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Bat Report

Client

Caddick Developments Limited

Project

**Land at Junction 22 of the M1,
Cliffe Hill Farm**

Date

August 2025

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Rev	Issue Status	Prepared/Date	Approved/Date
-	Final	DPL 24/03/25	KG / 03.06.25
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A	Final	LFR / 15.08.25	
B	Final	LFR / 28.08.25	

1.0 INTRODUCTION

- 1.1 The following report has been prepared by FPCR Environment & Design Ltd. for Caddick Developments Limited and provides details of bat surveys undertaken at Land at Junction 22 of the M1 (Central OS Grid Ref: SK 48127 11534) herein referred to as the 'site'.
- 1.2 Please note that this document should be read in conjunction with the Ecological Assessment (FPCR, August 2025).

Site Context

- 1.3 The site is located immediately east of Junction 22 of the M1 motorway, encompassing Cliffe Hill Farm and White Hill Farm. The site comprised a series of grassland field compartments, predominantly grazed pasture, divided by native hedgerows with mature trees and some remnant sections of stone walls. A strip of Scots pine plantation woodland stands centrally within the site with a small area of broadleaved woodland that straddles Cottage Lane in the southeast of the site. A series of buildings associated with Cliffe Hill Farm were recorded in the south of the site.
- 1.4 With the exception of the M1 running along the western edge of the site and the A50 flanking the southern boundary the wider area surrounding the site is similar to that within the site; grassland divided by hedgerows with blocks of woodland. Quarries are a significant feature of the surrounding landscape.

Development Proposals

- 1.5 This report supports an Full Planning Application for industrial development of the site to create B2 and B8 type units with associated infrastructure. This requires substantial cut and fill earthworks to deliver the necessary levels. Access to the site would be achieved by entering from the A50 and exiting onto Whitwick Road to the east.

2.0 LEGISLATION

- 2.1 All bats and their roosts are afforded legal protection under the Wildlife & Countryside Act 1981 (*as amended*) and the Conservation of Habitats and Species Regulations 2017 (*as amended*) which implements the EC Directive 92/43/EEC (the Habitats Directive). The purpose of the legislation is to maintain and restore protected species to a situation where their populations are favourable.
- 2.2 Under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (*as amended*) it is an offence to deliberately capture, injure or kill; deliberately disturb (including intentionally or recklessly) all UK bat species. This includes disturbance which impairs their ability to: breed and rear young; migrate; and hibernate; or affects their local distribution and abundance.
- 2.3 Four bat species: barbastelle *Barbastella barbastellus*, greater horseshoe bat *Rhinolophus ferrumequinum*, lesser horseshoe bat *Rhinolophus hipposideros*, and Bechstein's bat *Myotis bechsteinii* are additionally listed in Annex II of the Habitats Directive, which requires sites to be designated in member states for their protection. All have previously been recorded present within Shropshire, albeit (with the exception of lesser horseshoe bat) in very small numbers.
- 2.4 Under the Wildlife and Countryside Act 1981 (*as amended*) it is illegal to:
- Recklessly or intentionally kill, injure or take any wild animals included in Schedule 5;
 - Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection; and/or
 - Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.
- 2.5 Foraging habitat and commuting routes used by bats are not protected as such, though impacts that could prevent bats from using a resource or commuting to or from a valued roosting site may be considered as an indirect impact on a roost or a significant disturbance effect and would therefore also need to be avoided or prevented.
- 2.6 Seven bat species are listed as species of principal importance for the purpose of conserving biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006: barbastelle, greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*.
- 2.7 Bats are recognised in the National Planning Policy Framework (NPPF)¹ which advises that when determining planning applications, Local Planning Authorities should aim to conserve and enhance biodiversity by applying a set of principles including:
- "If significant harm resulting from a development cannot be avoided..., adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
 - development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity."

¹ Department for Communities and Local Government. 2019. National Planning Policy Framework. Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

3.0 METHODOLOGY

Desktop Survey

- 3.1 To support the field surveys and to compile existing baseline data for the site, ecological information was sought from third parties, including records of protected or notable species and sites designated for nature conservation interest. Organisations contacted included:
- Leicestershire and Rutland Environmental Records Office (LRERC).
 - The Multi Agency Geographic Information for the Countryside (MAGIC) website ²consulted for the presence of European Protected Species Licences (EPSL) within 2km of the survey Site and the presence of any statutory designated sites for bats of international (Special Area of Conservation (SAC), national (Site of Special Scientific, (SSSI) or local nature conservation importance (Local Nature Reserves (LNR) within 5km of Site.
- 3.2 The results are presented in the Ecological Assessment (FPCR, June 2025).

Roost Sites

Preliminary Roost Assessment (ground level)

- 3.3 Preliminary Roost Assessments (PRA) were undertaken from ground level on 29th May 2024 by a suitably experienced ecologists from FPCR. Potential Roosting Features (PRFs) (based on p.16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015) which were sought included:
- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
 - Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems;
 - Woodpecker holes;
 - Cracks/splits in stems or branches (horizontal and vertical);
 - Partially detached, loose or platy bark;
 - Cankers (caused by localised bark death) in which cavities have developed;
 - Other hollows or cavities, including butt rots;
 - Compression of forks with occluded bark, forming potential cavities;
 - Crossing stems or branches with suitable roosting space between;
 - Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); and
 - Bat or bird boxes.
- 3.4 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings, and its location in respect to other features may enhance or reduce the potential value.

² Multi Agency Geographic Information for the Countryside (MAGIC) (<http://magic.defra.gov.uk>)

- 3.5 Using professional judgement, the ground-based PRA assessment classified any trees identified based upon the presence of suitable features as set out in Bat Surveys for Professional Ecologists: Good Practice Guidelines (BCT, 2023¹) in which the general bat roost potential groups are defined (refer Table 4.2 of the guidelines) and provided in Table 1 below.

Table 1: Suitability of trees for bats

Suitability	Description
NONE	Either no potential roost features or highly unlikely to be any.
FAR	Further Assessment Required to establish if Potential Roost Features are present.
PRF	A tree with at least one Potential Roost Feature.

Aerial Inspection Surveys

- 3.6 Any trees that were categorised as Further Inspection Required (FAR) or Potential Roost Feature (PRF) were subject to further aerial inspection. This survey included a detailed inspection of trees for the presence of further PRF's and also for the level of suitability provided by PRF's.
- 3.7 This assessment was completed by suitably experienced and accredited ecologists (Natural England Class Licence Registration Number: 2016-22940-CLS-CLS) meeting the BCT competency requirements on the 20th – 21st June, 15th July and 16th August.
- 3.8 The survey involved accessing the tree using arborists tree climbing techniques (certified to Climb Trees (J/101/2449) and Perform Aerial Rescue (A/101/2450) – Level 2 (NPTC). The climbing methodology used follows that detailed within the Arboriculture and Forestry Advisory Group (AFAG) Tree Climbing Operations Leaflet (AFAG401) and included inspecting each PRF for suitability and evidence of current or past occupation by bats using endoscopes, mirrors, torches and cameras as necessary.
- 3.9 Each PRF was then categorised as outlined in Table 2.

Table 2: Bat Classification and Survey Requirements for Bats in Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work / Actions
Negligible/ No potential	Negligible/no habitat features likely to be used by roosting bats	None.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work / Actions
PRF-I	A tree with one or more Potential Roosting Features that are suitable for only individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey is required but appropriate compensation must be provided in advance of impacts and a precautionary working method statement must be applied. ^A
PRF-M	A tree with PRF's which could support multiple bats and may therefore be used by a maternity colony. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Three aerial assessments of PRF's by appropriately licensed/ accredited tree climbers to determine presence or likely absence of roosting bats. Surveys were undertaken between May and September (with at least two surveys between May and August and spread at least three weeks apart).^C If roost sites are confirmed and the roost is affected by proposals a licence from Natural England will likely be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary pre-felling survey or working method statement may still be appropriate.

^A In circumstances where there are lots of trees grouped together with PRF-I then further surveys may still be appropriate.

^B Nocturnal surveys using NVA's may be appropriate if a tree or PRF cannot be sufficiently accessed or fully assessed.

^C If the initial aerial inspection was undertaken during the optimum survey period, this can count as one of the three surveys

- 3.10 All trees identified from ground-based assessment as presenting PRF were climbed on 20th – 21st June. Those which were assessed during this initial climb as PRF-M were climbed a further two times on 15th July and 16th August.

Preliminary Building Assessment

- 3.11 An external and internal building assessment was carried out on the buildings on the 29th May 2024, by Ed Feetham, a licenced ecologist from FPCR Environment and Design Ltd. (Level 2 bat survey licence CL18: 2015-11246-CLS-CLS). The assessment was completed considering the guidance provided in chapters 4 and 5 of the Bat Surveys for Professional Ecologists, Good Practice Guidelines, 2023³.

External Building Assessment

- 3.12 The exterior of the buildings were visually assessed for potential access points and evidence of bat activity. Features such as small gaps under barge/soffit/fascia boards, raised or missing

³ Collins, J. (ed.) 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. The Bat Conservation Trust.

ridge tiles and gaps at gable ends, which have potential to be used as access points, were sought. In addition, structural features were noted that could provide suitable hibernation potential or not. Evidence that bats actively used potential access points includes staining within gaps and bat droppings or urine staining under gaps, a note being made wherever these were present. Where they could be safely accessed crevices were inspected for the presence of bats or their signs using torches, mirrors and endoscopes.

