



**LAND TO THE NORTH EAST OF KING GEORGE V PLAYING FIELD
2020 BAT SURVEY REPORT**

Prepared for Lands Improvement Holdings

by

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EXECUTIVE SUMMARY

This report describes the results of updated Phase 1 Bat Scoping and Phase 2 Bat Activity surveys carried out in support of the development of approximately 4.89ha of land at Cuffley, Hertfordshire, hereinafter referred to as 'the Site'. The Site is located by National Grid Reference TL 3045 0210. The study was commissioned by Lands Improvement in May 2020.

The findings of this work reflect those of similar studies carried out between 2008 and 2014. Key findings include:

- The Phase 1 Bat Scoping survey identified a number of trees on the Site boundary and adjacent to the Site with the potential to support roosting bats. Most of these are associated with the tree belt associated with the Hertfordshire Way on the southern boundary. It is understood that all these trees will be retained as part of the residential development scheme and the integrity of any opportunities that these trees provide could be maintained through the recommended measures to prevent indirect effects of lighting and maintain connectivity with habitat in the wider area as described in *Section 5* of this report. This includes the use of directional, cut-off and low-level lighting as appropriate together with narrow spectrum and low UV bulbs.
- Five species of bat were recorded using the Site and its surrounds during the Phase 2 bat activity surveys, although the vast majority of activity related to Common Pipistrelle bats. The majority of the Site including the proposed residential development area, comprises an intensively farmed arable field, providing low quality habitat for foraging and commuting bats and is considered to be of '**negligible**' value for bats. Much of the activity recorded was associated with the tree belt associated with the Hertfordshire Way along the southern Site boundary. The integrity of the tree belt, assessed as being of '**high local**' value for foraging and commuting bats, should be maintained through sympathetic use of artificial lighting in combination with maintenance of habitat linkages from existing residential development to the north-west and other suitable habitats to the south-east of the Site.
- Subject to the implementation of standard measures described in *Section 5* to avoid adverse potential effects of lighting on bats and maintain the integrity of the habitats bordering the Site to be used by bats, no adverse effects on the favourable conservation status of the local bat population would be expected to arise as a result of the proposed development.
- Furthermore, opportunities to strengthen the corridor of vegetation along the eastern and northern Site boundaries and provide habitats of high value for foraging bats, such as a selection of hedgerows and treelines, meadow grassland, garden and scrub habitats within the Site in areas currently comprising arable farmland would provide a considerable opportunity to improve the value of the Site for foraging and commuting bats.
- Along with the recommended provision of new roosting opportunities within the buildings of the proposed development, these habitat enhancement opportunities could considerably increase the value of the Site for bats in order to support the long-term favourable conservation status of bats in accordance with nature conservation legislation, planning policy and the 2006 NERC Act.

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes a suite of updated bat surveys carried out of approximately 4.89ha of land at Cuffley, Hertfordshire and its surrounds, hereinafter referred to as 'the Site'. The Site centre is located by National Grid Reference TL 3045 0210. The study was commissioned by Lands Improvement Holdings in May 2020.

1.1.2 The Site is located on the southern edge of Cuffley and is currently in agricultural use. It is bound by existing residential dwellings and the grounds of Cuffley Primary School to the north; Northaw Road East (B156) to the west with residential dwellings beyond; the railway line to the east with agricultural fields beyond; and the Hertfordshire Way, agricultural land and King George V Playing Fields to the south. A more detailed description of the habitats within the Site is given in the Ecological Appraisal (HDA, 2021). The location and boundary of the Site are shown in *Appendix A*.

1.2 Legislative context

1.2.1 All UK bat species are protected as 'European Protected Species' (EPS) under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. In relation to EPS, the 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of the species to which they belong;
- Damage or destroy a breeding site or resting place of such an animal; and/or
- To (a) be in possession of, or to control; (b) to transport any live or dead animal or any part of an animal; (c) to sell or exchange or (d) offer for sale or exchange any live or dead animal or part of an animal of an EPS.

1.2.2 In addition, all UK bat species are protected under the 1981 Wildlife and Countryside Act (as amended). All species are listed on Schedule 5 of the Act and are subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; and/or
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat.

1.2.3 If works are planned that are likely to constitute an offence under the current legislation, then works should be carried out under an appropriate Natural England licence.

1.2.4 Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe and Lesser Horseshoe) are listed as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the act requires planning authorities to regard these species as a material consideration in the planning process.

1.3 Development proposals

1.3.1 Development proposals for the site include the construction of residential dwellings with associated access, SuDS and landscaping.

