion fence, particularly that installed along the western boundary, stay in place until the earthworks are scheduled to begin in this part of the site. The vegetation has been strimmed in this area and hence this has reduced its suitability to support Slow-worm. However, this vegetation will re-establish relatively quickly next growing season and hence will again become suitable to support Slow-worm. Therefore, if the reptile exclusion fence is removed and a delay to the start of the earthworks then occurs, Slow-worm could potentially re-colonise the site from the adjacent railway corridor next spring, especially as the vegetation re-establishes within the site.

6.10. If for whatever reason the consented works to the access road are postponed until next spring or summer, then it is recommended that the earthworks be undertaken immediately following removal of the exclusion fence, with a staged approach adopted. Following this scenario it is recommended that only the section of fence adjacent to the area subject to earthworks that day should be removed.

6.11. *Post Development.* It is considered that given the location of the new road that once it is in place this new feature will form a natural barrier preventing reptiles re-colonising the site from the railway corridor, as the road will comprise unsuitable reptile habitat (i.e. hardstanding) as well as actual barriers to reptile dispersal (i.e. road curbs). Therefore, the installation of the new road should prevent reptiles re-colonising the remainder of north-western section of the site even after the vegetation has re-established within this area. Therefore, no additional reptile exclusion fencing at the site is considered necessary following completion of the new access road.

Ecological Enhancement Measures

6.12. The National Planning Policy Framework sets out that the planning system should enhance the natural environment by providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. The NPPF specifically states that opportunities to incorporate biodiversity in and around developments should be encouraged. In this regard the proposals present the opportunity to deliver ecological enhancements at the site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of the UK and Local Biodiversity Action Plans.

6.13. **Landscape Planting.** It is recommended that any new landscape planting comprise of a wide variety of native species of local provenance and/or wildlife friendly species (as detailed within Natural England's 2007 publication entitled '*Plants for Wildlife-friendly*

Gardens'). Such areas of vegetation should provide a range of habitats for a variety of species and be managed according to ecological principles (see below). Furthermore, new landscape planting should provide a mixed structure of vegetation to maximise opportunities for wildlife at the site and should provide an alternative foraging resource to the Buddleja scrub, which will be lost to the proposals.

6.14. Suitable native species recommended to be incorporated in the new areas of landscape planting could include tree species such Pedunculate Oak, Ash, Field Maple, Silver Birch, Willow sp., Apple sp. (particularly Crab Apple), Pear sp. and Wild Cherry. Native shrub species of particular benefit would include seed and fruit bearing species, which would provide an abundance of additional food for wildlife, including Hawthorn, Elder, Hazel, Cherry Plum, Blackthorn, Holly, Guelder Rose, Wild Privet and particularly Willow sp. In addition, it is recommended that a number of climbers be incorporated into the planting proposals, preferably including some native species such as Climbing Roses, Honeysuckles and Wild Clemantis sp.

6.15. **Habitat Management.** It is recommended that all new habitats be managed adopting ecological principles as part of the general site maintenance regime so as to ensure their ecological interest continues in the long-term. Such management should follow horticultural good practice and include specific measures such as:

- avoiding the use of pesticides /herbicides, wherever possible,
- any major tree /shrub pruning works should take place outside the bird-nesting season (late February – August inclusive), to prevent potential damage or disturbance to nests and to avoid a potential offence.
- arisings from any tree works should be used to create discrete brash and log piles that will provide shelter for animals and deadwood habitat for saproxylic species.
- limited management of new public grassland areas. Suitable management would ideally include a twice-yearly mowing regime, whereby rotational mowing is employed across the site in both spring and autumn, enabling flowers to set seed and insects to complete their life-cycle over the summer period. The cuttings should not be left in-situ. Significant areas should be left un-mown during each cut to ensure foraging opportunities are available at all times for a variety of insects, particularly bees and butterflies.

6.16. **Bats.** Four trees situated along the southern-western boundary of the site currently provide sub-optimal roosting opportunities for bats, with the reminder of the trees and all of the buildings providing negligible or negligible-to-low roosting opportunities. Therefore, as an enhancement for bats, and in line with Section 40 of the NERC Act 2006, it is recommended that a variety of new optimal roosting opportunities be provided in respect of this species group as part of the proposals. The site is located within the range of Common Pipistrelle and Soprano Pipistrelle bats (UK BAP), with records of both species obtained during the data search exercise for the local area. Accordingly, it is recommended that measures be targeted towards these bats (albeit these provisions may be utilized by other bat species, such as Noctule, a UK BAP-listed species. As such, it is recommended that new optimal roosting opportunities for bats be provided in the form of Schwegler 2F and 1FF woodcrete bat boxes upon

retained mature trees, as well as the incorporation of bat bricks, and/or bat roosting units, and/or bat tubes, and/or bat tiles into a number of the new buildings proposed at the site (see examples at Appendix 5).

6.17. Ideally bat boxes should be installed as high up as possible on retained mature trees along the south-western boundary of the site. Boxes should face in a southerly /south-easterly /south-westerly direction and be placed where bats can attain direct and free access to them and not in areas where access is restricted by the presence of dense vegetation or where there are existing lighting columns or new lighting columns proposed.

6.18. It is recommended that new buildings adjacent to railway corridor or situated adjacent to the northern embankment or south-western site boundary be targeted for the incorporation of new roosting features for bats. In particular, these features should largely be located upon the southerly /south-easterly /south-westerly elevations of these buildings.

6.19. In addition, it is recommended that new landscaping be provided along the north-western boundary of the site to help ameliorate potential lighting impacts upon the adjacent bat foraging /commuting corridor (i.e. the adjacent railway corridor). It is recommended that this planting largely comprise native tree and shrub species (as previously detailed). Such planting would not only provide a buffer to the railway corridor, but would also provide an additional foraging resource for bats along a likely main bat foraging /commuting corridor.

6.20. **Hedgehog.** Given the nature of the proposals and given that a significant number of pre-existing records of Hedgehog recorded within the local vicinity of the site were obtained from the data search exercise, and given the urban nature of the site and that the habitats present adjacent to the site provide some suitable habitat to support Hedgehog, it is recommended that a number of Schwegler woodcrete Hedgehog nesting domes be provided as part of the proposals (see Appendix 6). It is recommended that these domes ideally be situated within areas of dense new boundary planting to provide optimal nesting opportunities for this species at the site, within associated dispersal corridors. The provision of new nesting opportunities for Hedgehog at the site would facilitate that aims and objectives of the UK BAP for this species.

6.21. **Birds.** As an enhancement for birds, and in-line with Section 40 of the NERC Act 2006, it is recommended that new optimal nesting opportunities be provided at the site as part of the proposals. In particular, given that House Sparrow was recorded at the site, given that a number of House Sparrow records have been recorded in the surrounding area, and given the urban context of the site, it is recommended that nesting opportunities for this UK BAP listed species be provided, with a number of Schwegler 1SP Sparrow Terraces installed upon the new buildings (see Appendix 7). These Sparrow Terraces should ideally be positioned close to the eaves of the new buildings, adjacent to one-another along the northern /north-eastern / or north-western elevations to keep them out of direct sunlight and prevent birds abandoning their nests in warmer weather. The provision of new nest sites for House Sparrow within the site would

facilitate the aims and objectives of the UK BAP Species Action Plan for this species. Furthermore, consideration should also be given to the provision of nesting boxes at the site for other declining bird species. In particular, it is recommended that a number of Schwegler No.3S Starling boxes be installed (see Appendix 7), given that this UK BAP / RSPB Red-listed species was recorded within the site during the survey work undertaken, with records of its presence in the local area confirmed from the data search exercise.

6.22. In addition, it is recommended that a number of Schwegler 1B standard bird boxes, which are suitable for a wide variety of bird species, as well as a number of Schwegler 2H open-fronted nest boxes which are often utilized by species such as Wren which was recorded at the site during the Phase I survey work, be installed at the site (see Appendix 7). Ideally these boxes should be installed high up upon retained semi-mature /mature trees and scrub around the boundaries of the site.

6.23. In addition, it is recommended that new areas of dense shrub planting be incorporated into the landscape proposals to provide natural nest sites for species such as Song Thrush, which is a UK BAP Priority Species. It is recommended that such features, as well as other areas of new tree and shrub planting, incorporate a number of native fruit and seed bearing species to provide an additional foraging resource for birds at the site.

6.24. **Reptiles.** Given the known presence of reptiles within the local vicinity of the site, including the adjacent railway corridor, it is recommended that a purpose-built reptile hibernacula be provided within the site as part of the proposals. The design of this hibernacula should ideally follow that shown in Appendix 8. It is important that this over-wintering feature be situated in an area of the site that is going to remain dry throughout the winter period, but also in habitat connected to the adjacent railway corridor. As such, it is recommended that this feature be constructed within the new area of landscaping proposed along the north-western boundary of the site.

6.25. **Invertebrates.** In-line with Section 40 of the NERC Act 2006, it is recommended that a number of enhancement measures be provided for invertebrates at the site as part of the development proposals. In this regard it is recommended that the new landscape scheme predominantly comprise native species and/or species of wildlife value (as detailed below and within Natural England's 2007 publication entitled '*Plants for Wildlife-friendly Gardens')*. In particular it is recommended that alternative foraging habitat be provided for Bumblebees and butterflies, given the presence of rank grassland and Buddleja scrub currently present at the site.

6.26. Furthermore, It is recommended that a Stag Beetle loggery be created within one of the new areas of boundary planting (see Appendix 9). A loggery would provide important deadwood habitat for this UK BAP listed invertebrate species, which has been recorded within the local vicinity of the site. It is also recommended that a number of potential nesting sites be created for Bumblebees at the site including areas of deadwood /log piles partially covered with a topsoil cap. In this regard it is recommended that any arisings from tree works should be used to create brashwood

and log piles within vegetated areas around the boundaries of the site, whilst standing or fallen deadwood in these areas should be retained in situ, where safe to do so. Such features would also provide important hibernation sites for queen Bumblebees at the site. In addition, it is recommended that a Bug Box, Wooden Insect House, or a Woodcrete Insect Nest box be provided as part of the proposals. Such insect boxes provide opportunities for overwintering Bumblebees as well as other beneficial insects, including Ladybirds, Hoverflies, Lacewings, Honey Bees and Solitary Wasps. Examples of such boxes are highlighted at Appendix 9.

7. SUMMARY AND CONCLUSIONS

7.1. Bradley Murphy Design Limited (BMD) was commissioned by Spen Hill Developments Limited in October 2013 to undertake an ecological survey and assessment of an area of land located at Broadwater Road, Welwyn Garden City in Hertfordshire.

7.2. **Proposals.** The proposals for the site are for a mixed-use development, with associated access, car-parking provision and landscape planting. It should be noted that the site is scheduled for phased re-development and in this regard alterations to the existing northern access road were brought forward under a separate planning application as the first phase of re-development. This application was subsequently granted full planning permission (Ref: N6/2013/2305/MA) by Welwyn Hatfield Borough Council, dated 27/01/2014, with associated mitigation measures regarding reptiles now complete in order to address Condition 4 of this planning permission.

7.3. **Designations.** No statutory or non-statutory designated sites of nature conservation importance are situated within the site. The nearest statutory designated site of nature conservation importance to the development site is Sherrardspark Wood Local Nature Reserve (LNR), which is situated approximately 875m north-west of the site at its closest point. The nearest non-statutory designated site to the development site is Twentieth Mile Bridge Allotments County Wildlife Site (CWS), which is situated approximately 220m south-southwest of the site. Neither this LNR nor CWS will be directly or indirectly affected by the proposals either during the construction or operational phases of the development. As such, no specific safeguards or mitigation measures are considered necessary beyond adoption of standard best working practices as part of the development in regard to this LNR or CWS (or any other statutory or non-statutory designated sites).

7.4. **Habitats /Species of Principal Importance for Biodiversity.** The site does not contain any definitive Habitat(s) of Principal Importance in England, listed under Section 41 of the NERC Act (2006). Three faunal species listed as being 'Species of Principal Importance in England' were recorded within the site during the survey work undertaken. However, it is considered highly unlikely that any local populations of these three species are reliant upon the site, with the vast majority of the small /very small Slow-worm population now translocated outside of the development footprint.