Internal Assessment

- 3.13 The interior of the buildings, including all accessible roof voids, were also visually assessed with the aid of an endoscope, mirrors and torches to identify potential or actual bat access points and roosting places and for evidence of current or past bat roosts. Definitive evidence of a bat roosts was determined by the presence of:
- Dead or live bat(s); and/or
 - Droppings.
- 3.14 Other less definitive signs were also sought as indicators of potential roosting bats, these included:
- Urine staining;
 - Fur-oil staining;
 - Feeding remains such as moth wing fragments;
 - Audible calls;
 - Bat-fly (*Nycteribiid*) pupal cases; or
 - Odour
- 3.15 The absence of any of the above evidence was not considered to be definitive evidence that no roosts were present as bats may leave no visible sign of their presence particularly where they occupy inaccessible or hidden spaces within a building.
- 3.16 Subsequently, the buildings (or where relevant, sections of) were categorised according to their suitability to support roosting bats and whether they provide classic or non-classic hibernation potential or not. These were classified according to the features present within the buildings (see Table 3).

Potential Bat Roosting Suitability

- 3.17 Following the internal and external assessments each building was assigned a category according to its roosting suitability which is based on Table 4.1 of the BCT Guidelines⁴, this potential suitability is used to indicate the likely requirements for any further surveys to determine the presence or absence of roosting bats.

Table 3: Building bat roost habitat classifications (based on Table 4.1 BCT Guidelines)

⁴ Collins, J. (ed.) 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust.

Roost Suitability	Description of Roosting Habitats	Further Survey Requirements to Provide Confidence in the Likely Absence of Roosting Bats Within a Structure
None	No habitat features on Site that are likely to be used by bats at any time of the year.	No further surveys or consideration of roosting bats is required.
Negligible	No obvious habitat features are present that are likely to be used by roosting bats, but features may be present where a bat could theoretically roost but it is considered very unlikely.	No further surveys are required, but some vigilance may be required if the feature is impacted.
Low	A structure with one or more potential roost Sites that could be used by individual bats opportunistically. However, these potential roost Sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or classic hibernation roost).	Up to one single dusk emergence survey undertaken between May and August. (requirement is based on professional judgment). Precautionary method statement if works are to be undertaken during the winter period (where non-classic hibernation potential exists).
Moderate	A structure with one or more potential roost Sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Two separate dusk emergence surveys undertaken between May and September and at least one between May and August and spread at least 3 weeks apart. Precautionary method statement if works are to be undertaken during the winter period (where non classic hibernation potential exists).
High	A structure with one or more potential roost Sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support High conservation status roosts such as those used for maternity or hibernation (classic Site).	Three separate dusk emergence surveys undertaken between May and September and at least two between May and August and spread at least 3 weeks apart. Where classic hibernation potential is present hibernation surveys should be undertaken during the winter period.
A classic hibernation Site is considered to provide stable climatic conditions including temperature humidity, and light level such as, but not exclusively limited to underground structures which are subject to low levels of disturbance or species specific habitual requirements such as where brown long-eared bats often use a the same roosts for maternity and hibernation purposes. A non-classic hibernation Site is a location which does conform to the criteria above but could be used by individual hibernating bats. It usually not possible to identify non-classic hibernation Sites through surveys work.		

Nocturnal Surveys

- 3.18 During the nocturnal surveys, surveyors were positioned so that all aspects of the buildings or tree with the potential to support bats could be observed. The emergence surveys commenced at least 15 minutes prior to sunset until at least 90 minutes following sunset. The number and species of bats observed emerging or entering the buildings was recorded.
- 3.19 Any notable activity patterns including commuting and/or foraging within the vicinity of the building was recorded.
- 3.20 Echo Meter Touch® (Wildlife Acoustics, Inc.) bat detectors were utilised in conjunction with Echo Meter Touch® app. Where necessary to confirm species identification Bat calls were analysed using the Kaleidoscope Viewer® (Wildlife Acoustics, Inc.) software package.

- 3.21 Surveyors were equipped with night vision aids (NVA's) to enhance visibility of the survey area throughout the survey. NVA's were set to record for the duration of the survey, where roosting bats were observed or uncertain behaviours observed, footage was extracted, analysed and saved. A still shot of the darkest point of the survey was also extracted and saved and are included in Appendix A. NVA's used were Nightfox Whisker night vision binoculars with a Nightfox XB10 IR torch for each unit.
- 3.22 All of the nocturnal surveys were conducted in appropriate conditions, i.e. ambient temperature exceeding 10°C and little wind and no rain, details are provided in Table 4 below.

Table 4 – Summary of Nocturnal Survey Dates and Conditions

Survey Number	Survey date	Buildings covered	Start / Finish	Sunset	Conditions
1	26.06.24	B1, B4	21:18 to 23:33	21:33	15°C, 100% cloud cover, 1 BF, no rain.
2	24.07.24	B8	20:55 to 22:40	21:10	16°C, 100% cloud cover, 1 BF, no rain.
3	22.08.24	B1, B4, B8 Trees 152, 155 & AA4	20:00 to 21:45	20:15	16°C, 90% cloud cover, 1 BF, no rain.

Static Monitoring

- 3.23 Static (passive) monitoring was undertaken using an automated logging system (Wildlife Acoustics Inc. Song Meter® SM4BAT FS bat detectors with SMM-U2 microphones). During the survey period five static recording devices were positioned within the Site to record bat registrations for at least five consecutive nights on a monthly basis.
- 3.24 The number of static detectors to be used and location of deployment was determined so that a representative sample of all habitats within the Site could be monitored. The locations were subjectively predetermined using professional judgment to be positioned at least 15m away from any known or likely roosts and also in consideration of likely impacts. In order to provide rigorous analysis, static detectors were placed in the same location during each survey.
- 3.25 The devices were deployed for 5 consecutive nights during suitable weather conditions that were typical for the season/ month of deployment and were programmed to activate 30 minutes before sunset and record continuously until 30 minutes following sunrise.
- 3.26 Static detectors were deployed during the following periods;
- 23rd to 28th May.
 - 21st to 26th June 2024.
 - 24th to 29th July 2024.
 - 22nd to 27th August 2024.
 - 12th to 17th September.
 - 16th to 21st October 2024.

- 3.1 The data was analysed as soon as possible after retrieval of the static units using the Sonobat™ 30.1 (SonoBat™ Inc.) software package to assess the amount of bat activity on site by recording the number of bat registrations. Data were initially run through the auto-analysis function of the software with manual vetting taking place of every call with the exception of common pipistrelles and soprano pipistrelles. Noise files were also manually vetted. Measurements including peak frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification. This analysis was completed by a suitably experienced ecologist (analysts are audited internally for quality control purposes and to maintain consistent results).

Nighttime Bat Walkover (Flightpath / Transects Surveys)

- 3.2 In line with the BCT 2023 guidelines nighttime bat walkovers were undertaken in two parts. The first part was undertaken by stationary surveyors positioned adjacent to habitat features considered likely to be utilised as commuting routes by bats. Once conditions become too dark to see or once bat commuting activity had been observed and had largely ended, surveyors began a walked transect to sample representative areas and habitats within the Site, noting any bat activity that heard or observed along the way. Whilst the methodology incorporates two elements together these comprise one survey designed to record information to provide further context to elements that static detectors cannot always identify such as bat behaviour or abundance of bats.
- 3.3 The first part of each survey focussed on potential flightpaths and involved 2 surveyors being positioned at predetermined locations. The surveys started just before sunset and lasted for between 30 minutes and one hour after sunset. After this the walked transect component was started and continued until two to three hours after sunset.
- 3.4 Surveyors were equipped during the walkover/transect surveys with Wildlife Acoustics Inc. Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Samsung Galaxy Tab Active 3® to detect bats and aid species identification.

Table 5: Nighttime Bat Walkover Timings

Survey Date	Sunset Time	Start Time (commuting)	Start Transect	End Transect
23.05.24	21:08	21:08	22:29	23:39
29.07.24	21:02	21:02	22:02	23:14
17.09.24	19:14	19:14	20:22	21:55

Table 6: Nighttime Bat Walkover Conditions

Survey Date	Start Temp °C	End Temp °C	Wind Beaufort Scale	Rain	Cloud cover (%)
23.05.24	12	11	1	Dry	100
29.07.24	22	21	1	Dry	15
17.09.24	17	11	0	Dry	0

- 3.5 The data from the nighttime walkover/transect surveys was analysed using the Kaleidoscope Viewer© (Wildlife Acoustics, Inc.) software package to identify calls to species/genera and to provide a description of relative activity levels. As above, measurements including peak

frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification.

- 3.6 All data analysis was completed by a suitably experienced ecologist. FPCR analysts are audited internally for quality control purposes and to maintain consistent results.

Survey Limitations

- 3.7 Where bat calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Nyctalus* species) making a definite identification difficult, a likely species identification is provided. This is based on the features displayed by the calls when analysed using the Kaleidoscope and Sonobat™ 30.1 data analysis software package and taking into account the geographical location of the site and the habitats present.
- 3.8 To ensure the security of the SM4Bat FS bat detectors the placement of the detectors was carefully considered to avoid open habitats.

4.0 RESULTS

Desktop Survey

- 4.1 Previously known consultation records for bats can be viewed within the results section of the EcoApp (FPCR, 2024).