1.4 Scope and purpose of the report

1.4.1 This report provides an update to the suite of bat surveys of the Site carried out by HDA in 2008 (HDA, 2009), 2012/2013 (HDA, 2014^a) and 2014 (HDA, 2014^b). The 2014 bat surveys identified the presence of a bat roost for two Common Pipistrelle within Tree 2 (identified as Tree 8 in the 2014 report) along the Hertfordshire Way in the west of the Site. No other bat roosts were recorded, however the site boundaries were found to be used by foraging and commuting bats, with the Hertfordshire Way on the southern Site boundary being of 'high local' value for foraging and commuting bats. However, the majority of the Site, comprising intensively farmed arable land, was considered to be of 'negligible' value for bats. Where relevant the results of the earlier survey works are referred to in this report.

1.4.2 In recognition of the proposed development of the Site, the previous survey work carried out at the Site and within the legislative context set out in *Section 1.2*, a suite of bat surveys was undertaken to determine current use of the Site by roosting, foraging and commuting bats, and to determine the need for any licensing or mitigation in relation to bats. The surveys conducted to inform this assessment are described in *Section 2*.

1.4.3 Specifically, the aims of the study were:

- i. To identify potential bat roosts in trees within the Site, where potentially affected by the proposed development;
- ii. To determine levels of bat activity within the Site, and identify species and approximate numbers;
- iii. To provide an assessment of the importance of the Site for foraging and commuting bats;
- iv. To determine the requirement, if any, for licensing in respect of bats; and
- v. To provide outline recommendations for any mitigation and/or enhancement required to ensure that the development avoids adverse impacts on bats, and, where possible, provides enhancements to support the long-term favourable conservation status of bats in accordance with nature conservation legislation, planning policy and the 2006 NERC Act.

2 METHODOLOGY

2.1 Introduction

2.1.1 The methodology followed in relation to all bat survey work undertaken at the Site accords with current legislation and good practice guidelines set out by the Bat Conservation Trust (BCT, 2016). The following sections detail the suite of bat surveys undertaken to inform the potential development of the Site.

2.2 Phase 1 bat scoping survey

2.2.1 An updated Phase 1 bat scoping survey was carried out by Anna Potter of HDA on 1st July 2020. The Phase 1 bat scoping survey was limited to trees as no buildings are present within the Site. All trees within and immediately adjacent to the Site were assessed for their potential to support roosting bats and classified according to their potential. The methodology for the Phase 1 tree survey has been outlined below.

Phase 1 tree survey

2.2.2 All trees within the Site were inspected from ground-level with the aid of binoculars and a powerful torch to identify potential features suitable for use by roosting bats. Potential features include splits, cracks and cavities, peeling bark, woodpecker holes, broken branches and a covering of Ivy where this is of a sufficient age to provide a suitable microclimate between the tree and Ivy stem(s).

2.2.3 In accordance with current best practice guidelines, trees were placed into one of the following five categories based on the nature, size, location and quality of features present in each tree and surrounding habitat:

- Negligible suitability – Trees with no or negligible features for roosting bats;
- Low suitability – Trees of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential;
- Moderate suitability – Trees with one or more potential roost sites that could be used by bats but are unlikely to support roost types of high conservation status;
- High suitability – Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time; or
- Known or confirmed bat roost.

2.3 Phase 2 roost surveys

2.3.1 No trees with moderate or higher potential to support roosting bats (or confirmed roosts), were identified during the Phase 1 bat scoping survey which will be impact by the proposed works. In accordance with current guidelines (BCT, 2016), no Phase 2 roost surveys in the

form of emergence/re-entry surveys or climbing inspections are therefore required in support of the current application.

2.3.2 Notwithstanding the above, if trees identified as having potential to support roosting bats (or confirmed roosts) require felling/trimming at a later date (for example on health and safety grounds) an appropriate approach to works is given in *Section 5* below.

2.4 Phase 2 bat activity survey

Bat activity transects

2.4.1 In order to provide an assessment of the importance of the Site for foraging and commuting bats, dusk activity surveys were undertaken between June and September 2020. Surveyors carrying hand-held bat detectors walked transects of the Site, with listening stops at regular intervals for periods of up to 5 minutes. Surveys generally began at sunset, ending approximately 2 hours after sunset. Visual observations of bats and bat call registrations were noted, recording time, location, activity and, where known, species. Recordings of foraging and/or commuting activity made using digital devices¹ were subsequently analysed to determine the identity of any unconfirmed species recorded during the surveys. Times and dates of surveys are given in *Table 1* below, along with weather conditions.