7.5. **Habitats.** The vast majority of the site contains habitats, which are considered of negligible /low ecological value. Nevertheless, a number of semi-mature trees and an area comprising grassland /ruderal /scrub mosaic are present situated within the north-western section of the site and along the northern embankment and south-western site boundary, and these features are considered of raised ecological value within the context of the site. Given the raised ecological value of the trees, and to a lesser extent the grassland /ruderal /scrub mosaic, it is recommended that these features be retained wherever possible, or compensated for when lost to facilitate the proposals. In this regard a number of safeguards /mitigation measures regarding the trees are detailed in this report, whilst compensation measures are detailed in case any semi-mature /mature trees have to be lost to facilitate the proposals. In addition, a number of

recommendations are made regarding the landscape proposals and management of the new habitats to compensate for the loss of the area of grassland /ruderal /scrub mosaic.

7.6. **Invasive Plants.** Japanese Knotweed, Rhododendron and Cotoneaster sp. (including Wall Cotoneaster) are present within the site. These species are all non-native, invasive plant species, which are listed upon Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), which means that it is illegal to plant them in the wild or otherwise cause them to grow in the wild. Therefore, in order to avoid a potential offence under Schedule 9 during ground clearance /earthworks a number of recommendations for the eradication of these species from the site as part of the proposals are detailed within this report, with a chemical treatment programme for Japanese Knotweed currently on-going at the site.

7.7. **Fauna.** The vast majority of the site provides only limited opportunities to protected faunal species. Nevertheless, the northern embankment, north-western habitat mosaic, and the south-western boundary habitats do provide some opportunities for bats, birds, common mammals, reptiles and invertebrates. Therefore, mitigation measures /precautionary safeguards are detailed at Section 6 of this report regarding the presence /potential presence of these species, where appropriate.

7.8. **Peregrine Falcon.** A single pair of Peregrine Falcon was recorded nesting at the site during the spring 2014 survey work undertaken. As such, a mitigation strategy has been drafted to provide alterative nesting habitat for this species at the site during the development works, whilst it is proposed that a purpose-built nesting platform be incorporated into the proposals to provide optimal nesting opportunities for this species at the site in the long-term.

7.9. **Reptiles.** A small population of reptiles (Slow-worm) was recorded at the site during the spring 2014 survey work undertaken. As per best practice guidance, the vast majority of this population has been translocated outside of the development footprint, with reptile exclusion fencing installed to prevent re-colonization of this habitat. As such, it is considered that ‘reasonable measures’ have been completed in order to safeguard this species at the site.

7.10. **Enhancements.** Opportunities for ecological enhancement within the site as part of the proposals have been detailed, including the provision of new habitats, which should be planted following ecological design principles and managed sympathetically to maximise their potential to faunal species. In addition, recommendations have been made for the installation of bat boxes /bricks /tubes /access tiles, a Hedgehog nesting dome, bird and insect boxes, a reptile hibernacula, a Stag Beetle loggery, and a purpose-built nesting platform for Peregrine Falcon at the site, as part of the proposals.

7.11. **Conclusion.** In conclusion, based upon the evidence obtained from the ecological survey work undertaken to date and the desktop study, and subject to the implementation of the safeguards and mitigation /compensation measures set out within this report, there is currently no evidence to suggest that the site supports any

over-riding ecological constraints regarding botanical species /habitats, or protected, rare or notable faunal species. Furthermore, it is considered that, subject to the implementation of the ecological enhancement measures detailed within this report, that the proposals will result in an ecological gain at the site when compared with the current situation.

PHOTOSHEETS

Photographs 1-12 highlighting Buildings B1-B2

PHOTOGRAPH 1: BUILDING B1A (WESTERN ELEVATION)

PHOTOGRAPH 2: BUILDING B1A (NORTHERN ELEVATION)

PHOTOGRAPH 3: BUILDING B1A (INTERNAL)

PHOTOGRAPH 4: BUILDING B1A (INTERNAL)

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PHOTOGRAPH 5: BUILDING B1B (INTERNAL)

PHOTOGRAPH 6: BUILDING B1B (INTERNAL)

PHOTOGRAPH 7: BUILDING B1C (SOUTHERN ELEVATION)

PHOTOGRAPH 8: BUILDING B1C (STRUCTURE ON TOP OF SILOS)

PHOTOGRAPH 9: BUILDING B2 (NE AND SE MULTI-STOREY SECTIONS)

PHOTOGRAPH 10: BUILDING B2 (NE AND NW MULTI-STOREY SECTIONS AND MAIN SINGLE STOREY SECTION)

PHOTOGRAPH 11: BUILDING B2 (INTERNAL - GROUND FLOOR)

PHOTOGRAPH 12: BUILDING B2 (INTERNAL - 4TH STOREY SE MULTI-STOREY SECTION)

BMD LANDSCAPE DESIGN PLANNING

PLANS

PLAN 1

Site Location

KEY:

Site Boundary

Rev	Description	Date

Bradley Murphy Design Ltd
1 The Courtyard
Hatton Technology Park
Dark Lane
Hatton
Warwickshire
CV35 8XB

t: 01926 676496
e:info@bradleymurphydesign.co.uk
www.bradleymurphydesign.co.uk

BMD LANDSCAPE DESIGN PLANNING

Client
SPEN HILL DEVELOPMENTS

Project
LAND AT BROADWATER ROAD, WELWYN GARDEN CITY

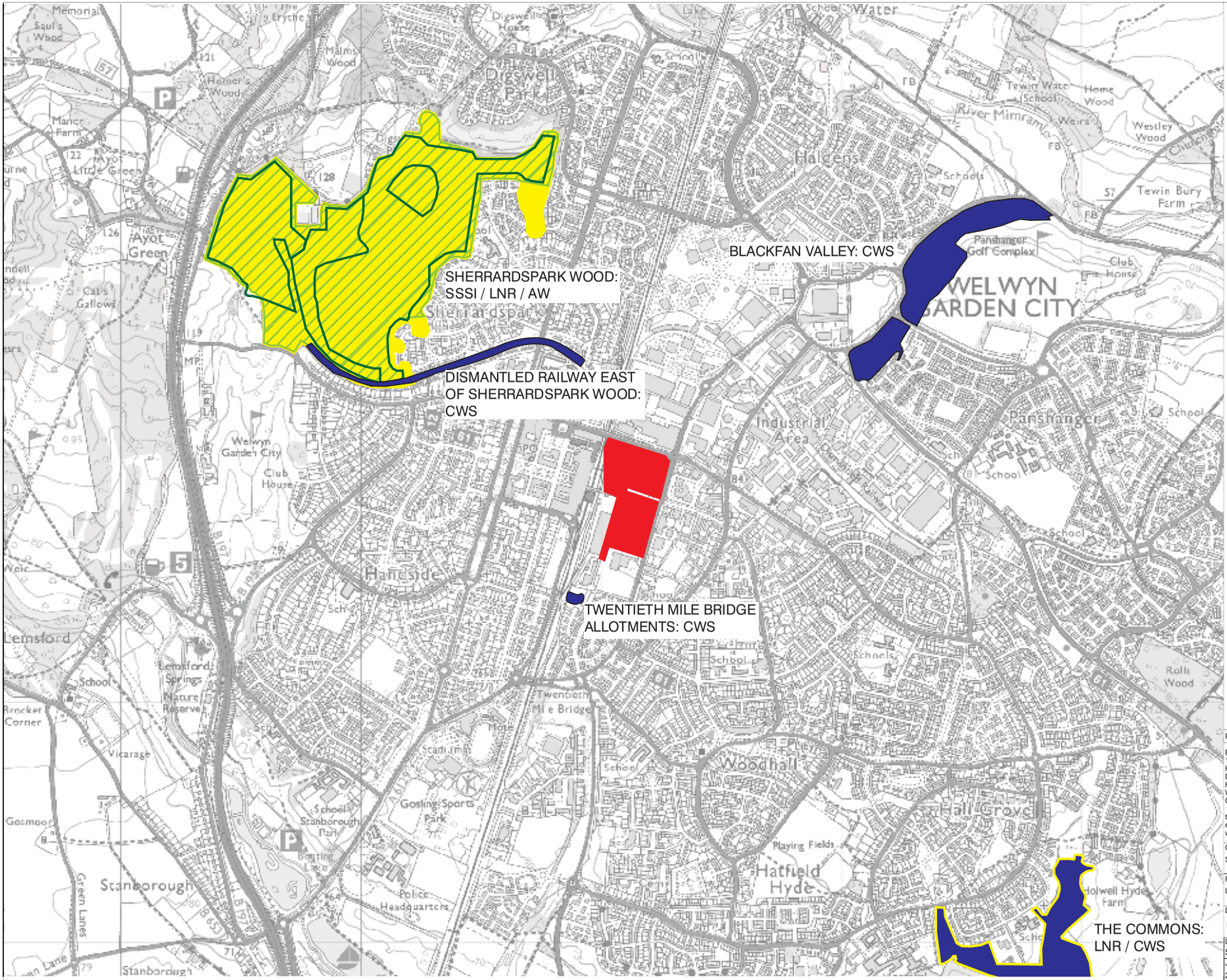
Drawing Title
PLAN 01 SITE LOCATION

Drawn	Checked	Reviewed	Date
SS	RJ	LB	18/12/2014
Job No.	**Scale**	**Sheet Size**	**Revision**
219	NTS	A3	-

Drawing Number
BMD.219.DR.801 Plan 01

PLAN 2

Ecological Designations



KEY:

SITE BOUNDARY

STATUTORY DESIGNATIONS

SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

LOCAL NATURE RESERVE (LNR)

NON-STATUTORY DESIGNATIONS

COUNTY WILDLIFE SITE (CWS)

ANCIENT WOODLAND (AW)

Rev	Description	Date

Bradley Murphy Design Ltd
1 The Courtyard
Hatton Technology Park
Dark Lane
Hatton
Warwickshire
CV35 8XB

t: 01926 676496
e:info@bradleymurphydesign.co.uk
www.bradleymurphydesign.co.uk

BMD LANDSCAPE DESIGN PLANNING

Client: SPEN HILL DEVELOPMENTS

Project: LAND AT BROADWATER ROAD, WELWYN GARDEN CITY

Drawing Title: PLAN 02 ECOLOGICAL DESIGNATIONS

Drawn	Checked	Reviewed	Date
SS	RJ	LB	18/12/2014
Job No.	Scale	Sheet Size	Revision
219	NTS	A3	-

Drawing Number: BMD.219.DR.802 Plan 02

PLAN 3

Habitats and Photographs / Faunal Survey Results

13

Hardstanding / Bare Re-colonizing Ground / Scattered Scrub

14

Rank Grassland / Ruderal Vegetation / Scrub

15

Semi-mature Trees (Northern Embankment)

16

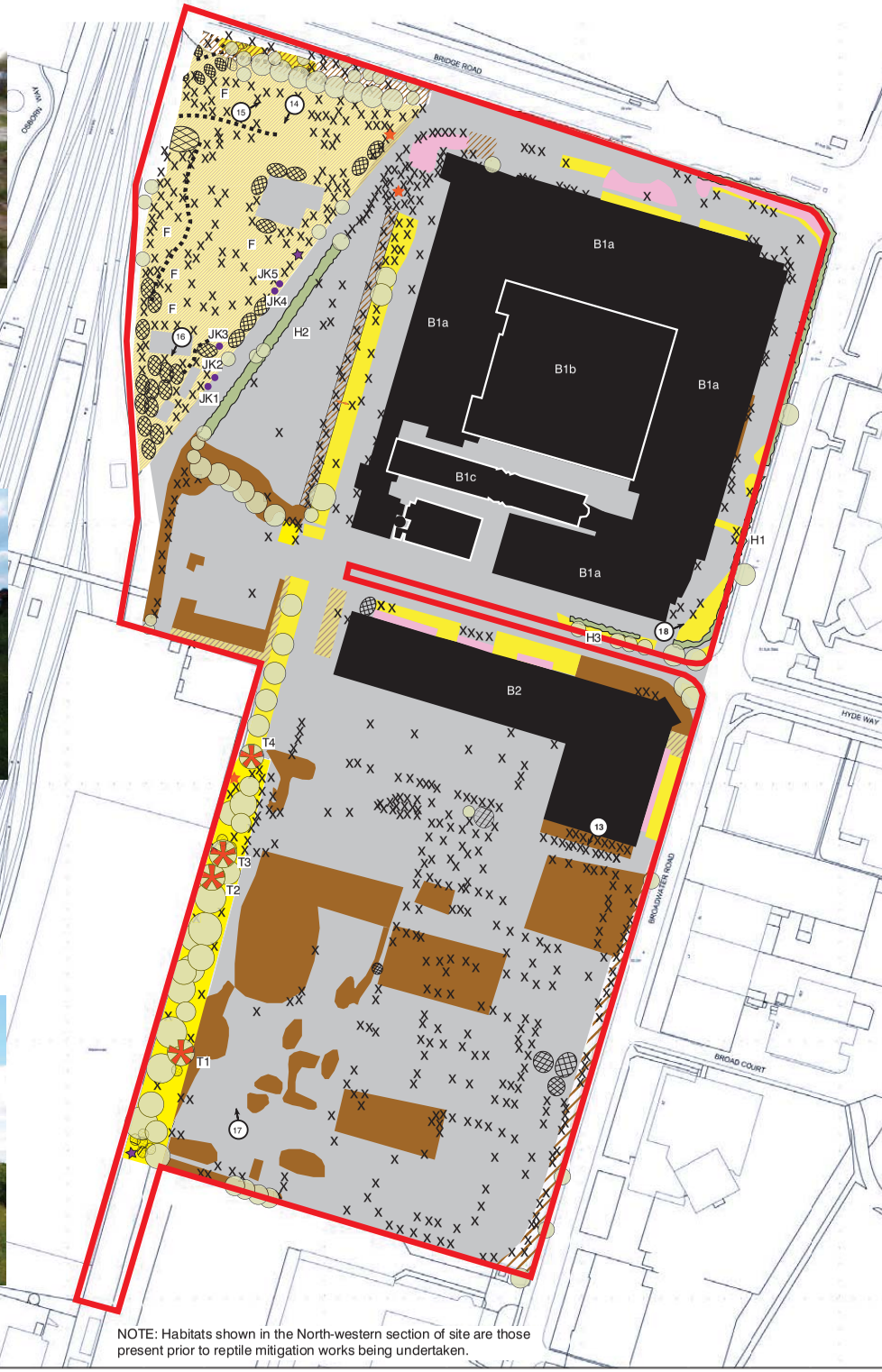
Scattered and Continuous Scrub

17

Mature Trees and Scrub - South-western Boundary

18

Amenity Hedgerow - Amenity Grassland (Rank)



NOTE: Habitats shown in the North-western section of site are those present prior to reptile mitigation works being undertaken.