Designated Sites

- 4.2 No statutory or non-statutory sites are present within a 5km radius of the Site for which bats are a primary feature for citation.

Field Surveys

Ground Level Tree Assessment (GLTA)

- 4.3 During the Ground Level Tree Assessment 46 trees were identified to have potential roosting features which could support roosting bats. The trees were later aerially assessed and categorised into Negligible, PRF-I or PRF-M.

Aerial Assessment

- 4.4 Of the 46 trees recorded, 14 were identified as having PRF-I features, 6 as having PRF-M features, 3 trees categorised as having potential but were not able to be confidently checked and were surveyed nocturnally. The remaining 26 trees were identified as providing Negligible potential for roosting bats. Trees with Negligible potential are not a constraint to the development. Details of the PRF-I, PRF-M features and trees nocturnally surveyed are present in Table 7 below and Figure 1.

Table 7: Aerial Assessment Results

Tree Ref.	Features considered to have roosting potential (Categorisation)
T102	Cavity goes back and down 20cm width 10cm old birds nest, smooth, dry, sheltered (PRF-I).
T108	Canopy North - tear out 8m, 40cm long, widest 5cm, entrance 3cm split, depth 5cm, sheltered, dry, rough split heartwood (PRF-I).
T109	Canopy East - 1m hollow stem tear out, exposed at top, section extends into dead branch, closed at top, goes up 40cm, rough, dry, exposed at base and sides (PRF-I).
T110	Canopy North - branch split at end of dead branch 8m (PRF-I). Canopy East - shallow trunk cavity 5m - hornet, knot hole 7m towards end of branch, extends 25cm in, 5cm diameter, smooth, dry, tube shaped (PRF-I).
T111	Canopy South - Large tear out and knot hole, 1m long 10cm diameter, tubular, rough heartwood some crevices, very exposed (PRF-I), low cavity, extends 15cm onwards, sheltered dry inside, tapers to a point, deadwood (PRF-I).

Tree Ref.	Features considered to have roosting potential (Categorisation)
T112	Canopy East - hazard beam 4m, exposed middle, two cavities either end, more sheltered, extended 15cm out, 10cm into tree, both tapered ends, widest point 6cm, 25cm middle (PRF-I).
T113	Canopy North - tear out 4m, tubular cavity section with heartwood ridges, dry, sheltered, connects two sections, entrances 5cm, width 10cm, length 20cm (PRF-M).
T120	Canopy North - hollow trunk 3m, opening 15cm diameter, another opening on east 10cm diameter, hollow inside, dry, dark, crevices, looks fairly sheltered and closed at top (PRF-M).
T122	Canopy North - knot hole 4m extends back 40cm, tubular, smooth, narrows at end, dry, some slugs (PRF-M), branch split 5m, rams horn crevice, top end open and exposed, relatively sheltered, smooth and dry (PRF - I). Canopy South - trunk split 1-4m, exposed, section where heartwood curves over and shelters a cavity, smooth, dry, entrance 3cm split, goes back 5-10cm (PRF-I).
T127	Canopy South - large split tear out, cavity extends back through limb 45cm, rough, dry, upward facing, 5cm wide, fairly exposed (PRF-I).
T133	Canopy West - Knot hole 6m , 5cm entrance diameter, cone shape cavity, tapers to point, depth 10-15cm, dry, rough, exposed heartwood (PRF-I).
T137	Canopy East - large tear out 4m, extends back 25cm, smooth, dry, slugs, entrance 15cm diameter, tube shaped cavity, large, exposed (PRF-I).
T150	Canopy South - split trunk 2 to 5m, rough, dry, closed at top, exposed on sides, extends up around 20cm (PRF-I).
T165	Canopy South - branch tear out 2.5m, extends 10cm up into branch, diameter 3cm, smooth, dry (PRF-I).
T168	Canopy North - trunk cavity 6m, extends upwards over 2m, narrow cavity, lots of grooves, slightly exposed on sides but closed at top, dry, 3-5cm entrance vertical split (PRF-M). Canopy South - woodpecker hole 2.5m, goes down then extends up past heartwood plate, narrow cavity around 5cm width entrance and 10cm long, extends further than endoscope could reach (awkward bend), sheltered, dry, smooth with crevices (PRF-M).

Tree Ref.	Features considered to have roosting potential (Categorisation)
T169	Canopy South - large cavity in main trunk, extends up into branch small opening at top, sheltered, cone shaped, smooth, dry, splits into two, entrance 10cm diameter, clear flight path (PRF-M).
T173	Canopy East - large branch split 5m, inwards 5cm, sheltered, no up or down cavity, dry, smooth (PRF-I). Canopy West - lightening strike 1m, cavity opening 5x2cm at top, extends back 10cm, up and down 5cm, tubular, dry, rough, some bird nesting potential (PRF-I).
AA5	Canopy East - branch tear out 4m, exposed, lots of crevices, some sheltered (PRF-I).
AA3	Canopy North - 1.5m huge tear out in main trunk, hollow, extends up into branches over 2m, sheltered, dry, entrance 30cm diameter, tube shaped, relatively smooth (PRF-M).
AA1	Canopy East - branch tear out 3m upward facing, cavity going up limb 20cm, damp, slugs were present (PRF I).

- 4.5 Three trees were unable to be safely assessed and were subject to a single nocturnal survey. The results of this are provided at paragraph 4.20.

Internal / External Building Assessment

- 4.6 Twelve buildings were identified within the application boundary B1 to B12 (Figure 2). The following provides a summary of the completed internal / external surveys, detailed building descriptions are provided at Appendix B.

Building B1

- 4.7 Building B1 was single storey, brick-built bungalow with pitched concrete pantiled roof. At the time of the survey, the property was occupied. Additional structural features of interest included barge boards, soffits and fascia boarding with brick-built chimney and flashing. Potential bat access points included occasional gaps in lifted/decayed soffits and occasional gaps under lifted/loose or missing tiles.
- 4.8 Internally, a void approximately 3m (h), 10m (l) x 5m (w) with king post timber roof beams with bituminous roofing felt. The building was categorised as having moderate potential for roosting bats.

Building B2

- 4.9 Building B2 was a single storey, brick-built kennel with single-pitch composite corrugated sheet roof. No roof void was present with exposed roof sheets and timber beams present. The building was categorised as having negligible potential for roosting bats.

Building B3

- 4.10 Single storey, brick-built garage with single pitched corrugated composite sheet roof, the building was open with a light interior and no roof void. B3 had negligible potential to support roosting bats.

Building B4

- 4.11 Brick and stone-built barn with pitched corrugated composite sheet roof. Derelict concrete block section with collapsed roof to east. Potential access points included gaps in brick and stonework as well as some section of loose or missing roof sheets. Internally, exposed timber roof beams and roof sheeting were present, and the interior of the building was relatively light. Internal the only potential roost sites recorded were gaps in brick and stonework. Building B4 was categorised as having moderate potential for roosting bats.

Buildings B5, B6 and B10

- 4.12 Buildings B5, B6 and B10 were adjoined buildings and were single storey metal prefabricated structures with pitched corrugated composite sheet/metal roof. The buildings had negligible potential for roosting bats.

Buildings B7-11

- 4.13 Buildings B7 and B11 were adjoining prefabricated timber-built stables with corrugated composite roof. Internally, the structures were exposed and open to the elements with no suitable roosting. The buildings were categorised as having negligible potential for roosting bats.

Building B8

- 4.14 Building B8 was a single storey, open sided concrete barn/shed with pitched corrugated composite sheet roof. The base of the building comprised a concrete breeze block wall up to 3m in height with timber cladding and open sides. Internally, the structure was light and open to the elements. Potential roosting points for bats included missing mortar in internal concrete walls. Building B8 was categorised as having moderate potential for roosting bats.

Building B9

- 4.15 Building B9 was a prefabricated static caravan with no accessible roof void as only a small, sealed void was present, between ceiling and roof. The structure had negligible potential for roosting bats.

Building B12

- 4.16 Building B12 was a single-storey, timber-built prefabricated stable with pitched corrugated metal/composite sheet roof. The structure was open to the elements with no suitable roosting opportunities present and therefore categorised as having negligible potential.

Nocturnal Building SurveysSurvey 1 – 26th June 2024 (Figure 3)

- 4.17 No evidence of roosting bats was identified emerging from building B1 from the first nocturnal survey undertaken on building B1. Incidental commuting and foraging activity within the immediate area of building B1 was noted with small numbers of common pipistrelle, noctule

and brown long-eared bats. The first bat identified was a noctule commuting far overhead at 21:39.

Survey 2 – 24th July 2024 (Figure 4)

- 4.18 No evidence of roosting bats were identified emerging from building B8 from the second nocturnal survey undertaken on building B8. Incidental commuting and foraging activity within the immediate area of building B8 was noted with small numbers of common pipistrelle and noctule. The first bat identified was a common pipistrelle foraging in and around building B8 at 21:34.

Survey 3 – 22nd August 2024 (Figure 5)

- 4.19 No evidence of roosting bats were identified emerging from building B1, B4 or B8. Incidental commuting and foraging activity within the immediate area of building B1 was notes with small numbers of common pipistrelle, soprano pipistrelle, noctule and unidentified *Myotis* species. The first bat identified was a common pipistrelle commuting along the eastern gable of building B1 at 20:36.
- 4.20 Three trees were nocturnally surveyed. No evidence of roosting bats were identified emerging from these trees, with incidental commuting and foraging activity noted within the surrounding area. The assemblage of bats recorded over this survey was similar to those recorded during the nocturnal survey on the buildings.