Table 1: Details of bat activity surveys

Date	Time	Sunset	Conditions
25.06.2020	21:23 – 23:23	21:23	<5% cloud cover, 0-1 on Beaufort Scale, dry, 24.1 – 20.1°C
03.08.2020	21:43 - 23:45	21:45	80% cloud cover, 1 on Beaufort Scale, dry, 16 – 15.3°C
08.09.2020	19:30 – 21:30	19:30	10% cloud cover, 1 on Beaufort Scale, dry, 19.4 - 18.6°C

Automated surveys

2.4.2 Automated surveys were carried out as a supplement to the activity transect surveys and to gain further information on the species present and frequency of bat activity at the Site and in the vicinity of the Site. Programmable electronic bat detectors² were installed within and in the vicinity of the Site and left in place for a minimum of five nights on three occasions between June and September 2020. The detector was programmed to record all bat activity. Details of the times and dates of automated bat detector deployment are provided in *Table 2* below and the location of the detector deployed within the Site is shown in *Appendix B*.

¹ Anabat Walkabout

² Anabat Express and 'Analook' software

Table 2: Details of Phase 2 automated bat detector surveys

Location	Deployment date	Sunset / Sunrise	Temp. (°C) Max. / Min.
Northern boundary of the Site*	25.06.2020 – 26.06.2020	21:21 / 04:45	25 / 16
	26.06.2020 – 27.06.2020	21:21 / 04:45	20 / 16
	03.07.2020 – 04.07.2020	21:19 / 04:50	15 / 14
	04.07.2020 – 05.07.2020	21:19 / 04:51	17 / 17
	05.07.2020 – 06.07.2020	21:18 / 04:52	15 / 11
Approximately 360m to the south of the Site along the Northaw Brook**	03.08.2020 – 04.08.2020	20:43 / 05:29	18 / 5
	04.08.2020 – 05.08.2020	20:42 / 05:31	19 / 15
Approximately 300m to the south-west of the Site along a treeline adjacent to King George V Playing Fields	08.09.2020 – 09.09.2020	19:28 / 06:27	23 / 15
	09.09.2020 – 10.09.2020	19:26 / 06:28	20 / 5
	10.09.2020 – 11.09.2020	19:24 / 06:30	15 / 5
	11.09.2020 – 12.09.2020	19:22 / 06:32	16 / 13
	12.09.2020 – 13.09.2020	19:20 / 06:33	19 / 13

* The automated detector was deployed for 6 nights in June however, due to technical issues the automatic detector recorded for only 2 nights. The automatic detector was subsequently re-deployed at the start of July.

** The automated detector was deployed for 9 nights however, due to technical issues the automatic detector recorded for only 2 nights.

2.5 Limitations of surveys

2.5.1 Due to equipment failure the automatic detectors deployed in June/July and August recorded for less than the requisite five nights. However, this was not considered a significant limitation as the automatic detector deployed in June was re-deployed in July to achieve the requisite five nights at this location, the recordings were made on two out of the requisite five nights in August (located beyond the site boundary) and the automated detector surveys were supplemented by bat activity transect surveys. Additionally the patterns of bat activity largely reflected that recorded during the 2008 and 2013/ 2014 surveys.

2.5.2 All other surveys followed current best practice guidelines (BCT, 2016) and were conducted at an appropriate time of year and with an appropriate level of survey effort both in terms of the number of surveyors used and number of survey visits undertaken. The surveys are therefore considered sufficient to allow a robust assessment of the likely effects of the proposed development on bats.

3 RESULTS

3.1 Phase 1 bat scoping survey

3.1.1 All trees identified as having potential to support roosting bats within the Site are described in *Table 3* below and their locations are given in *Appendix A*.