KEY:

- SITE BOUNDARY
- B1 BUILDING/ STRUCTURE
- HARDSTANDING
- AMENITY GRASSLAND (RANK)
- TALL RUDERAL
- RANK GRASSLAND / TALL RUDERAL MOSAIC
- BARE/ RE-COLONIZING
- TREE
- SCATTERED SCRUB
- CONTINUOUS SCRUB
- AMENITY PLANTING
- H1 AMENITY HEDGEROW
- JAPANESE KNOTWEED
- PHOTO LOCATION

FAUNA:

- TREE WITH LIMITED POTENTIAL TO SUPPORT ROOSTING
- MAMMAL EXCAVATION
- MAMMAL PATHWAY
- MAMMAL PUSH-THROUGH
- POTENTIAL HIBERNACULA
- F FOX SCAT

Rev	Description	Date

Bradley Murphy Design Ltd
1 The Courtyard
Hatton Technology Park
Dark Lane
Hatton
Warwickshire
CV35 8XB

t: 01926 676496
e:info@bradleymurphydesign.co.uk
www.bradleymurphydesign.co.uk

BMD LANDSCAPE DESIGN PLANNING

Client: SPEN HILL DEVELOPMENTS

Project: LAND AT BROADWATER ROAD, WELWYN GARDEN CITY

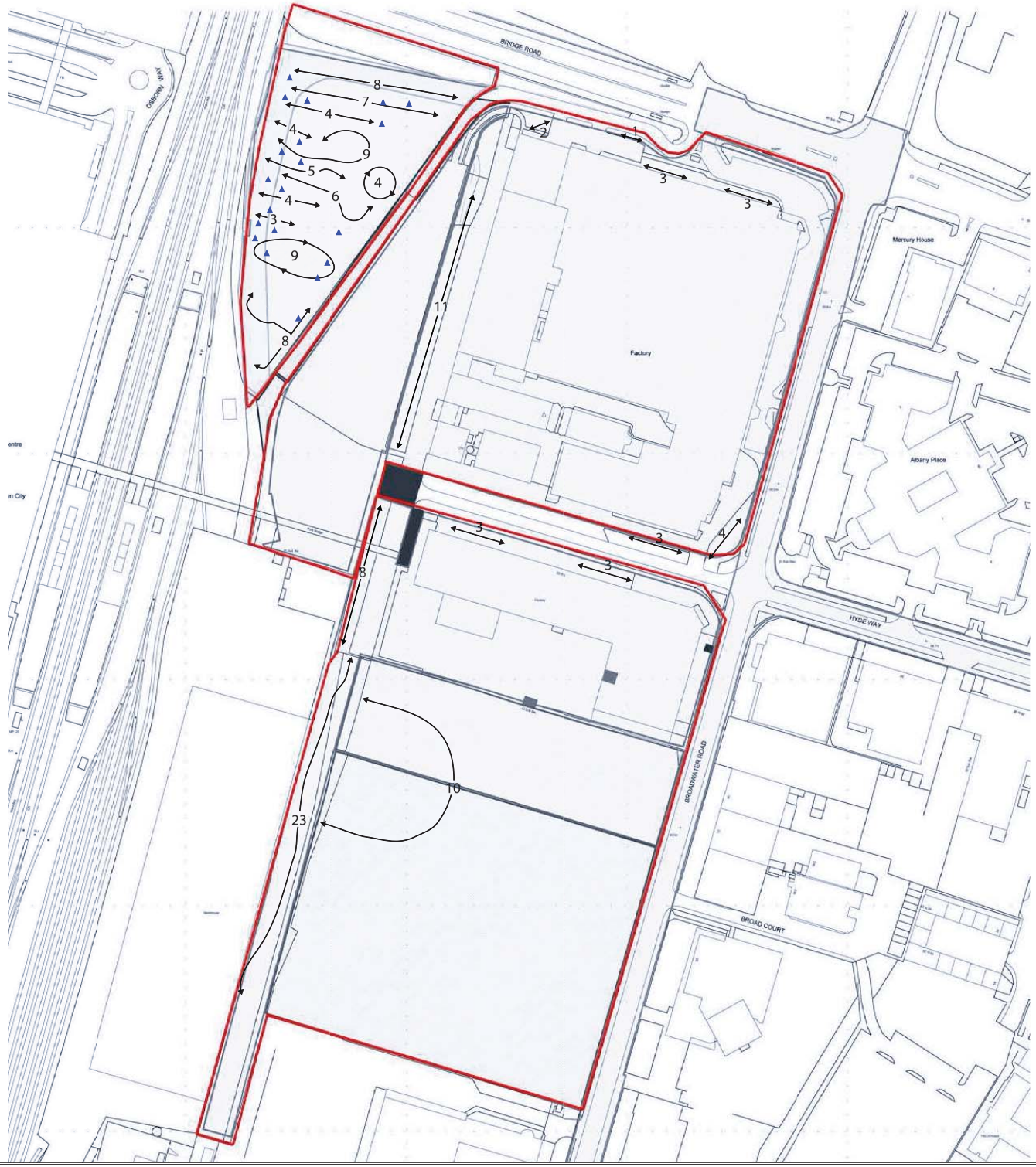
Drawing Title: PLAN 03 HABITATS AND PHOTOGRAPHS / FAUNAL SURVEY RESULTS

Drawn	Checked	Reviewed	Date
SS	RJ	LB	18/12/2014
Job No.	Scale	Sheet Size	Revision
219	NTS	A3	-

Drawing Number: BMD.219.DR.803 Plan 03

PLAN 4

Locations of Reptile Refugia / Recorded Locations of Reptiles



SURVEY BOUNDARY

1 Transect Line and Number of Reptile Refugia

Locations of Reptiles Recorded (Slow-worm)

Rev	Description	Date

Bradley Murphy Design Ltd
1 The Courtyard
Hatton Technology Park
Dark Lane
Hatton
Warwickshire
CV35 8XB

t: 01926 676496
e:info@bradleymurphydesign.co.uk
www.bradleymurphydesign.co.uk

BMD LANDSCAPE DESIGN PLANNING

Client
SPEN HILL DEVELOPMENTS

Project
LAND AT BROADWATER ROAD, WELWYN GARDEN CITY

Drawing Title
PLAN 04 LOCATIONS OF REPTILE REFUGIA / RECORDED

Drawn	Checked	Reviewed	Date
SS	RJ	LB	18/12/2014
Job No.	**Scale**	**Sheet Size**	**Revision**
219	NTS	A3	-

Drawing Number
BMD.219.DR.804 Plan 04

APPENDICES

APPENDIX 1

Records Received From Hertfordshire Biological Records Centre (HBRC)

Species records

Common Name	Scientific Name	Group	Sample Location	Location Name	Date	GridRef	Abundance	Survey	European	UK_Legal	NERC	BAP2007	IUCN	ScarceRare	Berne_Bonn	Local
Common Toad	Bufo bufo	amphibian	Tewinbury SSSI		13/03/1970	TL2612		Recorder 3 Reptile & Ampl			Sect.41	BAP:2007				
Common Toad	Bufo bufo	amphibian	TL21L		1985	TL21L	1 present [	Mammals, Amphibians & R			Sect.41	BAP:2007				
Common Toad	Bufo bufo	amphibian	TL21M		1988	TL21M	1 present [	Amphibian Survey 1988			Sect.41	BAP:2007				
Common Toad	Bufo bufo	amphibian	TL21R	B1000 by Birchall Wood	1986	TL21R		Recorder 3 Reptile & Ampl			Sect.41	BAP:2007				
Great Crested Newt	Triturus cristatus	amphibian	Smith Kline Beecham		1995	TL2512		Recorder 3 Reptile & Ampl	HSD2p, H	WCA5/9.1k/l, WCA5/9.	Sect.41	BAP:2007, LBAP			Berne2	
Common Kingfisher	Alcedo atthis	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey		WCA1i			BAmb		BD1, Berne2	
Common Kingfisher	Alcedo atthis	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey		WCA1i			BAmb		BD1, Berne2	
Mallard	Anas platyrhynchos	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Mallard	Anas platyrhynchos	bird	Brocket Park		30/11/1982	TL225125	50 Adult Es	BTO Winter Atlas Survey					BAmb		Bonn2	
Mallard	Anas platyrhynchos	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Meadow Pipit	Anthus pratensis	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	1 Exact	Herts Bird Club					BAmb		Berne2	
Little Owl	Athene noctua	bird	TL21L	Welwyn Garden City	12/05/2003	TL250130	1 Exact	Herts Bird Club							Berne2	
Common Pochard	Aythya ferina	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Common Pochard	Aythya ferina	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Tufted Duck	Aythya fuligula	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Tufted Duck	Aythya fuligula	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Tufted Duck	Aythya fuligula	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Bohemian Waxwing	Bombycilla garrulus	bird		Welwyn Garden City	25/03/2001	TL250130	8 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	10/02/2003	TL250130	20 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	30/03/2003	TL250130	17 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	30/03/2003	TL250130	17 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	29/01/2003	TL250130	21 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	28/03/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	27/02/2003	TL250130	12 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	27/02/2003	TL250130	12 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird		Welwyn Garden City	17/03/2001	TL250130	8 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	14/02/2003	TL250130	1 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	11/02/2003	TL250130	23 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	10/02/2003	TL250130	20 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	15/02/2003	TL250130	1 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird		Welwyn Garden City	18/03/2001	TL250130	8 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	06/02/2003	TL250130	46 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	07/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	06/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	06/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	06/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	05/03/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	05/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	02/03/2003	TL250130	10 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	02/02/2003	TL250130	23 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	02/02/2003	TL250130	23 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	01/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	01/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	01/02/2003	TL250130	27 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	01/02/2003	TL250130	19 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	02/03/2003	TL250130	10 Exact	Herts Bird Club							Berne2	
Bohemian Waxwing	Bombycilla garrulus	bird	TL21L	Welwyn Garden City	07/02/2003	TL250130	12 Exact	Herts Bird Club							Berne2	
Greater Canada Goos	Branta canadensis	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey							Bonn2	
Greater Canada Goos	Branta canadensis	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey							Bonn2	
Greater Canada Goos	Branta canadensis	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey							Bonn2	
Common Buzzard	Buteo buteo	bird	TL21L	Welwyn Garden City	02/04/2003	TL250130	2 Exact	Herts Bird Club							Bonn2	
Common Linnet	Carduelis cannabina	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	20 Exact	Herts Bird Club					BRed		Berne2	
Eurasian Siskin	Carduelis spinus	bird	Sherrardspark Wood S	Sherrardspark Wood, We	01/02/2003	TL230138	6 Exact	Herts Bird Club							Berne2	
Stock Pigeon	Columba oenas	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb			
Common Cuckoo	Cuculus canorus	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	1 Exact	Herts Bird Club			Sect.41	BAP:2007	BAmb, BR			
Mute Swan	Cygnus olor	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Mute Swan	Cygnus olor	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Mute Swan	Cygnus olor	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Great Spotted Woodp	Dendrocopos major	bird	Sherrardspark Wood S	Sherrardspark Wood, We	01/06/2003	TL230138	14 Breedin	Herts Bird Club							Berne2	
Little Egret	Egretta garzetta	bird	TL21L	Welwyn Garden City	19/11/2003	TL250130	3 Exact	Herts Bird Club					BAmb		BD1, Berne2	
Little Egret	Egretta garzetta	bird	TL21L	Welwyn Garden City	19/11/2003	TL250130	1 Exact	Herts Bird Club					BAmb		BD1, Berne2	