Activity Surveys

Nighttime Bat Walkover 23.05.24 (Figure 6)

- 4.21 During the May flightpath survey, both surveyors recorded a total of four bat contacts each. Species included common pipistrelle, and unidentified *Myotis* species. Surveyor A recorded two common pipistrelles, the first was recorded at 21:40 foraging along the edge of woodland and the second at 21:44 continuously foraging along a hedgerow. At location B two common pipistrelle bats were observed. The first was recorded at 21:39 commuting north away from position B and the second recorded at 21:42 commuting east along a hedgerow, towards the centre of the Site.
- 4.22 Over the walked transect survey, a total of 11 bat contacts were identified, with species composition consisting of common pipistrelle and unidentified *Myotis* species. The majority of activity was associated with foraging bats, although some commuting behaviour was also identified. Bat activity was identified along hedgerows H6, H21, H18 and H19 on the field boundary habitat. The majority of activity was associated with hedgerows H6.
- 4.23 No Annex II species were recorded during the survey.

Nighttime Bat Walkover 29.07.24 (Figure 7)

- 4.24 During the July flightpath survey a total of eight bat registrations were noted with all of them heard not seen. Surveyor A recorded a total of six bat contacts with species including common pipistrelle, and soprano pipistrelle, the registrations were recorded as commuting and foraging activity. The first bat was a soprano pipistrelle recorded at 21:33 with a single pass. At location B a common pipistrelle and soprano pipistrelle were recorded. The first was recorded at 21:52.

4.25 During the walked transect survey, a total of 11 bat contacts were identified, with species composition consisting of common pipistrelle and soprano pipistrelle. The majority of activity was associated with commuting bats, although some foraging behaviour was also identified. Bat activity was identified along boundary hedgerows on the western boundary and along hedgerow H6.

4.26 Annex II species were recorded during the survey.

Nighttime Bat Walkover 17.09.24 (Figure 8)

4.27 During the September flightpath survey, only surveyor A recorded 16 bat calls, no activity was recorded by surveyor B. Species included common pipistrelle, soprano pipistrelle, *Nyctalus* species and noctule. Surveyor A first recorded a single noctule foraging at 19:38.

4.28 During the walked transect survey, a total of 27 bat contacts were identified, with species composition similar to that of the flightline survey with the exception of unidentified *Myotis* species and brown long-eared being recorded. The majority of activity was associated with foraging bats, although some commuting behaviour was also identified. Bat activity was identified along hedgerow H6, H4 H17, H18, H19 and H11. The majority of activity was associated with hedgerows H4 and H6.

4.29 No Annex II species were recorded during the survey.

Static Detector Surveys

4.30 The following details the results of static monitoring of bat activity in 2024. Table 8 provides a summary of the results and Figure 9 showing locations of units. Full detailed results are available in Appendix C.

4.31 Items listed in bold correspond to notable activity and are explained in text below the table.

Table 8: Static Results

Month	Total Registrations	Location of highest recording static (see Figure 9)	Location of Lowest recording static (see Figure 9)	Most Recorded Species (Number of Registrations)	Other Species Recorded (Number of Registrations)
May	13787	Location A (Unit 7 - 4553).	Location C (Unit 2 – 360).	Common pipistrelle (12123)	Soprano pipistrelle (1210) Myotis species (228), Brown Long-eared (35), Nyctalus species (33), Pipistrelle species (23), Noctule (20), Nathusius' pipistrelle (5).

Month	Total Registrations	Location of highest recording static (see Figure 9)	Location of Lowest recording static (see Figure9)	Most Recorded Species (Number of Registrations)	Other Species Recorded (Number of Registrations)
June	4610	Location F (Unit 31 – 1856).	Location D (Unit 34 – 313).	Common pipistrelle (3530)	Myotis species (459), Soprano pipsitrelle (442), Noctule (96), Nyctalus species (67), Brown Long-eared (27), Pipistrelle species (8), Leisler's (1).
July	6382	Location D (Unit 26 – 3249)	Location F (Unit 16 – 1263).	Common pipistrelle (5384)	Soprano pipistrelle (797), Nyctalus species (84), Myotis species (59), Brown long-eared (31), Noctule (21), Pipistrelle species (5), Barbastelle (1).
August	11183	Location A (Unit 19 – 5291).	Location F (Unit 20 – 106).	Common pipistrelle (9575)	Soprano pipistrelle (1105), Brown long-eared (173), Myotis species (163), Nyctalus species (89) Noctule 566), Pipistrelle species (22).
September	3438	Location C (Unit 11 – 1708).	Location F (Unit 21 – 346).	Common pipistrelle (2767)	Soprano pipistrelle (361), Myotis species (158) Brown long-eared (82), Brown long-eared (82), Noctule (29), Nyctalus species (25) Pipistrelle species (16).

Month	Total Registrations	Location of highest recording static (see Figure 9)	Location of Lowest recording static (see Figure9)	Most Recorded Species (Number of Registrations)	Other Species Recorded (Number of Registrations)
October	1583	Location D (Unit 28 – 380).	Location A (Unit 25 – 188).	Common pipistrelle (1166)	Myotis species (274), Soprano pipistrelle (79), Nyctalus species (26), Brown Long-eared (23), Noctule (15).

- 4.32 The following text breaks down the collected data with numbers referring to registrations or static reference numbers as opposed to the number of bats, (see notes below this result section for clarification).
- 4.33 The bat activity levels ranged from 5291 to 106 registrations. The highest activity levels (5291 registrations) were noted along eastern edge of the central woodland block (Location A). The second was also recorded with the static situated within this woodland block, and third highest activity levels occurred along line of trees between hedgerow 21 and hedgerow 17 to the south (location D).
- 4.34 The lowest activity levels (106 registrations) occurred on Unit U20 along H19 in the south of the Site in August 2024 (location F). The second lowest recording static was Unit U25 on H3 (location A) with 188 registrations, and the third lowest being Unit 35 registering 313 passes, situated on some trees between H21 and H17 in the southern part of the Site (location D).
- 4.35 Common pipistrelle was the dominant species recorded c. 85% of the data, soprano pipistrelle second most frequently recorded with approx. 8% and *Myotis* species third with c. 3%. The remaining species recorded accounts for less than 1% of the total call registered (see Table 9).
- 4.36 An individual barbastelle registration was noted at location C in the northeastern part of the Site. Additional notable species included five registrations from nathusius' pipistrelle was recorded on 3 of the May statics, units 3, 7 and 8 (Locations A, D and E). A single Leisler call was also recorded in June on Unit U30 located in south eastern area of the Site, on the boundary woodland block (location E).
- 4.37 *Nyctalus* species bats (which could be noctule or Leisler's) but the recording was too poor to confirm) were recorded throughout the site, however given the dataset and preponderance of noctule bats they are more likely to be the former species.
- 4.38 The below table shows the relative percentage values of each species.

Table 9: Species Abundances

Species	Total registrations	Percentage (%)
Common pipistrelle	39,796	85.249
Soprano pipistrelle	4,088	8.757

Species	Total registrations	Percentage (%)
Myotis species	1,702	3.646
Brown Long-eared	431	0.923
Nyctalus	331	0.709
Noctule	247	0.529
Pipistrelle species	80	0.171
Nathusius' pipistrelle	5	0.011
Leisler's	1	0.002
Barbastelle	1	0.002
Total	46,682	100

Note

- 4.39 Please note, in this context, the term 'registration' in the above table refers to a unique sound files created over the course of a number of seconds. Based on this, one 'registration' does not necessarily refer to one bat (unlike the transect section above where the number of bats can often be visually identified), as one bat can create a number of registrations, for example a bat which is foraging in the area surrounding the microphone for a sustained period of time.
- 4.40 Where calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Nyctalus* genus bats) making a definite identification difficult, a likely species identification is provided. This is based on the features displayed by the calls when analysed using the Kaleidoscope data analysis software package and taking in to account the geographical location of the site and the habitats present. It was therefore considered that:
- 4.41 Unidentified *Myotis* species bats were likely to be whiskered /Brandt's *Myotis mystacinus/brandtii* or natterer's *Myotis nattereri* bats.
- 4.42 *Nyctalus* species bats were likely to be noctule but exhibited some overlap with Leisler's *Nyctalus leisleri* bats.
- 4.43 As listed above *Nyctalus/Eptesicus* could be either noctule, Leisler's or serotine but the call was such that a full identification could not be accurately determined.
- 4.44 Pipistrelle species bats were predominantly either common or soprano pipistrelle with a much lower likelihood that they are Nathusius'.

5.0 DISCUSSION

- 5.1 Bats and their habitats are protected under the Wildlife and Countryside Act 1981 (*as amended*) and by the Conservation of Habitats and Species Regulations 2017 (*as amended*). In summary this makes it an offence to damage, destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure or take a bat. Seven bat species are listed as Species of Principal Importance under the provisions of the NERC Act 2006.