Table 3: Results of Phase 1 tree survey

Tree	Species	Findings	Bat roost potential
T1	Oak	Two branch cavities on western aspect. Lifted bark on snapped limb on western aspect.	Moderate
T2*	Oak	Branch cavity on northern aspect. Cavity in snapped branch on north-eastern aspect. Large cavity in branch scar on south-eastern aspect.	Confirmed roost for two Common Pipistrelle in 2014
T3	Ash	Limited Ivy plating.	Low
T4	Ash	Large cavity from a lost limb and a small rot hole in branch scar on eastern aspect.	Moderate
T5	Ash	Multiple cavities on eastern and southern aspects. Woodpecker hole in branch on eastern aspect.	High
T6	Ash	Large trunk cavity on north-western aspect. Woodpecker hole on south-eastern aspect. Dead Ivy creating areas of plating.	High
T7	Ash	Large trunk cavity on northern aspect.	High
T8	Ash	Large trunk cavity on northern aspect. Dead Ivy creating areas of plating.	High
T9	Ash	Large trunk cavity on eastern aspect.	High
T10	Ash	Branch cavity on south-eastern aspect. Tree appears to be hollow although Corvid nest present within hole at time of survey.	Moderate
T11	Oak	Branch cavity on northern aspect	Moderate
T12	Ash	Two branch cavities on western aspect. Woodpecker hole below missing branch.	Moderate
T13	Oak	Deadwood and Ivy plating throughout.	Moderate
T14	Ash	Deadwood and Ivy plating throughout.	Moderate
T15	Ash	Large rot hole in broken trunk on eastern aspect.	Moderate
T16	Dead Ash	Woodpecker hole on northern aspect.	Moderate
T17	Ash	Large trunk cavity on eastern aspect. Rot hole in scar on south-eastern aspect. Possible woodpecker hole.	High
T18	Ash	Cavity in branch scar on northern aspect. Limited dead Ivy plating.	Low
T19	Oak	Two branch cavities on western aspect.	Low
T20	Dead Ash	Four woodpecker holes on south-eastern aspect.	High

Tree	Species	Findings	Bat roost potential
T21	Ash	Large open cavity at tree top and multiple scar holes on northern aspect.	High
T22	Ash	Large cavity on northern aspect.	Moderate
T23	Ash	Upwards facing trunk cavity on northern aspect.	Low
T24	Ash	Five woodpecker holes.	High
T25	Ash	Trunk appears to be hollow and three woodpecker holes.	High
T26	Ash	Small trunk cavity on western aspect.	Low

* Identified as Tree 8 in the 2014 bat survey report (HDA, 2014^b).

3.1.2 All other trees within and immediately adjacent to the Site were assessed as having negligible potential to support roosting bats. No buildings are located within the Site.

3.2 Phase 2 bat roost surveys

3.2.1 No trees with potential to support roosting bats (or confirmed roost presence) will be lost as a result of the proposed development and therefore no Phase 2 bat roost surveys were required. In the event that future site management, regardless of the proposed development, has the potential to affect trees with bat roost potential or confirmed bat roosts an appropriate approach to works is given in *Section 5* below.

3.3 Phase 2 activity transect surveys

3.3.1 Details of the dates and times of bat activity transect surveys, along with weather conditions and sunset times, are provided in *Table 1*.

3.3.2 A visual summary of bat foraging and commuting activity recorded during the surveys has been provided in *Appendix B*. In total, two species were recorded during the transect surveys: Common Pipistrelle and Noctule. A summary of each species recorded, their activity and an estimation of numbers using the site during any one survey is provided in *Table 4* below.

Table 4: Summary of bat activity during transect surveys

Species	Activity summary	Approx. number recorded*
Common Pipistrelle	<p>Common Pipistrelle was the most frequently recorded species during the activity surveys. The majority of Common Pipistrelle activity was recorded along the treeline and hedgerow associated with the north-western corner of the Site. Common Pipistrelles were also recorded foraging on a less frequent basis in association with the treeline and hedgerow habitats along the northern, eastern and southern Site boundaries.</p> <p>It is estimated that up to 3 Common Pipistrelles could have been using the Site at any one time for foraging and commuting as part of a much larger foraging range for individuals of this species.</p>	3
Noctule	<p>Noctule bats were recorded occasionally during the activity surveys. The majority of Noctule activity comprised brief passes high above the Site. Noctule are a loud calling bat and it is possible that some of the calls detected relate to this species flying high overhead or foraging in the wider area.</p> <p>It is likely that the Site is used by up to 1 Noctule bat at any one time as part of a much larger foraging range for individuals of this species.</p>	1

**This is an approximation of the number of bats of any one species estimated to have been using the Site during any one visit.*

3.3.3 Common Pipistrelle and Noctule were each recorded on only an occasional basis, with activity consisting of single passes and brief periods of foraging by single bats in association with treeline and hedgerow habitats along the Site boundaries.

3.4 Phase 2 automated activity surveys

3.4.1 The dates during which the automated detector was deployed, along with sunset/sunrise times and approximate air temperatures are provided in *Table 2*. The location of the automated bat detector placed within the Site is shown on the plan in *Appendix B*.

3.4.2 The automated detector was placed in three separate locations to give an indication of the species using the Site and suitable foraging habitat in the vicinity of the Site. A summary of bat activity recorded during the automated surveys in each location is provided below in *Table 5*. In total, six species/species groups were recorded during the automated surveys: Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Noctule, Brown Long-eared bat and *Myotis* sp.