Yellowhammer	Emberiza citrinella	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	2 Exact	Herts Bird Club			Sect.41	BAP:2007	BRed		Berne2	
Eurasian Hobby	Falco subbuteo	bird	TL21L	Welwyn Garden City	26/05/2003	TL250130	1 Exact	Herts Bird Club	WCA1i						Berne2, Bonn2	
Common Kestrel	Falco tinnunculus	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb		Berne2, Bonn2	
Pied Flycatcher	Ficedula hypoleuca	bird	TL21L	Welwyn Garden City	17/09/2003	TL250130	1 Exact	Herts Bird Club					BAmb		Bonn2	
Brambling	Fringilla montifringilla	bird	TL21L	Welwyn Garden City	06/12/2003	TL250130	1 Exact	Herts Bird Club	WCA1i							
Mew Gull	Larus canus	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb			
Red Kite	Milvus milvus	bird	TL21L	Welwyn Garden City	29/04/2003	TL250130	1 Exact	Herts Bird Club	WCA1i				BAmb		BD1, Bonn2	
Pied Wagtail	Motacilla alba	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey							Berne2	
Pied Wagtail	Motacilla alba	bird	TL21L	Welwyn Garden City	24/01/2003	TL250130	60 Exact	Herts Bird Club							Berne2	
Great Cormorant	Phalacrocorax carbo	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	4 Exact	Herts Bird Club					BAmb			
Willow Warbler	Phylloscopus trochilus	bird	Sherrardspark Wood S	Sherrardspark Wood, We	01/04/2003	TL230138	1 Exact	Herts Bird Club					BAmb			
Marsh Tit	Poecile palustris	bird	Sherrardspark Wood S	Sherrardspark Wood, We	01/02/2003	TL230138	1 Exact	Herts Bird Club					BRed		Berne2	
Marsh Tit	Poecile palustris	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BRed		Berne2	
Marsh Tit	Poecile palustris	bird	Sherrardspark Wood S	Sherrardspark Wood, We	02/01/2003	TL230138	1 Exact	Herts Bird Club					BRed		Berne2	
Common Bullfinch	Pyrrhula pyrrhula	bird	TL21L	Welwyn Garden City	01/02/2003	TL250130	2 Exact	Herts Bird Club					BAmb, BR			
Common Bullfinch	Pyrrhula pyrrhula	bird	TL21L	Welwyn Garden City	09/12/2003	TL250130	1 Exact	Herts Bird Club					BAmb, BR			
Common Bullfinch	Pyrrhula pyrrhula	bird	Sherrardspark Wood S	Sherrardspark Wood, We	01/02/2003	TL230138	2 Exact	Herts Bird Club					BAmb, BR			
Common Bullfinch	Pyrrhula pyrrhula	bird	Sherrardspark Wood S	Sherrardspark Wood, We	03/01/2003	TL230138	4 Exact	Herts Bird Club					BAmb, BR			
Goldcrest	Regulus regulus	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Berne2	
Stonechat	Saxicola torquata	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	3 Exact	Herts Bird Club					BAmb		Berne2	
Eurasian Woodcock	Scolopax rusticola	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb		Bonn2	
Wood Nuthatch	Sitta europaea	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey							Berne2	
Tawny Owl	Strix aluco	bird		Welwyn Garden City	04/01/2001	TL250130	1 Exact	Herts Bird Club							Berne2	
Common Whitethroat	Sylvia communis	bird		Welwyn Garden City	01/06/2002	TL250130	1 Exact	Herts Bird Club					BAmb			
Little Grebe	Tachybaptus ruficollis	bird	TL21L	Welwyn Garden City	08/07/2003	TL250130	3 Exact	Herts Bird Club					BAmb			
Little Grebe	Tachybaptus ruficollis	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb			
Little Grebe	Tachybaptus ruficollis	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb			
Little Grebe	Tachybaptus ruficollis	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey					BAmb			
Green Sandpiper	Tringa ochropus	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey	WCA1i				BAmb		Berne2, Bonn2	
Redwing	Turdus iliacus	bird	TL21L	Welwyn Garden City	28/01/2003	TL250130	50 Exact	Herts Bird Club	WCA1i				BAmb, BR			
Redwing	Turdus iliacus	bird	TL21L	Welwyn Garden City	10/02/2003	TL250130	75 Exact	Herts Bird Club	WCA1i				BAmb, BR			
Song Thrush	Turdus philomelos	bird	TL21L	Welwyn Garden City	15/04/2003	TL250130	1 Exact	Herts Bird Club				LBAP	BRed			
Fieldfare	Turdus pilaris	bird	Brocket Park		30/11/1982	TL225125		BTO Winter Atlas Survey	WCA1i				BAmb, BR			
Mistle Thrush	Turdus viscivorus	bird	Brocket Park		13/11/1982	TL225125		BTO Winter Atlas Survey					BAmb			
Mistle Thrush	Turdus viscivorus	bird	Brocket Park		09/01/1983	TL225125		BTO Winter Atlas Survey					BAmb			
Silver Hair-grass	Aira caryophyllea	flowering pla	TL21F	Stanborough Park: acid g	21/05/1999	TL227115		R3 Hertfordshire Flora Sur								HV
Stinking Chamomile	Anthemis cotula	flowering pla	TL21L	Welwyn Garden City	1992	TL21L		R3 Hertfordshire Flora Sur					RLGB.VU			
Stinking Chamomile	Anthemis cotula	flowering pla	TL21L	Welwyn Garden City (eas	1987 - 1999	TL21L		R3 Hertfordshire Flora Sur					RLGB.VU			
Stinking Chamomile	Anthemis cotula	flowering pla	TL21M	Digswell area	1987 - 1999	TL21M		R3 Hertfordshire Flora Sur					RLGB.VU			
Box	Buxus sempervirens	flowering pla	TL21R	Poplars Green area	1987 - 1999	TL21R		R3 Hertfordshire Flora Sur					NR(vp), R			
Basil Thyme	Clinopodium acinos	flowering pla	TL21L	Welwyn Garden City: Wat	24/09/1997	TL251129		R3 Hertfordshire Flora Sur			Sect.41	BAP:2007	RLGB.VU			
Basil Thyme	Clinopodium acinos	flowering pla	Sherrardspark Wood S		27/10/1982	TL230139		Hertfordshire Surveys			Sect.41	BAP:2007	RLGB.VU			
Meadow Saffron	Colchicum autumnale	flowering pla	TL21G	Sherrards Park Wood: by	08/10/2004	TL2213		R3 Hertfordshire Flora Sur					RLGB.Lr(N			
Green-flowered Helle	Epipactis phyllanthes	flowering pla	TL21G	Sherrards Park Wood: nea	11/09/1999	TL227136	1 present E	R3 Hertfordshire Flora Sur						NS		
Dwarf Spurge	Euphorbia exigua	flowering pla	TL21M	Digswell area	1993	TL21M	R	R3 Hertfordshire Flora Sur					RLGB.Lr(N			
Dwarf Spurge	Euphorbia exigua	flowering pla	TL21M	Digswell area	1987 - 1999	TL21M	rare preser	R3 Hertfordshire Flora Sur					RLGB.Lr(N			
Alder Buckthorn	Frangula alnus	flowering pla	Sherrardspark Wood S		02/06/1978- 03	TL230139		Ancient Woodland Survey								HR
Alder Buckthorn	Frangula alnus	flowering pla	TL21G	Lemsford Springs (north)	07/08/2005	TL2212	3 present E	R3 Hertfordshire Flora Sur								HR
Fritillary	Fritillaria meleagris	flowering pla	TL21H	Sherrards Park Wood	09/04/2004	TL235141	1 present E	R3 Hertfordshire Flora Sur					RLGB.VU	NS		
Snowdrop	Galanthus nivalis	flowering pla	TL21R	Poplars Green area	1987 - 1999	TL21R		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21Q	Holwell Hyde area	1987 - 1999	TL21Q		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21M	Digswell area	1987 - 1999	TL21M		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21H	Digswell Park area	1987 - 1999	TL21H		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21G	Welwyn Garden City (wes	1987 - 1999	TL21G		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21F	Stanborough area	1987 - 1999	TL21F		R3 Hertfordshire Flora Sur	HSD5							
Snowdrop	Galanthus nivalis	flowering pla	TL21L	Welwyn Garden City (eas	1987 - 1999	TL21L		R3 Hertfordshire Flora Sur	HSD5							
Long-stalked Crane's-	Geranium columbinum	flowering pla	TL21G	Near Welwyn Garden City	1992	TL239129	7 present E	R3 Hertfordshire Flora Sur								HV/HRQ
Hieracium acuminatur	Hieracium acuminatum	flowering pla	Sherrardspark Wood S		May 1978 - Jul	TL230139		Hertfordshire Surveys					NR(vp)			
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S		02/06/1978- 03	TL230139	F	Ancient Woodland Survey	WCA8							
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 13	May 1978 - Jul	TL237142	LF	Hertfordshire Surveys	WCA8							
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 6	May 1978 - Jul	TL227136		Hertfordshire Surveys	WCA8							
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 2	May 1978 - Jul	TL231137	R	Hertfordshire Surveys	WCA8							
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 12	May 1978 - Jul	TL234141	R	Hertfordshire Surveys	WCA8							
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 11	May 1978 - Jul	TL234141	LA	Hertfordshire Surveys	WCA8							

Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S	Compartment 1	May 1978 - Jul	TL230136	R	Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S		May 1978 - Jul	TL230139		Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Sherrardspark Wood S		16/06/1977	TL230139		Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Dismantled Railway E.		14/05/1996	TL236135	O	Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Dismantled Railway E.		06/05/2009	TL236135	R	Wildlife Sites Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Temple Wood Vale Op	Templewood Vale Open S	30/06/2009	TL236144	R	Wildlife Sites Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Pond and Surrounding		16/05/1996	TL238112	R	Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	Woodland and Orchar		15/05/1996	TL22751337	LA	Hertfordshire Surveys	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21F	Stanborough area	1987 - 1999	TL21F		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21M	Digswell area	1987 - 1999	TL21M		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21L	Welwyn Garden City (eas	1987 - 1999	TL21L		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21K	Welwyn Garden City: Hatf	1987 - 1999	TL21K		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21G	Welwyn Garden City (wes	1987 - 1999	TL21G		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21Q	Holwell Hyde area	1987 - 1999	TL21Q		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21H	Digswell Park area	1987 - 1999	TL21H		R3 Hertfordshire Flora Sur	WCA8						
Bluebell	Hyacinthoides non-scr	flowering pla	TL21R	Poplars Green area	1987 - 1999	TL21R	rare preser	R3 Hertfordshire Flora Sur	WCA8						
Fringed Water-lily	Nymphoides peltata	flowering pla	TL21M	Digswell: pond near viadu	1993	TL245147		R3 Hertfordshire Flora Sur					NS		
Fringed Water-lily	Nymphoides peltata	flowering pla	TL21G	Welwyn Garden City: Vall	22/06/1995	TL225124		R3 Hertfordshire Flora Sur					NS		
Prickly Poppy	Papaver argemone	flowering pla	TL21L	Welwyn Garden City: distu	1992	TL254138	1 present [	R3 Hertfordshire Flora Sur				RLGB.VU			
Solomon's-seal	Polygonatum multiflor	flowering pla	Dismantled Railway E.		06/05/2009	TL236135	R	Wildlife Sites Surveys							HR
Bog Pondweed	Potamogeton polygon	flowering pla	TL21G	Sherrards Park Wood: po	03/07/1994	TL228139		R3 Hertfordshire Flora Sur							HR
Rubus britannicus	Rubus britannicus	flowering pla	TL21K	The Commons Nature Re	24/09/2005	TL2510		R3 Hertfordshire Flora Sur				NR(vp)			
Rubus britannicus	Rubus britannicus	flowering pla	TL21F	Lemsford Springs (south)	07/08/2005	TL2211		R3 Hertfordshire Flora Sur				NR(vp)			
Rubus cantianus	Rubus cantianus	flowering pla	TL21G	Sherrards Park Wood	14/07/1993	TL2213		R3 Hertfordshire Flora Sur							HR
Rubus norvicensis	Rubus norvicensis	flowering pla	TL21G	Sherrards Park Wood	14/07/1993	TL2213	frequent pr	R3 Hertfordshire Flora Sur							HR
Rubus raduloides	Rubus raduloides	flowering pla	TL21G	Sherrards Park Wood	14/07/1993	TL2213		R3 Hertfordshire Flora Sur							HR
Annual Knawel	Scleranthus annuus	flowering pla	TL21G	Welwyn Garden City: by L	22/06/1995	TL225123	1 present [	R3 Hertfordshire Flora Sur		Sect.41	BAP:2007	RLGB.EN			
Orpine	Sedum telephium	flowering pla	TL21G	Sherrards Park Wood: by	1994	TL228135	10 present	R3 Hertfordshire Flora Sur							HV
Orpine	Sedum telephium	flowering pla	TL21L	Welwyn Garden City: disu	12/04/1997	TL253128		R3 Hertfordshire Flora Sur							HV
Orpine	Sedum telephium	flowering pla	TL21L	Welwyn Garden City: disu	16/04/1997	TL249130		R3 Hertfordshire Flora Sur							HV
Corn Spurrey	Spergula arvensis	flowering pla	TL21F	Near Welwyn Garden City	2001	TL238110	1 present [	R3 Hertfordshire Flora Sur				RLGB.VU			
Corn Spurrey	Spergula arvensis	flowering pla	TL21G	Welwyn Garden City: Vall	22/06/1995	TL225124	1 present [	R3 Hertfordshire Flora Sur				RLGB.VU			
Water-soldier	Stratiotes aloides	flowering pla	TL21G	Welwyn Garden City: Vall	22/06/1995	TL225124	several pre	R3 Hertfordshire Flora Sur				NR(vp), R			
Viola canina subsp. m	Viola canina subsp. m	flowering pla	Sherrardspark Wood S	Compartment 11	May 1978 - Jul	TL234141		Hertfordshire Surveys				NR(vp), R			
Small Heath	Coenonympha pamph	insect - butte	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys		Sect.41	BAP:2007	RLGB.Lr(N			
Small Heath	Coenonympha pamph	insect - butte		Templewood Vale Transe	01/08/2007	TL235143	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
Small Heath	Coenonympha pamph	insect - butte		Templewood Vale Transe	01/06/1999	TL234142	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
Small Heath	Coenonympha pamph	insect - butte	The Commons LNR	The Commons W G C	21/06/1998	TL21K	5 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
Small Heath	Coenonympha pamph	insect - butte		Digswell	1997	TL21M	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
Small Heath	Coenonympha pamph	insect - butte		Panshanger Aerodrome	06/09/2009	TL2612	4 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
Wall	Lasiommata megera	insect - butte	Sherrardspark Wood S	Brockswood Transect	05/08/2000	TL227138	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.Lr(N			
White Admiral	Limenitis camilla	insect - butte		Welwyn Garden City	09/07/2003	TL243128	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte		Welwyn Garden City	19/07/2003	TL231135	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte		Welwyn Garden City	28/07/2001	TL232132	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte		The Reddings, Welwyn G	21/07/2010	TL231134	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte		Templewood Vale Transe	05/07/2005	TL235144	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte	Sherrardspark Wood S	Sherrards Park Reddings	02/07/2009	TL230135	2 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte	Sherrardspark Wood S	Sherrards Park Wood	15/07/2005	TL231135	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte	Sherrardspark Wood S	Sherrards Park Wood	18/07/2005	TL231135	2 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
White Admiral	Limenitis camilla	insect - butte	The Commons	Commons Wood W G C	22/07/1996	TL2511	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.VU			
Swallowtail	Papilio machaon	insect - butte		W G C	03/08/2004	TL236140	1 Exact	Herts Butterflies	WCA5/9.1k/I, WCA5/9.			RLGB.Lr(N			
Grizzled Skipper	Pyrgus malvae	insect - butte		Digswell	1997	TL21M	10 Exact	Herts Butterflies		Sect.41	BAP:2007, LBAP	RLGB.VU			
White-letter Hairstreal	Satyrium w-album	insect - butte		Police Hq / Stadium	18/07/1996	TL231117	2 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Panshanger Lagoon W G	14/07/1997	TL254137	2 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte	Sherrardspark Wood S	Sherrards Park Woods	21/07/2010	TL234141	2 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte	Sherrardspark Wood S	Sherrards Park Woods	24/07/2010	TL234141	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Welwyn Garden City	18/08/2001	TL232132	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Welwyn Garden City	25/07/2002	TL231134	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Templewood Vale Transe	14/07/2004	TL235143	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Templewood Vale Transe	15/07/2003	TL235143	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Templewood Vale Transe	15/07/2005	TL235144	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Templewood Vale Transe	26/07/2005	TL235144	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Templewood Vale Transe	27/07/2004	TL235143	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			
White-letter Hairstreal	Satyrium w-album	insect - butte		Digswell	1997	TL21M	1 Exact	Herts Butterflies		Sect.41	BAP:2007	RLGB.EN			

White-letter Hairstreal	Satyrium w-album	insect - butte	The Commons	Commons Wood W G C	25/07/1996	TL2511	45 Exact	Herts Butterflies	Sect.41	BAP:2007	RLGB.EN	
Grey Dagger	Acronicta psi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Grey Dagger	Acronicta psi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	10/08/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Knot Grass	Acronicta rumicis	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Knot Grass	Acronicta rumicis	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Flounced Chestnut	Agrochola helvola	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Flounced Chestnut	Agrochola helvola	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Beaded Chestnut	Agrochola lychnidis	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Green-brindled Cresc	Allophyes oxyacantha	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Green-brindled Cresc	Allophyes oxyacantha	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Ear Moth	Amphipoea oculea	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Mouse Moth	Amphipyra tragopogin	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Mouse Moth	Amphipyra tragopogin	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Dusky Brocade	Apamea remissa	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Garden Tiger	Arctia caja	insect - moth	Hertfordshire	Welwyn Garden City	1972	TL2513	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Sprawler	Asteroscopus sphinx	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Minor Shoulder-knot	Brachylomia viminalis	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Mottled Rustic	Caradrina morpheus	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Mottled Rustic	Caradrina morpheus	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Mottled Rustic	Caradrina morpheus	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Mottled Rustic	Caradrina morpheus	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Mottled Rustic	Caradrina morpheus	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Latticed Heath	Chiasmia clathrata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	10/08/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Lemsford Springs	Lemsford Springs N. R.	03/06/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Square-spot	Diarsia rubi	insect - moth	Hertfordshire	Warren Way, Digswell	1999	TL2414	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Phoenix	Ecliptopera silaceata	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Small Phoenix	Ecliptopera silaceata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Phoenix	Ecliptopera silaceata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Phoenix	Ecliptopera silaceata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/04/2002	TL2211	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Phoenix	Ecliptopera silaceata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/04/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Dusky Thorn	Ennomos fuscantaria	insect - moth	Lemsford Springs	Lemsford Springs N. R.	10/08/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
August Thorn	Ennomos quercinaria	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Spinach	Eulithis mellinata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Small Emerald	Hemistola chrysoprasa	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Ghost Moth	Hepialus humuli	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Ghost Moth	Hepialus humuli	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Ghost Moth	Hepialus humuli	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Rustic	Hoplodrina blanda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Rustic	Hoplodrina blanda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Rosy Rustic	Hydraecia micacea	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Rosy Rustic	Hydraecia micacea	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Brindled Beauty	Lycia hirtaria	insect - moth	Lemsford Springs	Lemsford Springs N. R.	03/04/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Lackey	Malacosoma neustria	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Dot Moth	Melanchra persicariae	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Dot Moth	Melanchra persicariae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Dot Moth	Melanchra persicariae	insect - moth	The Commons	The Commons, Welwyn	1999	TL2510	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Pretty Chalk Carpet	Melanthia procellata	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Pretty Chalk Carpet	Melanthia procellata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Wainscot Neb	Monochroa palustrella	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths				Nb
Shoulder-striped Wair	Mythimna comma	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
Bordered Pearl	Paratalanta pandalis	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths				Na
Common Fan-foot	Pechipogo strigilata	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Shaded Broad-bar	Scotopteryx chenopoc	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
Shaded Broad-bar	Scotopteryx chenopoc	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/04/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		
White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/04/2002	TL2211	1 Adult Exa	Herts Moths	Sect.41	BAP:2007		

White Ermine	Spilosoma lubricipeda	insect - moth	Lemsford Springs	Lemsford Springs N. R.	03/06/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	03/06/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Buff Ermine	Spilosoma luteum	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Feathered Gothic	Tholera decimalis	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Blood-Vein	Timandra comae	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Blood-Vein	Timandra comae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Blood-Vein	Timandra comae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	10/08/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Cinnabar	Tyria jacobaeae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	10/08/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Cinnabar	Tyria jacobaeae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Cinnabar	Tyria jacobaeae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2000	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Cinnabar	Tyria jacobaeae	insect - moth	Lemsford Springs	Lemsford Springs N. R.	23/06/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Scotch Pearl	Udea decrepitalis	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys						Na	
Oak Hook-tip	Watsonalla binaria	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Oak Hook-tip	Watsonalla binaria	insect - moth	Lemsford Springs	Lemsford Springs N. R.	15/07/2002	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Sallow	Xanthia icteritia	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Sallow	Xanthia icteritia	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Dark-barred Twin-spo	Xanthorhoe ferrugata	insect - moth	Sherrardspark Wood S		1977 - 1979	TL230139		Hertfordshire Surveys				Sect.41	BAP:2007		
Dark-barred Twin-spo	Xanthorhoe ferrugata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	2001	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Dark-barred Twin-spo	Xanthorhoe ferrugata	insect - moth	Lemsford Springs	Lemsford Springs N. R.	1979	TL2212	1 Adult Exa	Herts Moths				Sect.41	BAP:2007		
Minute Pouncewort	Cololejeunea minutiss	liverwort	Sherrardspark Wood S	WGC, Sherrards Park Wo	16/01/2008	TL2313	1 Gemmae	Herts Bryophytes						NS	
Large White-moss	Leucobryum glaucum	moss	Sherrardspark Wood S	Sherrardspark Wood	Apr-92	TL2313		Herts Bryophytes	HSD5						
Large White-moss	Leucobryum glaucum	moss	Sherrardspark Wood S	Sherrardspark Wood	Apr-92	TL2314		Herts Bryophytes	HSD5						
Smaller White-moss	Leucobryum juniperoi	moss	Sherrardspark Wood S	WGC, Sherrards Park Wo	16/01/2008	TL2313		Herts Bryophytes						NS	
Slow-worm	Anguis fragilis	reptile	Twentieth Mile Bridge		1997	TL2312		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Slow-worm	Anguis fragilis	reptile	Watch Mead Disused		12/04/1997	TL2512		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Slow-worm	Anguis fragilis	reptile	TL21L	WGC Blakemere Rd	22/04/2001	TL2413		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Slow-worm	Anguis fragilis	reptile		64 Brockswood Lane, We	20/05/2010	TL228133	1 Exact	HBRC - Miscellaneous rec		WCA5/9.1k/I		Sect.41	BAP:2007		
Slow-worm	Anguis fragilis	reptile		Welwyn Garden, Blakeme	22/04/2001	TL2413		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Common Lizard	Zootoca vivipara	reptile		Twentieth Mile Bridge, We	28/04/1995	TL2312		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Common Lizard	Zootoca vivipara	reptile	Twentieth Mile Bridge		1997	TL2312		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
Common Lizard	Zootoca vivipara	reptile	Watch Mead Disused		12/04/1997	TL2512		Recorder 3 Reptile & Ampl		WCA5/9.1k/I		Sect.41	BAP:2007		
European Water Vole	Arvicola terrestris	terrestrial ma	TL21L		1987	TL21L	1 present [	Recorder 3 Water Vole rec		WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007, LBAP		
European Water Vole	Arvicola terrestris	terrestrial ma	TL21Q		1987	TL21Q	1 present [	Recorder 3 Water Vole rec		WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007, LBAP		
European Water Vole	Arvicola terrestris	terrestrial ma	Archers Green	River Mimram,	28/07/1982	TL21R	1 present [	Recorder 3 Water Vole rec		WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007, LBAP		
a Bat	Chiroptera	terrestrial ma	TL21G	Sherrardspark Road WGC	15/04/2009	TL2313		Bat Roost records (HMBG)	Yes	Yes					
a Bat	Chiroptera	terrestrial ma	TL21G	Welwyn Garden, Redding	Summer 1997	TL2313		Recorder 3 Bat records	Yes	Yes					
Serotine	Eptesicus serotinus	terrestrial ma	TL21G		1985	TL21G	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.					Berne2, Bonn2
Serotine	Eptesicus serotinus	terrestrial ma	TL21M		1985	TL21M	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.					Berne2, Bonn2
Serotine	Eptesicus serotinus	terrestrial ma	TL21F		1985	TL21F	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.					Berne2, Bonn2
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21F		1985	TL21F	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21R		1985	TL21R	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21Q		1985	TL21Q	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21M		1985	TL21M	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21L		1985	TL21L	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
West European Hedg	Erinaceus europaeus	terrestrial ma	TL21K		1985	TL21K	1 present [	Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21L		Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21R		Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21M		Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21K		Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21F		Mammals, Amphibians & R				Sect.41	BAP:2007		
Brown Hare	Lepus europaeus	terrestrial ma			1985	TL21Q		Mammals, Amphibians & R				Sect.41	BAP:2007		
Eurasian Badger	Meles meles	terrestrial ma	TL21F		1985	TL21F	1 present [	Mammals, Amphibians & R		PBA					
Eurasian Badger	Meles meles	terrestrial ma	TL21Q		1985	TL21Q	1 present [	Mammals, Amphibians & R		PBA					
Harvest Mouse	Micromys minutus	terrestrial ma	TL21R		1985	TL21R		Mammals, Amphibians & R				Sect.41	BAP:2007		
Hazel Dormouse	Muscardinus avellana	terrestrial ma	Sherrardspark Wood S		Sep-98	TL230139	1 present [	Recorder 3 Dormouse rec	HSD4	WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007, LBAP		
Hazel Dormouse	Muscardinus avellana	terrestrial ma	Sherrardspark Wood S	Sherrardspark Wood	20/11/2008	TL21G		HBRC Excel 2008	HSD4	WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007, LBAP		
Lesser Noctule	Nyctalus leisleri	terrestrial ma	TL21G		1987	TL21G	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.					Berne2, Bonn2
Noctule Bat	Nyctalus noctula	terrestrial ma	TL21F		1985	TL21F	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007		Berne2, Bonn2
Noctule Bat	Nyctalus noctula	terrestrial ma	TL21L		1985	TL21L	1 present [	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.		Sect.41	BAP:2007		Berne2, Bonn2