Roost Sites

Tree Assessment

- 5.2 During ground level tree assessment 80 trees were identified as providing suitable roosting opportunities for bats. Following the aerial assessment all PRFs were categorised as NONE, PRF-I and PRF-M, therefore two additional surveys were required on the PRF-M features.
- 5.3 26 mature trees were recorded within the Site which possessed either PRF-I or PRF-M (seven PRF-M and 19 PRF-I features were recorded). Six trees were categorised as possessing one or more PRF-M features and were subject to two more aerial assessments. 15 trees were identified as having one or more PRF-I features, and weren't subject to any further works following the Bat Conservation Trust (BCT) survey guidance⁵. Three trees were considered unsafe to climb and were subject to a nocturnal survey.
- 5.4 During all aerial assessments and nocturnal surveys, no roosting evidence was recorded. Therefore as no roost was identified to be present at the time of the surveys, roosting bats are not a constraint to the removal of trees, though it is advised that removal of trees identified as PRF-I or PRF – M is undertaken under best practice precautionary working methodology. Survey data is current for up to 2 years. Updating surveys may therefore be necessary prior to works. In the unlikely event that any bats or evidence of bats is discovered during pre-commencement surveys or the works then works will be stopped immediately until advice has been sought from a licenced bat ecologist.
- 5.5 It is advised that removal is carried out outside of breeding bird survey, otherwise a nesting bird check will be required, and any active nest sites must be retained and buffered from works.

Buildings

- 5.6 Buildings B2, B3, B5-B7 and B10-B11 were assessed as having negligible potential to support roosting bats, as such, the presence of a roost has not been considered as a statutory constraint for the demolition of these buildings.
- 5.7 Buildings B1, B4 and B8 were all assessed as having moderate potential for supporting roosting bats and were subjected to two nocturnal surveys.
- 5.8 Nocturnal surveys of these buildings did not result in finding a roost and therefore the buildings are not considered a constraint for roosting bats.
- 5.1 Survey data is current for up to 2 years. Updating surveys may therefore be necessary prior to works. In the unlikely event that any bats or evidence of bats is discovered during pre-commencement surveys or the works then works will be stopped immediately until advice has been sought from a licenced bat ecologist.

⁵ Collins, J. (ed.) 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust.

- 5.2 To provide on-site enhancements for bats, it is recommended that suitable roosting opportunities are integrated within or externally mounted to the proposed industrial units, where possible. Where the building design does not allow the implementation of internal or external bat roost features a range of bat boxes should be implemented across the site of suitable retained mature trees or woodland areas.
- 5.3 The illumination of any integrated features and/or bat boxes by security lighting or similar is to be avoided. It is advised that any lighting used as part of the development should follow the Bat Conservation Trust and Institute of Lighting Professionals guidance⁶ and is designed to reduce spill and be downwardly directional (where practicable).

Bat Activity Assessment

- 5.4 The application Site is dominated by modified grassland and smaller parcels of other neutral grassland. These are considered to provide low value habitat for commuting and foraging bats as the habitat do not support high numbers of invertebrates upon which bats prey. Therefore, the loss of such habitats is unlikely to significantly affect the favourable conservation status of the species recorded using the Site. Areas of woodland and scrub are also present and provide greater commuting and foraging habitat for a range of bat species, a network of hedgerows which may be used as linking habitat for commuting/foraging bats to get to the smaller pockets of richer habitat or commute offsite.
- 5.5 Survey data indicates the Site supports an assemblage of foraging and commuting bats, with activity recorded by transect and the statics detector surveys consistently dominated by common pipistrelle and soprano pipistrelle, which are both widespread and abundant species. *Myotis* species was also frequently recorded, with less frequently encountered species including unidentified *noctule* and *Nyctalus* species, brown long-eared bat, leisler's, nathusius' pipistrelle and barbastelle. Overall, the assemblage of species recorded using the Site was not considered as being of more than local level importance.
- 5.6 No pattern of activity was noted in the timing of activity of any species that was indicative of the presence of a nearby roost Site (such as a recurring peak in activity shortly following sunset and/or prior to sunrise, and no flightpaths regularly used by commuting individuals were identified during flightline/transect surveys).
- 5.7 Of the above, *Pipistrellus* and *noctule/Nyctalus* sp. readily forage within and/or commute over urban areas, therefore are relatively insensitive to urban development when this includes the provision of gardens open greenspace. Barbastelle were recorded at very low frequencies, registrations were isolated to single nights and with a total of 1 pass in total. Nathusius pipistrelle was also noted with a total of 5 passes which were all recorded in may inclusive.
- 5.8 Overall, the relative abundance of Nathusius' and barbastelle as a proportion of bat species recorded on Site was low, with species accounting for less than 1% of the total registrations recorded suggesting that the Site only forms a minor part of a network of foraging and commuting areas within the wider landscape. From the result of the surveys, it has been concluded that the site does not form an important resource for these species and as a result the proposed development is not considered to have a significant impact upon the Favourable Conservation Status of these species. An appropriate mitigation strategy incorporating the

⁶ Bat Conservation Trust & Institute of Lighting Professionals (ILP) 2018. Guidance Note 08/18: *Bats and artificial lighting in the UK*. Bats and the Built Environment Series.

measures outlined below can be accommodated in the design to minimise any potential impacts from the proposals.

- 5.9 The development requires the removal of internal trees and hedgerows to facilitate the necessary levels to deliver the proposed layout. The central woodland block and perimeter trees and hedgerows will be safeguard to offer suitable habitat corridors around the Site, such that the Site remains permeable to such species in the short term during the construction phase. Approximately 1.4Km of hedgerow will be lost for the construction of warehouses, however the proposed planting of approximately 3km of hedgerows will more than mitigate the loss and provide suitable foraging and commuting habitat. Proposals also include an extensive amount of tree and scrub planting as well as creation of permanent water bodies (attenuation features), creating alternative foraging and commuting features through the site, which as they grow and establish shall enhance available movement corridors and foraging resources between off-site roost sites and foraging grounds.
- 5.10 Connectivity around and through the Site will be appropriately maintained for bats and will continue to link to habitats within the wider area in conjunction with a sympathetic lighting scheme (see below).
- 5.11 Enhancements include planting species rich hedgerow and night pollinating plant species, additional enhancements that could be integrated within the proposed development could include the erection of bat boxes on retained trees or integrated bat boxes within new buildings across the Site.

Habitat Provision and Mitigation Measures

- 5.12 Post-development the site offers significant opportunities to provide enhancements for the local population of bats. Habitat creation, including native species rich hedgerows, broadleaved tree planting, along with SuDS, and species rich meadow grassland creation within the proposed development will increase the foraging value within the site as well as maintaining / creating commuting connectivity between these areas and the wider site surrounds.
- 5.13 Both common and soprano pipistrelles are known to adapt to the urban environment and with the incorporation of green infrastructure it is anticipated that the proposals will not affect the conservation status of these species.
- 5.14 The hedgerow network and tree lines within the Site are utilised by local bat populations for foraging and commuting purposes. The areas of retained hedgerow and new hedgerow creation will maintain movement throughout the Site to the wider landscape for the local bat population.
- 5.15 All of the internal hedgerows are set to be removed which will reduce the connectivity across the Site. However, boundary hedgerow is set to be retained allowing bats to still commute around the Site and not creating a barrier.
- 5.16 It will be important to ensure that dark corridors are maintained along features such as woodland and SuDS to avoid impact on bats. Lighting mitigation is discussed below.
- 5.17 The creation of waterbodies will also offer further foraging opportunities for bats. Waterbodies should, where feasible, be designed so that there are permanent areas of standing water to improve foraging opportunities for bats.

- 5.18 The proposals provide opportunity to deliver enhanced roosting opportunities via the installation of bat boxes mounted onto retained suitable trees within the new development footprint. These should be located at a height of at least 4m above ground level, on an unshaded SW/S/SE facing aspect and should be unlit by any form of artificial lighting such as security lighting.

Lighting

- 5.19 Bat activity recorded on Site was dominated by common pipistrelle and soprano pipistrelle which are adaptable species, more tolerant of artificial light and will feed on insect congregations around the lights, as will noctule. However, some species of bats are known to be deterred by artificial lighting such as brown long-eared and Myotis species which were recorded on Site in low numbers. To avoid any impacts associated with light spill on bat flight-lines or foraging habitat, mitigation measures should be implemented.
- 5.20 In the absence of mitigation, the direct lighting of created and retained habitats may reasonably be expected to lead to the avoidance of these areas by the local bat population, particularly brown long-eared and Myotis species bats. It is therefore important to avoid such impacts through the development of a sensitive lighting strategy with a focus on maintaining dark corridors.
- 5.21 The lighting and layout of the proposed development will be designed to minimise light-spill onto habitats both within and adjacent to it that are used by the local bat population for foraging or commuting. This will be achieved by ensuring that the design of lighting is based upon guidelines presented in EUROBATS 'Publication Series No. 8 – Guidelines for consideration of bats in lighting projects'. Therefore, the lighting scheme will include the following:
- The strategic use of landscaping and planting to avoid light spill on sensitive habitats. New planting should aim to buffer retained boundary features and create dark corridors around the Site.
 - The avoidance of direct lighting on existing trees, hedgerows, or proposed areas of habitat creation / landscape planting.
 - The use of dynamic lighting where feasible, where lighting is proposed along linear habitat features such hedgerow and tree lines.
 - Unnecessary light spill will be controlled through a combination of directional lighting, low lighting columns, hooded/shielded luminaires or strategic planting.
 - Where appropriate, luminaires on the site boundary will be fitted with light baffles to prevent light spill and create dark corridors around the Site.
- 5.22 With the implementation of the mitigation proposed above, residual effects on potential commuting/foraging routes will be limited and any disturbance likely to be caused by lighting on the local bat population is considered likely to be negligible.