Table 5: Summary of bat activity recorded by the automated detector

Location	Activity summary
Northern site boundary	<p>The automated detector was situated along a treeline on the northern Site boundary.</p> <p>A total of 288 bat recordings was made over 4 nights; an average of 72 bat recordings per night. This location had the lowest level of bat activity recorded.</p> <p>Common Pipistrelle was the most frequently recorded species (97.2% of the bat recordings), with passes and foraging activity recorded every night.</p> <p>Occasional passes by Noctule, Soprano Pipistrelle, Brown Long-eared bat and <i>Myotis</i> sp. bat were also recorded (1.4%, 0.7%, 0.3% and 0.3% of the bat recordings, respectively).</p>
Approximately 360m to the south of the Site along the Northaw Brook	<p>The automated detector was situated along Northaw Brook located approximately 360m to the south of the Site.</p> <p>A total of 431 bat recordings was made over 2 nights; an average of 216 bat recordings per night. This location had the highest level of bat activity recorded.</p> <p>Common Pipistrelle was the most frequently recorded species (67.5% of the bat recordings), with passes and foraging recorded every night. Soprano Pipistrelle was the second most frequently recorded species (26.2% of the bat recordings), with passes and foraging recorded every night.</p> <p>Occasional passes by Brown Long-eared bat, Noctule and <i>Myotis</i> sp. bats were also recorded (3.0%, 1.9% and 1.4% of the bat recordings, respectively).</p>
Approximately 300m to the south-west of the Site along a treeline adjacent to King George V Playing Fields	<p>The automated detector was situated along a treeline adjacent to King George V Playing Fields approximately 300m to the south-west of the Site.</p> <p>A total of 396 bat recordings were made over 5 nights; an average of 79 bat recordings per night. This location had the second highest level of bat activity recorded.</p> <p>Common Pipistrelle was the most frequently recorded species (60.9% of the bat recordings), with foraging activity and passes recorded every night. <i>Myotis</i> sp. bat was the second most frequently recorded species (20.2% of the bat recordings), with passes and occasional foraging recorded during every night.</p> <p>Occasional passes by Soprano Pipistrelle, Brown Long-eared bat, Noctule and Nathusius' Pipistrelle bats were also recorded (9.8%, 6.6%, 2.0% and 0.5% of the bat recordings, respectively).</p>

3.4.3 In summary, the static detectors recorded Common Pipistrelle, Soprano Pipistrelle, Noctule, Brown Long-eared bat and *Myotis* sp. bats at all locations the bat detector was deployed. Nathusius' Pipistrelle was only recorded on two occasions, both in relation to the static located adjacent to King George V Playing Fields (approximately 300m south-west of the Site). The highest number of bat recordings was made along the Northaw Brook (360m to the south of the Site) and the highest number of bat species was recorded adjacent to King George V Playing Fields (300m south-west of the Site). The lowest number of bat recordings was made from the Site itself. Common Pipistrelle was the most frequently recorded species relating to 72.8% of all bat recordings, with all locations being used by foraging bats of this species, on all survey nights. Soprano Pipistrelle was the next

most recorded bat species relating to 13.8% of all bat recordings, however it should be noted that most of these bat recordings were associated with the statics located beyond the Site boundary. *Myotis* sp., Brown Long-eared bat, Noctule and Nathusius' Pipistrelle activity was recorded at lower levels (7.8%, 3.6%, 1.8% and 0.2% of all bat recordings respectively).

4 EVALUATION

4.1 Roosting bats

4.1.1 The Phase 1 bat scoping survey and historic bat surveys of the Site identified one tree with a confirmed roost (T2³), 10 trees with high potential to support roosting bats (T5-T9, T17, T20, T21, T24 & T25), 9 trees with moderate potential to support roosting bats (T1, T4, T11-T16 & T22) and 6 trees with low potential to support roosting bats (T3, T10, T18, T19, T23 & T26). It is understood that all trees with confirmed roosts or potential to support roosting bats will be retained within the scheme. Subsequently, no Phase 2 bat surveys were carried out in relation to the proposed development of the Site. In the event that ongoing site maintenance works may result in the loss of confirmed roosts or trees with potential to support roosting bats an approach is provided in *Section 5*, in accordance with current survey guidelines (BCT, 2016) and nature conservation legislation, to ensure no bats are harmed during site maintenance works. In addition, subject to implementation of the measures identified in *Section 5* below to avoid indirect effects from additional external lighting and loss of habitat connectivity it is considered that there will be no significant impact on the availability of opportunities currently provided by the Site for roosting bats.