Noctule Bat	Nyctalus noctula	terrestrial ma	TL21R		1985	TL21R	1 present D	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Noctule Bat	Nyctalus noctula	terrestrial ma	TL21M		1985	TL21M	1 present D	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Welwyn Garden, Moorlan	18/05/1995	TL2511		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21L	Welwyn/Hatfield Council (	13/01/1997	TL2412		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21L	Welwyn Garden, Carve Le	16/09/1996	TL2512		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21L	The Hydeway, Welwyn Ga	25/08/1992	TL2412		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21G	Welwyn Garden, Woodlar	13/04/1995	TL2313		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Welwyn Garden, Meadwa	01/02/1995	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Welwyn Garden	14/02/1992	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Meadway, Welwyn Garde	Feb-95	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Homestead Court. Welwy	14/12/1992	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	Welwyn Garden, Ludwik V	16/02/1993	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Common Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21L	Attimore Hall area	May-04	TL2512		Hertfordshire Surveys	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Common Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21G	Sherrardspark Road WGC	15/04/2009	TL2313		Bat Roost records (HMBG)	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Common Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21K	WGC The Croft	07/06/2004	TL2411		Bat Group Survey	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Common Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21R	Welwyn Garden, Forreste	24/05/2004	TL2612		Bat Group Survey	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21F		1987	TL21F	1 present D	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Pipistrelle	Pipistrellus pipistrellus	terrestrial ma	TL21L	The Methodist Church are	01/02/1993	TL21L		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.			Berne2, Bonn2
Brown Long-eared Ba	Plecotus auritus	terrestrial ma	TL21F	Stanborough Green	07/03/1992	TL2311		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Brown Long-eared Ba	Plecotus auritus	terrestrial ma	TL21L	Argos Warehouse area, W	06/10/1992	TL2413		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Brown Long-eared Ba	Plecotus auritus	terrestrial ma	TL21L	Digswell Rise	15/09/1992	TL2413		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Brown Long-eared Ba	Plecotus auritus	terrestrial ma		Welwyn Garden, Woodha	03/09/1994	TL2411		Recorder 3 Bat records	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2
Brown Long-eared Ba	Plecotus auritus	terrestrial ma	TL21G		1985	TL21G	1 present D	Mammals, Amphibians & R	HSD4	WCA5/9.1k/I, WCA5/9.	Sect.41	BAP:2007	Berne2, Bonn2

Veteran & Mature Tree records

SPECIES	SURVEY DATE	SITE	ADDRESS	CONTEXT	EASTING	NORTHING
Oak species	20/06/1999	Quadrangle	Welwyn Garden City	UP, Urban Park	523500	213300
Oak species	20/06/1999	Blythway	Welwyn Garden City	UP, Urban Park	524800	214500
Oak species	10/08/2000	Opp. No.31 Hollybush Lane	Welwyn Garden City	UT, Urban Tree	524400	211600
Oak species	10/08/2000	Outside 20 Hollybush Lane	Nr junction with Leigh Common, \	UT, Urban Tree	524400	211600
Oak species	10/08/2000	Outside 55 Hollybush Lane	Nr junction with Hunters Way	UT, Urban Tree	524500	211400
Oak species	03/10/2000	Outside 189 Blyth Way	Welwyn Garden City	UT, Urban Tree	524910	214460
Oak species	09/01/2001	Broadwater Rd	Welwyn Garden City	HW, Highway	524138	212391
Wild service tree	01/02/2001	Campus	Welwyn Garden City	PL, Parkland	523800	213200
Hornbeam	29/06/2002		17 Sweet Briar	UT, Urban Tree	525400	212000
Ash	29/06/2002		60 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		60 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		60 Sweet Briar	UT, Urban Tree	525400	212000
Ash	29/06/2002		62 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		64 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		70a Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		70a Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		70a Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		70a Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		72 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		74 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		76 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		76 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		82 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		84 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		90 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		106 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		108 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		110 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		116 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		116 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		124 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		124 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		37 Sweet Briar	UT, Urban Tree	525400	212000

Hornbeam	29/06/2002		East side of garage block @ Swe	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		Outside 'Hornbeams' flats, north	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		Outside 'Hornbeams' flats, south	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		South of 'Hornbeams' flats, east s	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		2 Whitehorn	UT, Urban Tree	525400	212000
Oak species	29/06/2002		70 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		77 Sweet Briar	UT, Urban Tree	525400	212000
Hawthorn	29/06/2002		79 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		87 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		89 Sweet Briar	UT, Urban Tree	525400	212000
Hawthorn	29/06/2002		97 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		99 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		101 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		103 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		103 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		107 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		105 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		113 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		115 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		115 Sweet Briar	UT, Urban Tree	525400	212000
Oak species	29/06/2002		117 Sweet Briar	UT, Urban Tree	525400	212000
Hawthorn	29/06/2002		121 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	29/06/2002		132 Sweet Briar	UT, Urban Tree	525400	212000
Hornbeam	01/08/2002	Blackfan Lagoon (North-East)	Panshanger, Welwyn Garden City	WL, Woodland	525500	213800
Hornbeam	01/08/2002	Blackfan Lagoon (North-East)	Panshanger, Welwyn Garden City	WL, Woodland	525500	213800

APPENDIX 2

Botanical / Faunal Scientific Names of Species Recorded Within / Adjacent to the Site or Referred to within this Report

Botanical Species

Common Name	Scientific Name
Agrimony	*Agrimonia eupatoria*
Alder	*Alnus glutinosa*
Alpine Blue Sow-thistle	*Cicerbita alpina*
Amphibious Bistort	*Persicaria amphibia*
Annual Knawel	*Scleranthus annuus*
Apple	*Malus spp.*
Arrow-head	*Sagittaria latifolia*
Ash	*Fraxinus excelsior*
Basil Thyme	*Acinos arvensis*
Bee Orchid	*Ophrys apifera*
Beech	*Fagus sylvatica*
Bird Cherry	*Prunus padus*
Bird's-foot Trefoil	*Lotus corniculatus*
Bittersweet	*Solanum dulcamara*
Black Knapweed	*Centaurea nigra*
Black Medick	*Medicago lupulina*
Blackthorn	*Prunus spinosa*
Bluebell	*Hyacinthoides non-scripta*
Bracken	*Pteridium aquilinum*
Bramble	*Rubus fruticosus agg.*
Branched Bur-reed	*Sparganium erectum*
Bristly Ox-tongue	*Picris echioides*
Broad Buckler-fern	*Dryopteris dilatata*
Broad-leaved Cudweed	*Filago pyramidata*
Broad-leaved Dock	*Rumex obtusifolius*
Broad-leaved Willowherb	*Epilobium montanum*
Broom	*Cytisus scoparius*
Buddleja	*Buddleja davidii*
Bulrush	*Typha latifolia*
Bugle	*Ajuga reptans*
Bush Vetch	*Vicia sepium*
Canadian Fleabane	*Conyza canadensis*
Caraway	*Carum carvi*
Cat-mint	*Nepeta cataria*
Chamomile	*Chamaemelum nobile*
Cherry Laurel	*Prunus laurocerasus*
Cherry sp.	*Prunus sp.*
Cherry Plum	*Prunus cerasifera*
Chickweed	*Stellaria media*
Cleavers	*Galium aparine*
Climbing Roses	*Rosa spp.*
Cock's-foot	*Taraxacum officinale*
Colt's-foot	*Tussilago farfara*
Columbine	*Aquilegia vulgaris*
Comfrey sp.	*Symphytum* sp.
Common Centaury	*Centaurium erythraea*
Common Knapweed	*Centaurea nigra*
Common Lime	*Tilia europaea*
Common Mallow	*Malva sylvestris*
Common Michaelmas Daisy	*Aster x salignus*
Common Nettle	*Urtica dioica*
Common Sedge	*Carex nigra*
Common Spotted Orchid	*Dactylorhiza fuchsii*
Common Toadflax	*Linaria vulgaris*
Common Vetch	*Vicia sativa*
Conifer	*Conifer sp.*
Copper Beech	*Fagus sylvatica f. purpurea*
Corn Buttercup	*Ranunculus arvensis*
Corn Chamomile	*Anthemis arvensis*
Corn Cleavers	*Galium tricornutum*

Corn Marigold	*Chrysanthemum segetum*
Corn Spurrey	*Spergula arvensis*
Cornflower	*Centaurea cyanus*
Corsican Pine	*Pinus nigra*
Cotoneaster sp.	*Cotoneaster sp.*
Cow Parsley	*Anthriscus sylvestris*
Cowslip	*Primula veris*
Crab Apple	*Malus sylvestris*
Crack Willow	*Salix fragilis*
Crane's-bill sp.	*Geranium spp.*
Creeping Cinquefoil	*Potentilla reptans*
Creeping Buttercup	*Ranunculus repens*
Creeping Thistle	*Cirsium arvense*
Cuckoo Flower	*Cardamine pratensis*
Crucifer sp.	*Crucifer* sp.
Curled Dock	*Rumex crispus*
Cut-leaved Crane's-bill	*Geranium dissectum*
Daisy	*Bellis perennis*
Dandelion	*Taraxacum officinale*
Darnel	*Lolium temulentum*
Deadly Nightshade	*Atropa belladonna*
Deodar Cedar	*Cedrus deodara*
Dogwood	*Cornus sanguinea*
Dog Rose	*Rosa canina*
Dog's Mercury	*Mercurialis perennis*
Dwarf Gorse	*Ulex minor*
Early Purple Orchid	*Orchis mascula*
Elder	*Sambucus nigra*
Elm	*Ulmus* procera
English Whitebeam	*Sorbus anglica*
European Larch	*Larix decidua*
False Oat-grass	*Arrhenatherum elatius*
Fescue sp.	*Fescue sp.*
Feverfew	*Tanacetum parthenium*
Field Bindweed	*Convolvulus arvensis*
Field Eryngo	*Eryngium campestre*
Field Forget-me-not	*Myosotis arvensis*
Field Gentian	*Gentianella campestris*
Field Gromwell	*Lithospermum arvense*
Field Maple	*Acer campestre*
Field Rose	*Rosa arvensis*
Field Scabious	*Knautia arvensis*
Field Woundwort	*Stachys arvensis*
Fine-leaved Sandwort	*Minuartia hybrida*
Floating Water-plantain	*Luronium natans*
Fly Orchid	*Ophrys insectifera*
Fringed Heartwort	*Ricciocarpos natans*
Fringed Water-lily	*Nymphoides peltata*
Forget-me-not sp.	*Myosotis sp.*
Forsythia	*Forsythia sp.*
Galingale	*Cyperus longus*
Garden Privet	*Ligustrum ovalifolium*
Garlic Mustard	*Alliaria petiolata*
Germander Speedwell	*Veronica chamaedrys*
Giant Fescue	*Festuca gigantea*
Giant Hogweed	*Heracleum mantegazzianum*
Glyceria sp.	*Glyceria sp.*
Goat Willow	*Salix caprea*
Grape Hyacinth	*Muscari neglectum*
Grass Vetchling	*Lathyrus nissolia*
Grass-wrack Pondweed	*Potamogeton compressus*
Great Mullein	*Verbascum thapsus*
Great Willowherb	*Epilobium hirsutum*
Greater Bird's-foot Trefoil	*Lotus pedunculatus*
Greater Burdock	*Arctium lappa*