Bat Boxes

- 5.23 Bat boxes should be installed on retained trees (where feasible) and incorporated into the fabric of new buildings (where appropriate). The provision of such features would be in accordance with NPPF 2023, providing an enhancement for biodiversity within the local area.

Bat boxes should be installed and varying heights between 3 and 6m on the southern, south-eastern and south-western aspects of the trees and buildings, with a variety of box types used to provide roosting opportunities for a wide range of species. Specific bat boxes that would be suitable to erect on retained trees where appropriate would be Schwegler 1FF and 2F boxes or similar specification.

- 5.24 Bat bricks/integrated wall boxes such as Habitat Bat Boxes and Schwegler 1FR and Schwegler 2FR or similar specification should also be positioned on the southern, eastern and western elevations of buildings at least 4m from the ground. The bat boxes/bricks on tree and buildings should be located around the Site's periphery adjacent to the proposed and existing habitats which provide suitable commuting/foraging habitat, particularly around the eastern, western and southern site boundaries.
- 5.25 Any external lighting will be applied sensitively with no lights above or adjacent to access points on bat boxes.

Summary

- 5.26 The internal inspection survey undertaken identified potential roosting features within 3 of the buildings, however two nocturnal building surveys undertaken however did not identify the presence of roosting bats. Demolition works of B1, B4 and B8 should proceed under best practice for roosting bats.
- 5.27 The aerial assessment survey identified no roosts but recorded 26 trees with potential roosting features, as these are set to be removed, a PWMS is required with features soft felled and works carried out under best practice.
- 5.28 The species assemblage and level of activity identified on Site during the survey period was generally unexceptional and not considered to be significant. The boundary and internal hedgerows were identified as the main corridors of movement for commuting and foraging bats.
- 5.29 Whilst Nathusius' pipistrelle and barbastelle was identified utilising the Site, they were not confirmed to be utilising the Site in significant numbers. Proposals demonstrate that the site will implement the creation of a range of diverse habitats across the Site enhancing the sites foraging and commuting potential. In addition, the habitats utilised the most by these species (hedgerows) will be incorporated into green corridors throughout the site improving links throughout the development and into the wider landscape.
- 5.30 The grassland habitats which dominate the Site are considered to provide negligible value for bats. The hedgerows present were assessed as providing higher commuting and foraging value for bats and they are to be largely lost within the development proposals. Due to the size of the Site and areas of green infrastructure to be created, it is considered that impacts can be mitigated, through the creation of new areas of native species-rich grassland, broadleaved tree planting and the creation of waterbodies within the areas of public open space throughout the development.
- 5.31 New habitat creation and other mitigation measures, including the appropriate use of artificial lighting and provision of bat boxes, should also be implemented to minimise potential impacts and provide new foraging, commuting and roosting opportunities.

- 5.32 In conclusion, if mitigation and enhancements are implemented within the development, this will ensure the Favourable Conservation Status of all species identified using the Site over the survey will be maintained. The proposals may properly be considered to accord with the requirements of the Conservation of Habitats & Species Regulations 2017 (*as amended*) and the NPPF (2024).



N

0

100

200 m

Site Boundary

PRF-I

PRF-M

Trees Nocturnally Surveyed

date	14/04/25	drwn/chkd	DPL / LFR
client	Caddick Developments Limited		
project	Land at Junction 22 of the M1, Cliffe Hill Farm		
title	AERIAL ASSESSMENT RESULTS PLAN	scale	1:3,500 @ A3
number	FIGURE 1	rev	-



N

0 10 20 m

Site Boundary

Trees Surveyed

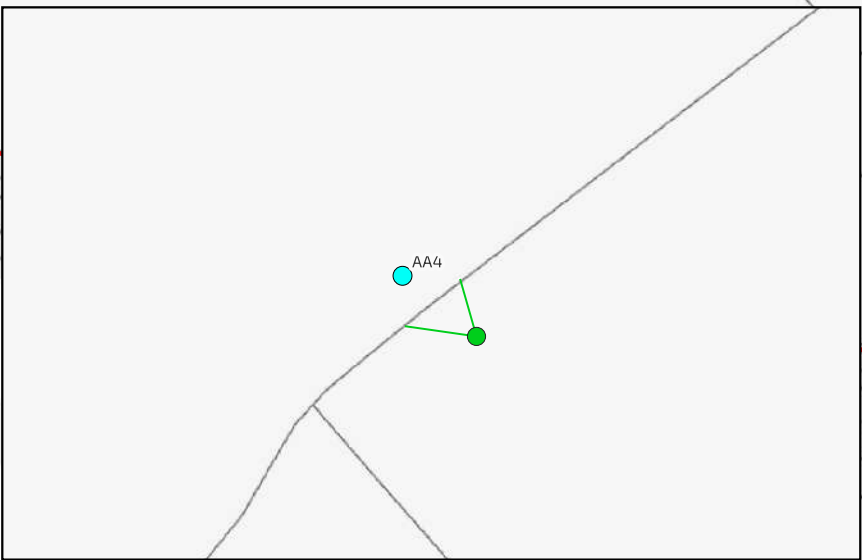
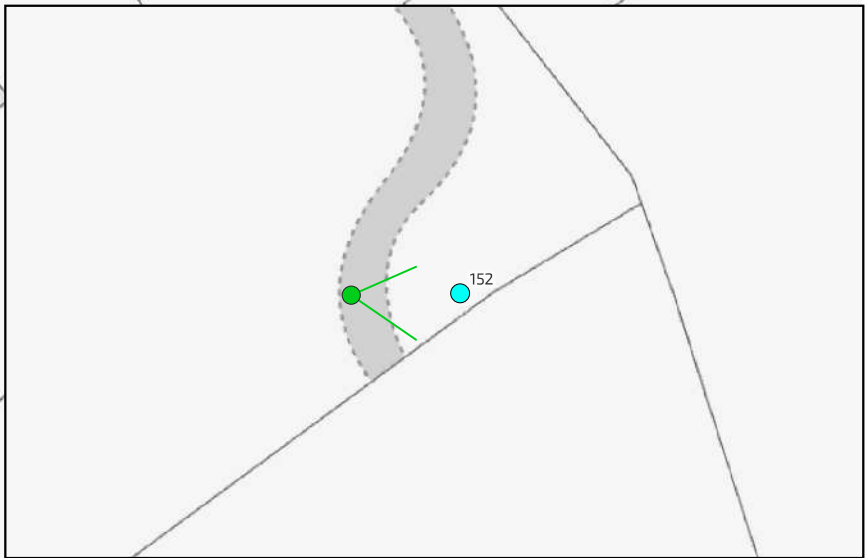
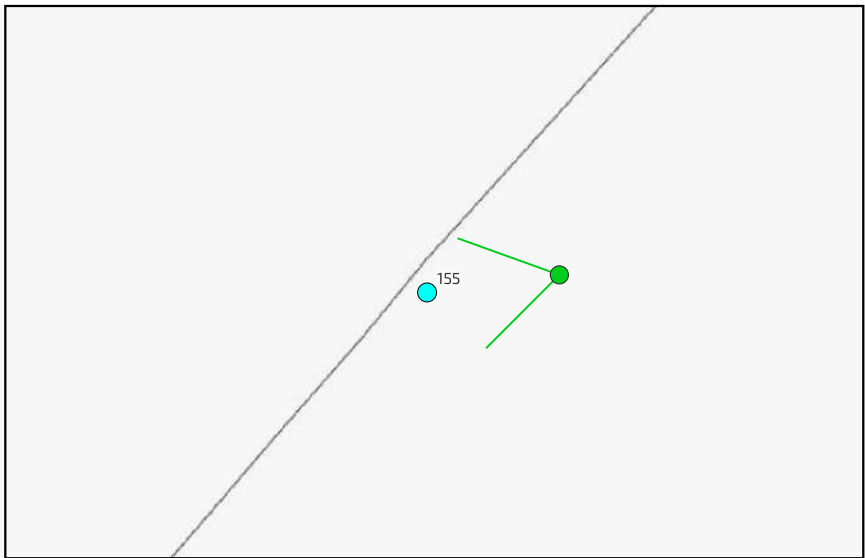
Surveyor Location

Surveyor Eyeline

Buildings Bat Potential

Mod

Neg



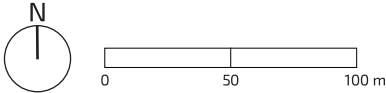
date	10/06/25	drwn/chkd	DPL / LFR
client	Caddick Developments Limited		
project	Land at Junction 22 of the M1, Cliffe Hill Farm		
title	SURVEYOR LOCATION PLAN	scale	1:1,000 @ A3
number	FIGURE 2	rev	-



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t: 01509 672772 e: mail@fpcr.co.uk w: www.fpcr.co.uk



Key

- Site Boundary

Transect Route

Flightline Location

Start point

Finish point
- Flight Arrow

Static Locations

Bat Contacts

Common Pipistrelle

Myotis Species

Flightlines

Ref.	Time	Species Name	Passes	Behaviour
A	21.3	Common Pipistrelle	3	Commuting
A	21.37	Common Pipistrelle	2	Commuting
A1	21.4	Common Pipistrelle	3	Foraging
A2	21.44	Common Pipistrelle	Continuous	Foraging
B1	21.39	Common Pipistrelle	3	Commuting
B2	21.42	Common Pipistrelle	1	Commuting
B	21.59	Myotis Species	2	Commuting
B	22.04	Common Pipistrelle	1	Commuting