4.2 Foraging and commuting bats

4.2.1 At least five bat species were recorded using the Site for foraging and commuting with varying levels of activity observed throughout the surveys. The plan in *Appendix B* provides an overview of bat activity recorded during the transect surveys. One further species, Nathusius' Pipistrelle was only recorded on two occasions associated with the static detector located approximately 300m south-west of the Site. It is possible however that Nathusius' Pipistrelle bats also use the Site on an occasional basis.

4.2.2 The majority of activity recorded related to Common Pipistrelle bats, with up to 3 Common Pipistrelle considered to be using the Site at any one time. Common Pipistrelle bats were mostly recorded foraging along the treeline and hedgerow in the westernmost corner of the Site and to a lesser extent foraging along the other Site boundaries in association with hedgerow and treelines.

³ Identified as T8 in the 2014 report.

- 4.2.3 Noctule bats were also occasionally recorded during the suite of bat surveys, associated with the treelines along the site boundaries. Soprano Pipistrelle, Brown Long-eared bat and *Myotis* sp. bat were recorded on an occasional basis during the automated detector surveys only. Activity relating to Soprano Pipistrelle, Brown Long-eared bat and *Myotis* sp. bats consisted of brief passes by individual bats, suggesting the Site forms only a small part of a much wider foraging territory for individuals of these species. It should be noted however that Brown Long-eared bats have a quiet call and may have been underrepresented in the recordings made during the bat activity surveys.
- 4.2.4 The static detectors located within suitable foraging habitat in the vicinity of the Site had higher levels of bat activity than the static deployed within the Site, with the highest level of bat activity associated with the Northaw Brook approximately 360m to the south of the Site. Overall across all three static detector locations, Common Pipistrelle was the most frequently recorded species. Soprano Pipistrelle was the next most recorded bat species, albeit the majority of the Soprano Pipistrelle recordings were associated with the static detectors located beyond the Site boundary. *Myotis* sp., Brown Long-eared bat, Noctule and Nathusius' Pipistrelle activity was recorded at lower levels.
- 4.2.5 Despite the number of species recorded and the number of bats expected to have been present within the Site at any one time, overall the level of bat activity recorded was generally considered to be low, relative to the size of the Site, and similar foraging and commuting opportunities are relatively widespread in the wider area. The majority of the Site including the proposed development area, comprises an intensively farmed arable field, providing low quality habitat for foraging and commuting bats and is considered to be of '**negligible**' value for bats at a local level. Much of the activity recorded was associated with the tree belt associated with the Hertfordshire Way along the southern Site boundary. With regard to the findings of the 2008 and 2013/ 2014 survey work carried out at the Site, which recorded higher numbers of pipistrelle bats using the Hertfordshire Way tree belt, this feature is considered to be of '**high local**' value for foraging and commuting bats.
- 4.2.6 Development proposals should seek to maintain and, where possible, enhance roosting, foraging and commuting opportunities for all species of bats using the site in accordance with nature conservation legislation, planning policy and the 2006 NERC Act. Recommendations to maintain and enhance the value of the site for bats are provided in *Section 5* below.

5 RECOMMENDATIONS

5.1 This section identifies any requirements for measures to be implemented during development of the site in order to avoid, mitigate and compensate potential effects of development on bats. In addition, measures for enhancement of the Site for roosting and foraging bats are included in accordance with the National Planning Policy Framework (NPPF, 2019) and the 2006 NERC Act.

5.2 Roosting bats

Works to trees

5.2.1 The findings of the Phase 1 bat scoping survey, previous bat surveys of the Site and the emerging development proposals indicate that no trees with confirmed bat roosts or bat roost potential will be lost as a result of the proposed development. Although no further survey of these trees is required at the application stage, in the unlikely event that ongoing site maintenance (e.g. for health and safety) results in the loss of a tree with either a confirmed bat roost or potential to support roosting bats an approach to felling is provided below.