Greater Plantain	*Plantago major*
Green Alkanet	*Pentaglottis sempervirens*
Grey Poplar	*Populus canescens*
Ground Ivy	*Glechoma hederacea*
Ground Pine	*Ajuga reptans*
Groundsel	*Senecio vulgaris*
Guelder Rose	*Viburnum opulus*
Hairy Sedge	*Carex hirta*
Hard Rush	*Juncus inflexus*
Harebell	*Campanula rotundifolia*
Hawkweed sp.	*Hieracium sp.*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Heath Bedstraw	*Galium saxatile*
Heath Cudweed	*Gnaphalium sylvaticum*
Hebe sp.	Hebe sp.
Hedge Bindweed	*Calystegia sepium*
Hedge Mustard	*Sisymbrium officinale*
Hedge Woundwort	*Stachys sylvatica*
Hemlock	*Conium maculatum*
Hemp Agrimony	*Eupatorium cannabinum*
Herb Robert	*Geranium robertianum*
Himalayan Balsam	*Impatiens glandulifera*
Himalayan Cotoneaster	*Cotoneaster simonsii*
Hogweed	*Heracleum sphondylium*
Holly	*Ilex aquifolium*
Holm Oak	*Quercus ilex*
Honeysuckles	*Lonicera spp.*
Hornbeam	*Carpinus betulus*
Horse Chestnut	*Aesculus hippocastanum*
Horsetail	*Equisetum arvense*
Hybrid Black Poplar	*Populus x canadensis*
Ivy	*Hedera helix*
Japanese Knotweed	*Fallopia japonica*
Jointed Rush	*Juncus articulatus*
Kidney Vetch	*Anthyllis vulneraria*
Knotgrass	*Polygonum aviculare*
Laburnum	Laburnum *anagyroides*
Lady's Bedstraw	*Galium verum*
Lady's Mantle	*Alchemilla sp.*
Lavender	*Lavandula sp.*
Lawson's Cypress	*Chamaecyparis lawsoniana*
Lesser Burdock	*Arctium minus*
Lesser Spearwort	*Ranunculus flammula*
Leyland Cypress	× *Cuprocyparis leylandii*
Lime	*Tilia sp.*
Lombardy Poplar	*Populus nigra Italica*
London Plane	*Platanus* × *acerifolia*
Long-stalked Crane's-bill	*Geranium columbinum*
Lord's and Ladies	*Arum maculatum*
Male Fern	*Dryopteris filix-mas*
Marsh Marigold	*Caltha palustris*
Marsh Stitchwort	*Stellaria palustris*
Meadow Crane's-bill	*Geranium pratense*
Meadow Fescue	*Festuca pratensis*
Meadow Foxtail	*Alopecurus pratensis*
Meadowsweet	*Filipendula ulmaria*
Minute Pouncewort	*Cololejeunea minutissima*
Mouse-eared Hawkweed	*Pilosella officinarum*
Mugwort	*Artemisia vulgaris*
Narrow-fruited Corn-salad	*Valerianella dentata*
Norway Maple	*Acer platanoides*
Oak	*Quercus sp.*
Ornamental Rose	*Rosa sp.*
Ox-eye Daisy	*Leucanthemum vulgare*

Pampas Grass	*Cortaderia selloana*
Pear sp.	*Pyrus spp.*
Pedunculate Oak	*Quercus robur*
Pendulous Sedge	*Carex pendula*
Perennial Rye-grass	*Lolium perenne*
Perforate St. John's-wort	*Hypericum perforatum*
Petty Whin	*Genista anglica*
Pheasant's Eye	*Adonis vernalis*
Pignut	*Conopodium majus*
Plum	*Prunus sp.*
Poa sp.	*Poa sp.*
Pondweed sp.	*Potamogeton sp.*
Poplar sp.	*Populus sp.*
Prickly Lettuce	*Lactuca serriola*
Prickly Sow-thistle	*Sonchus asper*
Purple Loosestrife	*Lythrum salicaria*
Purple Toadflax	*Linaria purpurea*
Pyracantha sp.	*Pyracantha* sp.
Quaking Grass	*Briza media*
Ragged Robin	*Lychnis flos-cuculi*
Ragwort	*Senecio jacobaea*
Red Campion	*Silene dioica*
Red Clover	Trifolium pratense
Red Dead Nettle	*Lamium purpureum*
Red Fescue	*Festuca rubra*
Red Hemp Nettle	*Galeopsis angustifolia*
Red Oak	*Quercus rubra*
Redshank	*Persicaria maculosa*
Red-tipped Cudweed	*Filago lutescens*
Red Star Thistle	*Centaurea calcitrapa*
Rhododendron	*Rhododendron ponticum*
Ribwort Plantain	*Plantago lanceolata*
Rigid Hornwort	*Ceratophyllum demersum*
Rosebay Willowherb	*Epilobium angustifolium*
Rose sp.	*Rosa sp.*
Rough Meadow-grass	*Poa trivialis*
Rowan	*Sorbus aucuparia*
Scentless Mayweed	*Tripleurospermum inodorum*
Scots Pine	*Pinus sylvestris*
Sea Buckthorn	*Elaeagnus rhamnoides*
Self Heal	*Prunella vulgaris*
Shepherd's Needle	*Scandix pecten-veneris*
Silver Birch	*Betula pendula*
Silverweed	*Argentina anserina*
Slender Tufted Sedge	*Carex acuta*
Smaller White Moss	*Leucobryum juniperoideum*
Smooth Meadow Grass	*Poa pratensis*
Smooth Sow-thistle	*Sonchus oleraceus*
Snapdragon sp.	*Antirrhinum sp.*
Snowberry	*Symphoricarpus albus*
Soft Rush	*Juncus effusus*
Spear Thistle	*Cirsium vulgare*
Speedwell sp.	*Veronica spp.*
Spurge sp.	*Euphorbia* sp.
Spreading Hedge Parsley	*Torilis arvensis*
Starwort sp.	*Callitriche spp.*
Stinking Goosefoot	*Chenopodium vulvaria*
Swedish Whitebeam	*Sorbus intermedia*
Sweet Chestnut	*Castanea sativa*
Sycamore	*Acer pseudoplatanus*
Tall Fescue	*Festuca arundinacea*
Tansy	*Tanacetum vulgare*
Teasel	*Dipsacus fullonum*
Thorow-wax	*Bupleurum rotundifolium*
Timothy	*Phleum pratense*

Three-corned Garlic	*Allium triquetrum*
Tower Mustard	*Arabis glabra*
Traveller's Joy	*Clematis vitalba*
Tufted Hair-grass	*Deschampsia cespitosa*
Tufted Vetch	*Vicia cracca*
Turkey Oak	*Quercus cerris*
Tutsan	*Hypericum androsaemum*
Variegated Reed Sweet-grass	*Glyceria maxima variegata*
Violet sp.	*Viola sp.*
Wall Cotoneaster	Cotoneaster *horizontalis*
Water Forget-me-not	*Myosotis scorpioides*
Water Mint	*Mentha aquatica*
Water Plantain	*Alisma plantago-aquatica*
White Campion	*Silene latifolia*
White Clover	*Trifolium repens*
White Dead Nettle	*Lamium album*
White Helleborine	*Cephalanthera damasonium*
White Poplar	*Populus alba*
White Willow	*Salix alba*
Whitebeam	*Sorbus sp.*
Whorled Water-milfoil	*Myriophyllum verticillatum*
Wild Angelica	*Angelica sylvestris*
Wild Candytuft	*Iberis amara*
Wild Cherry	*Prunus avium*
Wild Clematis	*Clemantis vitalba*
Wild Pansy	*Viola tricolor*
Wild Privet	*Ligustrum vulgare*
Willow sp.	*Salix sp.*
Wood Anemone	*Anemone nemorosa*
Wood Avens	*Geum urbanum*
Wood Meadow-grass	*Poa nemoralis*
Wych Elm	*Ulmus glabra*
Yarrow	*Achillea millefolium*
Yellow Archangel	*Lamiastrum galeobdolon*
Yellow Bird's-foot	*Lotus corniculatus*
Yellow Flag-iris	*Iris pseudacorus*
Yellow Loosestrife	*Lysimachia vulgaris*
Yellow Toadflax	*Linaria vulgaris*
Yew	*Taxus baccata*
Yorkshire Fog	*Holcus lanatus*

Faunal Species

Common Name	Scientific Name
Adder	*Vipera berus*
Andrena nigriceps	*Andrena nigriceps*
Azure Damselfly	*Coenagrion puella*
Badger	*Meles meles*
Banded Demoiselle	*Calopteryx splendens*
Bank Vole	*Myodes glareolus*
Barn Owl	*Tyto alba*
Beaded Chestnut	*Agrochola lychnidis*
Blackbird	*Turdus merula*
Blackcap	*Sylvia atricapilla*
Black Rat	*Rattus rattus*
Black Redstart	*Phoenicurus ochruros*
Black-tailed Skimmer	*Orthetrum cancellatum*
Blue Tit	*Cyanistes caeruleus*
Blue-tailed Damselfly	*Ischnura elegans*
Bordered Beauty	*Epione repandaria*
Brambling	*Fringilla montifringilla*
Brandt's bat	*Myotis brandti*
Brimstone	*Gonepteryx rhamni*

Broad-bodied Chaser	*Libellula depressa*
Brown Hare	*Lepus europaeus*
Brown Aeshna	*Aeshna grandis*
Brown Hawker	*Aeshna grandis*
Brown Long-eared bat	*Plecotus auritus*
Buff Ermine	*Spilarctia luteum*
Bullfinch	*Pyrrhula pyrrhula*
Burnet Moth	*Zygaena sp.*
Buzzard	*Buteo buteo*
Carrion Crow	*Corvus corone*
Cat	*Felis catus*
Centre-barred Sallow	*Atethmia centrago*
Chaffinch	*Fringilla coelebs*
Chiff-Chaff	*Phylloscopus collybita*
Cinnabar	*Tyria jacobaeae*
Coal Tit	*Periparus ater*
Collared Dove	*Streptopelia decaocto*
Comma	*Polygonia c-album*
Common Blue Butterfly	*Polyommatus icarus*
Common Blue Damselfly	*Enallagma cyathigerum*
Common Darter	*Sympetrum striolatum*
Common Frog	*Rana temporaria*
Common Lizard	*Zootoca vivipara*
Common Pipistrelle	*Pipistrellus pipistrellus*
Common Scoter	*Melanitta nigra*
Common Shrew	*Sorex araneus*
Common Toad	*Bufo bufo*
Corn Bunting	*Miliaria calandra*
Cuckoo	*Cuculus canorus*
Curlew	*Numenius arquata*
Daubenton's bat	*Myotis daubentonii*
Devil's Coach-horse	*Ocypus olens*
Dot Moth	*Melanchra persicariae*
Dunnock	*Prunella modularis*
Dusky Brocade	*Apamea remissa*
Dusky Thorn	*Ennomos fuscantaria*
Eastern Grey Squirrel	*Sciurus carolinensis*
Emperor Dragonfly	*Anax imperator*
Feral Pigeon	*Columba livia*
Feathered Gothic	*Tholera decimalis*
Field Vole	*Microtus agrestis*
Fieldfare	*Turdus pilaris*
Firecrest	*Regulus ignicapillus*
Five-banded Weevil Wasp	*Cerceris quinquefasciata*
Fox	*Vulpes vulpes*
Garden Snail	*Helix aspersa*
Goldfinch	*Carduelis carduelis*
Goshawk	*Accipiter gentilis*
Grasshopper Warbler	*Locustella naevia*
Grass Snake	*Natrix natrix*
Great Bittern	*Botaurus stellaris*
Great Crested Grebe	*Podiceps cristatus*
Great Crested Newt	*Triturus cristatus*
Great Tit	*Parus major*
Green-brindled Crescent	*Allophyes oxyacanthae*
Green Shank	*Tringa nebularia*
Green Woodpecker	*Picus viridis*
Grey Dagger	*Acronicta psi*
Grey Partridge	*Perdix perdix*
Grey Squirrel	*Sciurus carolinensis*
Greylag Goose	*Anser anser*
Harvest Mouse	*Micromys minutus*
Hawfinch	*Coccothraustes coccothraustes*
Hazel Dormouse	*Muscardinus avellanarius*
Hedgehog	*Erinaceus europaeus*