Walkover

Ref.	Time	Species Name	Passes	Behaviour
1	22.29	Common Pipistrelle	Multiple	Foraging
2	22.43	Common Pipistrelle	Multiple	Foraging
3	22.47	Common Pipistrelle	Multiple	Foraging
4	22.5	Common Pipistrelle	Multiple	Foraging
5	22.53	Common Pipistrelle	Multiple	Foraging
6	23.05	Common Pipistrelle	Multiple	Foraging
7	23.17	Common Pipistrelle	Multiple	Foraging
8	23.2	Myotis Species	1	Commuting
9	23.23	Common Pipistrelle	2	Commuting
10	23.27	Myotis Species	Multiple	Foraging
11	23.28	Common Pipistrelle	Multiple	Foraging

date

10/06/25

drwn/chkd

EH / LFR

client

Caddick Developments Limited

project

Land at Junction 22 of the M1,
Cliffe Hill Farm

title

TRANSECT RESULTS PLAN

23.05.24

scale

1:3,000 @ A3

number

rev

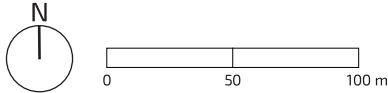
FIGURE 3



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Key

- Site Boundary

Transect Route

Flightline Location

Start point

Finish point
- Flight Arrow

Static Locations

Bat Contacts

Common Pipistrelle

Soprano Pipistrelle

Flightlines

Ref.	Time	Species Name	Passes	Behaviour
A	21.33	Soprano Pipistrelle	1	Commuting
A	21.38	Common Pipistrelle	Multiple	Foraging
A	21.44	Common Pipistrelle	1	Commuting
A	21.48	Common Pipistrelle	3	Commuting
A	21.54	Common Pipistrelle	1	Commuting
A	21.55	Soprano Pipistrelle	Multiple	Foraging
B	21.52	Common Pipistrelle	Multiple	Foraging
B	21.56	Soprano Pipistrelle	1	Commuting

Walkover

Ref.	Time	Species Name	Passes	Behaviour
1	22.04	Soprano Pipistrelle	1	Commuting
2	22.08	Common Pipistrelle	1	Commuting
3	22.09	Soprano Pipistrelle	1	Commuting
4	22.13	Common Pipistrelle	2	Commuting
5	22.25	Soprano Pipistrelle	1	Commuting
6	22.32	Soprano Pipistrelle	1	Commuting
7	22.44	Common Pipistrelle	Multiple	Foraging
8	23.02	Common Pipistrelle	Multiple	Foraging
9	23.04	Common Pipistrelle	Multiple	Foraging
10	23.09	Common Pipistrelle	2	Commuting
11	23.1	Common Pipistrelle	2	Commuting

date
10/06/25

drwn/chkd
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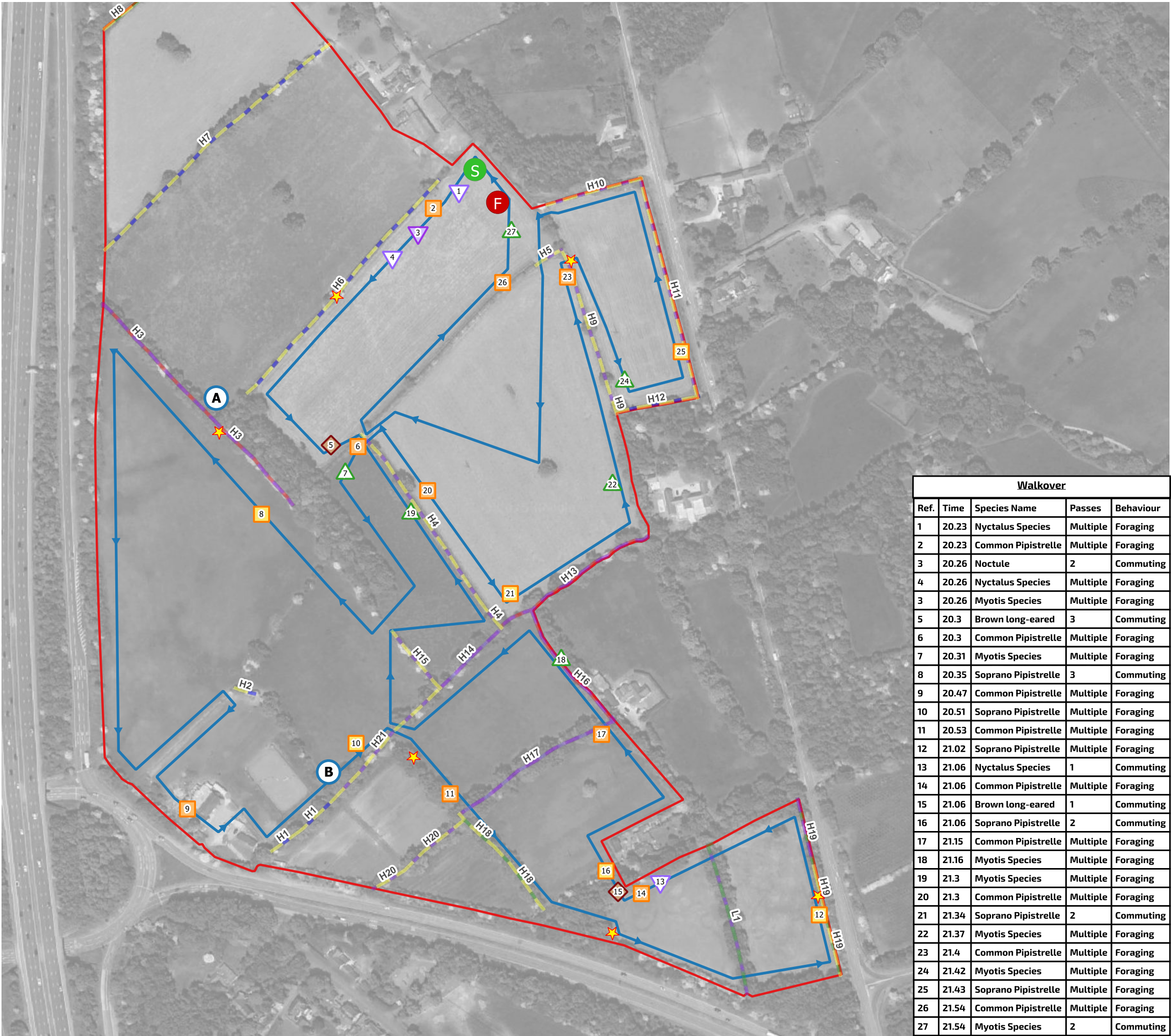
project
**Land at Junction 22 of the M1,
Cliffe Hill Farm**

title
TRANSECT RESULTS PLAN
29.07.24

scale
1:3,000 @ A3

number
FIGURE 4

rev
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050100 m

Key

Site Boundary

Transect Route

Flightline Location

Start point

Finish point

Static Locations

Soprano Pipistrelle

Brown Long-eared

Myotis Species

Nyctalus Species

Noctule

Bat Contacts

Common Pipistrelle

Flightlines

Ref.	Time	Species Name	Passes	Behaviour
A	19.38	Noctule	Multiple	Foraging
A	19.42	Common Pipistrelle	Multiple	Foraging
A	19.43	Soprano Pipistrelle	2	Commuting
A	19.48	Nyctalus Species	Multiple	Foraging
A	19.49	Common Pipistrelle	2	Commuting
A	19.49	Soprano Pipistrelle	Multiple	Foraging
A	19.51	Common Pipistrelle	2	Commuting
A	19.53	Noctule	Multiple	Foraging
A	19.54	Nyctalus Species	Multiple	Foraging
A	19.54	Common Pipistrelle	Continuous	Foraging
A	19.54	Soprano Pipistrelle	Multiple	Foraging
A	19.59	Nyctalus Species	3	Commuting
A	19.59	Noctule	1	Commuting
A	19.59	Soprano Pipistrelle	Continuous	Foraging
A	20.06	Noctule	2	Commuting
A	20.06	Nyctalus Species	2	Commuting

Walkover				
Ref.	Time	Species Name	Passes	Behaviour
1	20.23	Nyctalus Species	Multiple	Foraging
2	20.23	Common Pipistrelle	Multiple	Foraging
3	20.26	Noctule	2	Commuting
4	20.26	Nyctalus Species	Multiple	Foraging
3	20.26	Myotis Species	Multiple	Foraging
5	20.3	Brown long-eared	3	Commuting
6	20.3	Common Pipistrelle	Multiple	Foraging
7	20.31	Myotis Species	Multiple	Foraging
8	20.35	Soprano Pipistrelle	3	Commuting
9	20.47	Common Pipistrelle	Multiple	Foraging
10	20.51	Soprano Pipistrelle	Multiple	Foraging
11	20.53	Common Pipistrelle	Multiple	Foraging
12	21.02	Soprano Pipistrelle	Multiple	Foraging
13	21.06	Nyctalus Species	1	Commuting
14	21.06	Common Pipistrelle	Multiple	Foraging
15	21.06	Brown long-eared	1	Commuting
16	21.06	Soprano Pipistrelle	2	Commuting
17	21.15	Common Pipistrelle	Multiple	Foraging
18	21.16	Myotis Species	Multiple	Foraging
19	21.3	Myotis Species	Multiple	Foraging
20	21.3	Common Pipistrelle	Multiple	Foraging
21	21.34	Soprano Pipistrelle	2	Commuting
22	21.37	Myotis Species	Multiple	Foraging
23	21.4	Common Pipistrelle	Multiple	Foraging
24	21.42	Myotis Species	Multiple	Foraging
25	21.43	Soprano Pipistrelle	Multiple	Foraging
26	21.54	Common Pipistrelle	Multiple	Foraging
27	21.54	Myotis Species	2	Commuting

date

10/06/25

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project

Land at Junction 22 of the M1,
Cliffe Hill Farm

title

TRANSECT RESULTS PLAN

scale

1:3,000 @ A3

17.09.24

number

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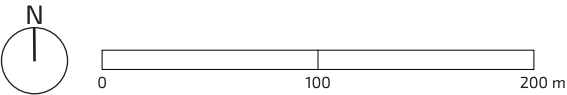
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FIGURE 5