5.2.2 In the event that retention of a tree, or tree features, identified as providing opportunities for roosting bats is not possible within the Site, it is recommended that felling works should be carried out in accordance with the following procedure:

1. In the event that future pruning or felling works are required to the tree with a confirmed roost (T2), such works have the potential to disturb or destroy any roosts present. If it is not possible to retain the roost site associated with the tree, an EPS licence would need to be obtained from Natural England prior to the commencement of any works affecting the roost sites associated with this tree.
2. Other trees suitable for climbing inspections should first be climbed by a licensed bat worker to inspect potential roost sites for bats. In the event that a bat (or evidence of bats) is encountered, and the tree cannot be retained, then felling/works to this tree should be delayed until an EPS licence has been sought and obtained from Natural England prior to soft felling in accordance with the methodology described under point 5 below. In the event that no bats (or evidence of bats) are encountered during an exhaustive search then any features should be 'soft stopped' to prevent occupation prior to felling.
3. Trees with 'high' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to three emergence/re-entry surveys to confirm the absence of roosting bats prior to any works affecting the tree commencing.
4. Trees with 'moderate' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to two emergence/re-entry surveys to confirm the continued absence of roosting bats prior to any works affecting the tree commencing.

5. 'Low' potential trees that are unsuitable for climbing inspections and/or have not been subject to an emergence survey immediately in advance of works should be 'soft felled' under the supervision of a suitably qualified ecologist. Soft felling involves progressive removal of the tree, using ropes to gently lower sections of tree potentially supporting roosting bats to the ground for inspection by a suitably qualified ecologist. Where appropriate, features should be left on the ground overnight before clearing to allow any bats present to escape.

5.2.3 In the event that a roosting bat is discovered during any of the above works, works must cease and Natural England contacted to agree an appropriate course of action. A licence may need to be applied for, and approved, before works can continue.

Protection of retained roost sites and roosting opportunities

5.2.4 The Site is currently subject to very limited artificial light spill from street lights within the off-site development to the north-west of the site, however the Site becomes progressively darker to the east. The integrity of retained and new roosting, foraging and commuting habitat, both within the site and its surrounds, should be conserved through the sensitive use of lighting throughout the construction and operational phases of the proposed development. In accordance with guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (BCT and ILP, 2018) this could be achieved through employment of a selection of the following measures in the vicinity of retained/newly created areas of suitable foraging habitat and in the vicinity of trees and buildings providing opportunities for roosting bats:

- Use of only the minimum amount of light required for safety and amenity, and minimise upward reflected light.
- Avoidance of bare bulbs or upward-pointing lights. The spread of light should be kept near to or below the horizontal.
- Use of narrow spectrum bulbs (between 4000 and 2700 kelvin) and/or low UV emitting bulb types.
- Avoidance of light-spill into adjacent areas through luminaire design or with accessories, such as hoods, cowls, louvers and shields to direct the light.
- Minimisation of the height of lighting columns.
- For pedestrian lighting, use of low level lighting that is as directional as possible and below 3 lux at ground level.
- Use of embedded road lights to illuminate roadways and lighting of only high-risk stretches of roads such as crossings and merges.
- Limit the times that lights are on to provide some dark periods for wildlife and/or use automatic dimmers to reduce lighting outside times of peak use.

5.2.5 It is recommended that all detailed external lighting proposals are reviewed at appropriate design stages by a suitably qualified ecologist. This could be secured via a condition of planning consent.

Enhancement of opportunities for roosting bats

5.2.6 Development of the Site could provide opportunities to enhance its current value for roosting bats in accordance with planning policy and the 2006 NERC Act through the provision of a range of new bat roosting features. The detailed design and location of such features should be determined at an appropriate stage prior to construction, but could include a selection of the following:

- Erection of bat boxes on existing mature trees on the boundaries of the Site; and/or
- Creation of roosting opportunities on new dwellings and other buildings, e.g. through inclusion of bat tubes or 'Habibat' type bat boxes within the external walls, raised tiles, access to roof voids etc.

These roosting features should be located where good connections exist to suitable foraging and commuting habitat such as on the site boundaries and other areas of newly created and retained semi-natural habitats within and around the Site.

5.2.7 By providing a variety of roosting opportunities in different locations and orientations, a range of roost spaces with varied microclimates could be provided by the Site, offering opportunities for roosting bats throughout the year and maintaining and enhancing the future potential of the Site to support roosting bats. In the long-term, proposed new areas of landscape planting are also likely to provide an additional bat roosting resource as planted trees develop suitable bat roosting features such as cracks, splits and holes. This would further increase opportunities for roosting bats. Natural development of bat roosting features should be further encouraged by the retention of mature trees and standing deadwood within and adjacent to the Site, where appropriate.

5.3 Foraging and commuting bats

5.3.1 The Site is dominated by an intensively farmed arable field providing only very limited opportunities for roosting bats, with the majority of suitable habitat being located around the Site margins in the form of hedgerows, scrub and tree belts. Of particular interest in the tree belt associated with the Hertfordshire Way which runs along the southern Site boundary. The Site is expected to provide only a small area of foraging habitat for low numbers of bats, with the vast majority of activity relating to Common Pipistrelle and Noctule which are both relatively common and widespread species in the UK. The Site and its surrounds are also used by Soprano Pipistrelle, *Myotis* sp., Brown Long-eared and Nathusius' Pipistrelle bats on an occasional basis.