Hen Harrier	*Circus cyaneus*
Herring Gull	*Larus argentatus*
Hobby	*Falco subbuteo*
Honey Bee	*Apis sp.*
Hoopoe	*Upupa epops*
House Sparrow	*Passer domesticus*
Jackdaw	*Corvus monedula*
Jay	*Garrulus glandarius*
Kingfisher	*Alcedo atthis*
Knot Grass	*Acronicta rumicis*
Lackey	*Malacosoma neustria*
Lapwing	*Vanellus vanellus*
Large Garden Bumblebee	*Bombus ruderatus*
Large Nutmeg	*Apamea anceps*
Large White	*Pieris brassicae*
Latticed Heath	*Semiothisa clathrata*
Leisler's Bat	*Nyctalus leisleri*
Lesser Spotted Woodpecker	*Picoides minor*
Linnet	*Carduelis cannabina*
Little Ringed Plover	*Charadrius dubius*
Long-eared bats	*Plecotus sp.*
Long-tailed Tit	*Aegithalos caudatus*
Loosestrife Flea Beetle	*Lythraria salicariae*
Marbled White	*Melanargia galathea*
Magpie	*Pica pica*
Marsh Tit	*Poecile palustris*
Meadow Brown	*Maniola jurtina*
Meadow Pipit	*Anthus pratensis*
Migrant Hawker	*Aeshna mixta*
Mole	*Talpa europaea*
Moorhen	*Gallinula chloropus*
Mottled Rustic	*Caradrina morpheus*
Mouse Moth	*Amphipyra tragopoginis*
Mullein Wave	*Scopula marginepunctata*
Natterer's bat	*Myotis nattereri*
Nathusius' Pipistrelle	*Pipistrellus nathusii*
Noctule	*Nyctalus noctula*
Orange Tip	*Anthocharis cardamines*
Otter	*Lutra lutra*
Palmate Newt	*Lissotriton helveticus*
Parti-coloured Bat	*Vespertilio murinus*
Peacock	*Inachis io*
Peregrine Falcon	*Falco peregrinus*
Pheasant	*Phasianus colchicus*
Pied Wagtail	*Motacilla alba*
Pink-footed Goose	*Anser brachyrhynchus*
Polecat	*Mustela putorius*
Powdered Quaker	*Orthosia gracilis*
Rabbit	*Oryctolagus cuniculus*
Rat	*Rattus rattus*
Redpoll	*Carduelis cabaret*
Redwing	*Turdus iliacus*
Red Kite	*Milvus milvus*
Red Soldier Ant	*Myrmica rubra*
Red Soldier Beetle	*Rhagonycha fulva*
Red Squirrel	*Sciurus vulgaris*
Red-eared Terrapin	*Trachemys scripta elegans*
Reed Bunting	*Emberiza schoeniclus*
Robin	*Erithacus rubecula*
Rockfinch	*Carpospiza brachydactyla*
Rosy Rustic	*Hydraecia micacea*
Rustic	*Hoplodrina blanda*
Sallow	*Xanthia icteritia*
Sand Lizard	*Lacerta agilis*
Savi's Pipistrelle	*Hypsugo savii*

Scarce Chaser	*Libellula fulva*
Sedge Warbler	*Acrocephalus schoenobaenus*
Serotine	*Eptesicus serotinus*
Shelduck	*Tadorna tadorna*
Shoveler	*Anas clypeata*
Skylark	*Alauda arvensis*
Signal Crayfish	*Pacifastacus leniusculus*
Slow-worm	*Anguis fragilis*
Small Heath	*Coenonympha pamphilus*
Small Emerald	*Hemistola chrysoprasaria*
Small Phoenix	*Ecliptopera silaceata*
Small Tortoiseshell	*Aglais urticae*
Small White	*Pieris rapae*
Smooth Newt	*Lissotriton vulgaris*
Smooth Snake	*Coronella austriaca*
Song Thrush	*Turdus philomelos*
Soprano Pipistrelle	*Pipistrellus pygmaeus*
Southern Hawker	Aeshna cyanea
Speckled Wood	Pararge aegeria
Spinach	*Eulithis mellinata*
Spotted Flycatcher	*Muscicapa striata*
Stag Beetle	*Lucanus cervus*
Starling	*Sturnus vulgaris*
Stone Curlew	*Burhinus oedicnemus*
Swift	*Apus apus*
Teal	*Anas crecca*
Tree Pipit	*Anthus trivialis*
Tree Sparrow	*Passer montanus*
Turtle Dove	*Streptopelia turtur*
Wall	*Lasiommata megera*
Water Vole	*Arvicola amphibius*
Waxwing	*Bombycilla garrulus*
Wheatear	*Oenanthe oenanthe*
Whiskered bat	*Myotis mystacinus*
White Admiral	*Limenitis camilla*
White-clawed Crayfish	*Austropotamobius pallipes*
White-letter Hairstreak	*Satyrium w-album*
Whitethroat	*Sylvia communis*
White Ermine	*Spilosoma lubricipeda*
Whooper Swan	*Cygnus cygnus*
Wood Pigeon	*Columba palumbus*
Wood Warbler	*Phylloscopus sibilatrix*
Wren	*Troglodytes troglodytes*
Yellowhammer	*Emberiza citrinella*
Yellow Meadow Ant	*Lasius flavus*
Yellow Wagtail	*Motacilla flava*
7-spot Ladybird	*Coccinella septempunctata*

APPENDIX 3

Copy of E-mail Correspondence with Local Planning Authority Regarding Condition 4 of Planning Permission N6 / 2013/ 2305/ MA

From: **Richard Jennings** <richard@bradleymurphydesign.co.uk>
Date: Wed, Mar 26, 2014 at 3:41 PM
Subject: Land at 3 Bridge Road (former Shredded Wheat Factory) - Ecology
To: r.aston@welhat.gov.uk

Dear Richard

I understand that you are the Case Officer regarding the above site and I would therefore be grateful if you could help me with a number of queries regarding ecology.

I am undertaking ecology survey and assessment work on behalf of Spen Hill Developments Ltd. at the above named site. I have been sent a copy of the planning permission (REF: N6 /2013/2305/MA) regarding alterations to the existing access road at the site and I note that Pre-development Condition No.4 relates to ecology, and states:

"4. No development (including any works of site clearance) shall take place until the following have been submitted to and approved in writing by the Local Planning Authority:
a) A reptile/invertebrate survey has been submitted to HGBI guidelines
b) Details of any subsequent mitigation
c) Any construction phase mitigation has been implemented

Subsequently the works shall not be carried out other than in accordance with the approved details, unless otherwise agreed in writing by the Local Planning Authority.

REASON: To comply with the requirements of the Wildlife and Countryside Act and Habitats Regulations and to protect species of conservation concern in accordance with the National Planning Policy Framework and Policy R11 and R16 of the Welwyn Hatfield District Plan 2005."

1) In regard to 4a (above) I would be grateful if you could clarify the extent of **invertebrate survey** required at the site, as it is my understanding that the HGBI Guidelines refer to amphibian and reptile surveys, but not to invertebrate surveys. I would therefore be grateful if you could highlight the literature you are referring to in 4a above and /or detail the level of survey effort you require at the site regarding invertebrates.

2) In regard to the reptile surveys (4a, above), I propose to initially undertake **7 surveys** to confirm continued presence of reptiles at the site (as per 2010 results) and to obtain a handle on any reptile population present. The survey work will follow the guidance detailed in the HGBI best practice guidance note entitled "*Herpetofauna Groups of Britain and Ireland Evaluating Local Mitigation /Translocation Programmes: Maintaining Best Practice and Lawful Standards*" and Froglife's Advice Sheet 10 entitled "*An introduction to Planning, Conducting and Interpreting Surveys for Planning for Snake and Lizard Conservation*."

Any reptile mitigation or translocation exercise required at the site will be fully drafted and agreed with the LPA following completion of the initial survey effort at the site, with the 7 presence /absence surveys currently proposed taken from the recommendations detailed within Froglife's Advice Sheet 10. I would be grateful if you could confirm that you are satisfied with this approach.

3) My final query is not related to the above Permission, but to the wider former Shredded Wheat site, the area of land immediately to the south and the adjacent former Network Rail land to the NW. I am a Natural England licensed bat worker and I have completed survey and assessment of all buildings and trees for evidence of roosting bats within these areas, including internal and external survey of all the buildings for evidence of roosting bats. No evidence of roosting bats was recorded during this inspection work and the buildings were recorded as providing negligible, or negligible-to-low potential for roosting bats. Therefore, I am of the opinion that providing a Watching Brief for roosting bats is adopted during the removal of the few suitable features that are present (e.g. the external cladding on some of the buildings), then the level of

survey effort currently completed is sufficient to determine this issue and hence no further survey work is required. I would be grateful if you could confirm that you are in agreement in this regard (I note that a similar level of survey effort was undertaken by another party at the site regarding roosting bats for the previous planning application in 2010 and that the LPA was satisfied that sufficient survey effort had been carried out to determine this issue).

I look forward to hearing from you.

Many thanks for your help.

Kind regards

Richard

Richard Jennings

Principal Ecologist

BMD

LANDSCAPE

DESIGN

PLANNING

BRADLEY MURPHY DESIGN LTD

On Tue, May 13, 2014 at 10:21 AM, Richard Aston <r.aston@welhat.gov.uk> wrote:

Dear Richard,

This is the approach I received from HBRC. Please bear in mind I haven't reviewed it yet so offer no comment.

Kind regards

Richard

From: Martin Hicks [mailto:Martin.Hicks@hertfordshire.gov.uk]
Sent: 08 May 2014 13:59
To: Richard Aston
Subject: RE: Land at 3 Bridge Road (former Shredded Wheat Factory) - Ecology

Dear Richard

Land at 3 Bridge Road (former Shredded Wheat Factory)
(REF: N6/2013/2305/MA)

Thank you for this information. I can't find any records of HBRC making any comments on this so I'm not sure where it originated. However in resepct of the issues raised by Richard Jennings I can advise the following:

1. The planning application is for the alteration to an existing access road. In itself this will have a limited impact on the site but will require removal of some existing vegetation. Whilst this may be small in extent, and potentially could have ben dealt with by a programme of sensitive vegetation removal to make the working area unsuitable, given the full area of the site which is presumably going to be developed at some stage, a **reptile survey seems reasonable.** This is due to the vegetated nature of perhaps half of the site and its location directly adjacent to the railway line, a feature often associated with reptiles given the sparsity of vegetation, open ground and linear corridor nature of the route. This area of the site is now a trypical derelict brownfiled site and for these reasons has a reasoanble potential for supporting reptiles such as slow worms.

2. To determine presence / absence of reptiles, **I can confirm that following the guidance in Froglife's Advice Sheet 10 is acceptable**. This states seven visits are sufficient to determine presence. If shown to be present on habitat to be lost or otherwiuse detrimentally affected, a translocation / exclusion exercise will need to be implemented as necssary.

3. There are no HGBI (Herpetofauna [reptiles and amphibians] Groups of Britain and Ireland) requirements for invertebrate surveys. However, given the nature of the site is is quite posible there is some invertebrate interest present. Whilst in some circumstances it may be reasoanble to require such surveys, this would normally be the case where there were exsiting records suggesting an interest or where there may be a reasonable likelihood that a site supports a particular character of invertebrate interest that would otherwise be lost - such as a special vegetation or ground type, or veteran trees etc… I have no reason to suspect this is the case for this site which is otherwise in the middle of the industrial area. Although there is a past record of White Admiral butterfly within the Industrial Area, this is a woodland butterfly and given there are no woodlands here and no trees are going to be affected, this was probably a lone indivudual and I do not consider it to require any further survey work to determine its presence. Consequently **I consider there is little or no justification to require an invertebrate survey to be undertaken.** All such sites will develop some form of ecology which will be destroyed by development - that is simply the nature of development and this may only realistically be