- 5.3.2 Three bat species identified at the Site (Soprano Pipistrelle, Noctule and Brown Long-eared) are listed as Species of Principal Importance under Section 41 of the 2006 NERC Act and therefore the effects of development on foraging and commuting habitat are a material consideration in the planning process.
- 5.3.3 The emerging development proposals (Illustrative Masterplan, 2015) indicate the retention of the majority of hedgerow and treeline habitats bordering the Site. The development of the site may however result in the loss of small areas of foraging habitat within the site where hardstanding access routes take the place of areas currently dominated by treeline and hedgerow habitats. Although this is not considered significant in a local context and it is expected that the proposed areas of open space within the Site will provide new opportunities for roosting bats as these mature, consideration should be given to the use of pollen and nectar rich species within the formal planting schemes to encourage invertebrate prey. Loss of habitat from the site could be further off-set through enhancement of habitats around the Site margins (see *Section 5.3.5* below).
- 5.3.4 Opportunities for foraging and commuting bats and other nocturnal wildlife across and around the Site should be maintained through the implementation of a sensitive lighting strategy to minimise additional external light-spill into areas of existing and newly created habitats (see *Section 5.2.4*).
- 5.3.5 Furthermore, in addition to the above measures to maintain opportunities for roosting, foraging and commuting bats within and adjacent to the Site, the proposed areas of informal public open space will provide opportunities to enhance these areas of the Site for bats through the creation and enhancement of meadow grassland, treeline and hedgerow habitats (Illustrative Masterplan, 2015). In order to maximise future opportunities for foraging and commuting bats within these areas of open space, it is recommended that the following measures are included in the landscape strategy for these areas of the site:
- Landscape proposals within areas of open space across the Site should seek to include high quality habitat for foraging bats. This might include shrub planting, creation of areas of rough and meadow grassland, marginal vegetation and/or use of native species-rich hedgerows and treelines along boundaries;
 - Creation of new wetland habitats including wet grassland and drains either as stand-alone features or as part of the surface water drainage strategy. These habitats are capable of supporting large numbers of invertebrates, providing a significant foraging resource for bats;
 - Provision of a range of bat boxes on existing trees and new buildings to provide a variety of new roosting opportunities at the Site;

- Maintenance of standing deadwood and decaying trees/branches where safe to do so within and immediately adjacent to the site in order to maintain and encourage future natural opportunities for roosting bats; and
- Securing the long-term integrity of high-quality habitats through inclusion within a long-term management strategy.

6 CONCLUSION

6.1 The Phase 1 bat scoping survey identified a number of trees along the Site boundaries with the potential to support roosting bats, most of which are associated with the tree belt associated with the Hertfordshire Way on the southern boundary. It is understood that all these trees will be retained and the integrity of any opportunities that these trees provide for roosting bats could be maintained through the recommended measures to prevent indirect effects of lighting and maintain connectivity with habitat in the wider area as described in *Section 5* above.

6.2 Although the Site is dominated by habitats of negligible value for foraging and commuting bats and suitable habitat is generally confined to the Site margins, at least five species of bat were recorded using the Site and its surrounds during the suite of bat activity surveys. Wherever possible development proposals for the Site should aim to maintain and enhance existing opportunities for foraging and commuting bats in order to support the long-term favourable conservation status of bats in accordance with nature conservation legislation, planning policy and the 2006 NERC Act. This could be achieved through the retention, enhancement and/or creation of high quality foraging and commuting habitats (e.g. treelines, hedgerows, scrub, rough and meadow grassland and wetland) and the implementation of a sensitive lighting strategy. Measures by which this can be achieved are given in *Sections 5.2.4 and 5.3*.

6.3 In conclusion, subject to the implementation of the measures described in *Section 5* to avoid possible adverse effects on roosting, foraging and commuting bats currently using habitats within and adjacent to the Site, it is considered unlikely that any adverse effects would arise as a result of the proposed development on the local bat population. Furthermore, development of the site would provide opportunity to enhance the value of the site for bats through provision of high quality foraging habitat and new roosting opportunities on buildings and trees in keeping with planning policy and the 2006 NERC Act.

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APPENDIX A

2020 Bat roost survey summary plan

APPENDIX B

2020 Bat activity survey summary plan