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- Site Boundary
- Static Locations
- Line of trees
- Native hedgerow
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Species-rich native hedgerow
- Species-rich native hedgerow with trees
- Species-rich native hedgerow with trees - associated with bank or ditch

date 10/06/25
drwn/chkd DPL / LFR

client
Caddick Developments Limited

project
**Land at Junction 22 of the M1,
Cliffe Hill Farm**

title
STATIC LOCATION PLAN

scale
1:3,500 @ A3

number
FIGURE 6

rev
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Appendix A – Darkest Point of Survey

 26.06.24	 26.06.24	 26.06.24	 26.06.24
 26.06.24	 26.06.24	 26.06.24	 26.06.24
 22.08.24	 22.08.24	 22.08.24	 22.08.24
 22.08.24	 22.08.24	 22.08.24	 22.08.24



22.08.24



22.08.24



22.08.24



22.08.24



22.08.24



22.08.24



22.08.24



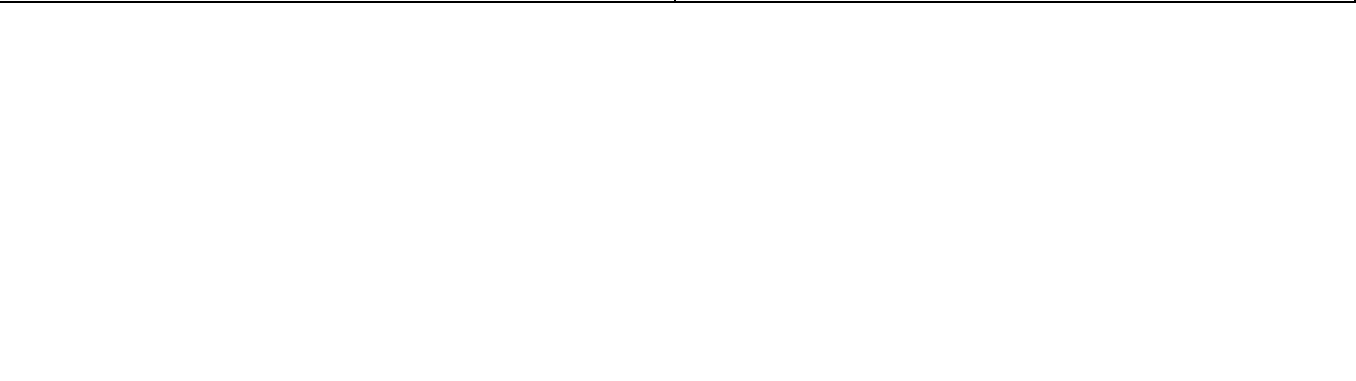
22.08.24



22.08.24



22.08.24



Appendix B – Building Descriptions

Ref	External description	Other external features of bat interest	Potential bat access points	Internal description	Evidence/Potential
B1	Single storey, brick-built bungalow with pitched concrete pantile roof.	Brick built chimneys, gables, barge boards, soffits, fascias and flashing.	Occasional gaps in lifted for decayed soffits. Occasional gaps under lifted/loose or missing tiles	Roof void c.3m in height, c.5m wide and c.10m long. King post timber roof beams with bituminous roofing felt.	No evidence, moderate potential.
B2	Single storey, brick-built kennels with single-pitch composite corrugated sheet roof.	Gables and fascias.	Gaps in end of roof sheeting and in open kennel section.	No roof void. Exposed roof sheets and timber beams.	No evidence, negligible potential.
B3	Single-storey, brick-built garage with single-pitched corrugated composite sheet roof.	Gables and open entrance at front.	Open entrance and gaps in gable end verges at join of roof sheet and brickwork.	Open and light interior with no roof void. Exposed roof sheets and timber roof beams	No evidence, negligible potential.
B4	Brick and stone-built barn with pitched corrugated composite sheet roof. Derelict concrete block section with collapsed roof to east.	Gables and skylights	Gaps in brick and stonework. Some sections of loose or missing roof sheet.	No roof void. Exposed timber roof beams and roof sheeting. Relatively light and open interior but gaps in brick and stonework provide increased potential for bats (also in the collapsed section to east).	No evidence, moderate potential.
B5, B6 and B10	Single storey metal prefabricated structure with pitched corrugated composite sheet/metal roof.	Gables, timber cladding and open doors.	Open doors.	Open and light interior with no roof void. Exposed roof sheets and timber roof beams	No evidence, negligible potential.
B7 and B11	Prefabricated timber-built stables with corrugated composite sheet roof.	Gables, timber cladding and open doors.	Open doors.	Open and light interior with no roof void. Exposed roof sheets and timber roof beams	No evidence, negligible potential.
B8	Single storey, open-sided concrete barn/shed with pitched corrugated composite sheet roof.	Concrete breeze block wall up to 3m in height. Gables, timber cladding and open sides.	Open sides.	Open and light interior with no roof void. Exposed roof sheets and metal/timber roof beams. Potential for bats within missing mortar in internal concrete walls.	No evidence, moderate potential.
B9	Prefabricated static caravan.	Gables, barge boards and fascias.	None.	No accessible roof void, small, sealed void c.10c, between ceiling and roof.	No evidence, negligible potential.
B12	Single-storey, timber-built prefabricated stable with pitched corrugated metal/composite sheet roof.	Gables and skylights.	Open front.	Open and light interior with no roof void. Exposed roof sheets and timber roof beams	No evidence, negligible potential.

Appendix C – Static Results

Unit No.	Start Date	End Date	Survey Hours	Total Av. per hour	Total Registrations	Common Pipistrelle			Soprano Pipistrelle			Myotis Species			Brown Long-eared			Nyctalus Species			Noctule			Pipistrelle Species			Nathusius' pipistrelle			Leisler's			Barbastelle			
						Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	Period Total	Peak Count	Av. Per Hour	
U3	23/05/2024 28/05/2024		43:16:46	27.750	1201	986	381	22.782	74	33	1.710	128	48	2.958	0	0	0	5	5	0.116	7	3	0.162	0	0	0	1	1	0.023	0	0	0	0	0	0	
U4			43:16:46	39.880	1726	749	380	17.306	786	419	18.161	175	70	4.043	3	2	0.069	6	2	0.139	4	2	0.092	3	1	0.069	0	0	0	0	0	0	0	0	0	
U2			43:16:46	8.318	360	326	114	7.532	22	8	0.508	0	0	0	2	2	0.046	6	3	0.139	4	2	0.092	0	0	0	0	0	0	0	0	0	0	0	0	
U7			43:16:46	105.200	4553	4488	1007	103.698	9	3	0.208	14	5	0.323	17	7	0.393	4	2	0.092	0	0	0	18	7	0.416	3	3	0.069	0	0	0	0	0	0	
U8			43:16:46	92.261	3993	3638	1229	84.058	316	226	7.301	20	6	0.462	9	3	0.208	3	2	0.069	5	3	0.116	1	1	0.023	1	1	0.023	0	0	0	0	0	0	
U9			43:16:46	45.148	1954	1936	739	44.733	3	1	0.069	1	1	0.023	4	2	0.092	9	5	0.208	0	0	0	1	1	0.023	0	0	0	0	0	0	0	0	0	
U29	21/06/2024 26/06/2024		40:44:17	14.802	603	319	111	7.831	144	43	3.535	70	35	1.718	7	3	0.172	5	5	0.123	54	24	1.326	4	2	0.098	0	0	0	0	0	0	0	0	0	
U30			40:44:17	12.323	502	362	144	8.886	54	28	1.326	52	23	1.276	6	3	0.147	17	5	0.417	8	5	0.196	2	1	0.049	0	0	0	1	1	0.025	0	0	0	
U31			40:44:17	45.559	1856	1320	439	32.402	175	121	4.296	324	148	7.953	3	2	0.074	28	9	0.687	5	2	0.123	1	1	0.025	0	0	0	0	0	0	0	0	0	
U32			40:44:17	32.770	1335	1272	526	31.224	23	7	0.565	10	6	0.245	8	4	0.196	6	3	0.147	15	6	0.368	1	1	0.025	0	0	0	0	0	0	0	0	0	
U33			16:17:07	0.061	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.061	0	0	0	0	0	0	0	0	0	0	0	0	
U34			40:44:17	7.683	313	257	85	6.309	26	9	0.638	3	2	0.074	3	2	0.074	11	3	0.270	13	6	0.319	0	0	0	0	0	0	0	0	0	0	0	0	0
U16	24/07/2024 29/07/2024		46:05:41	27.400	1263	1192	544	25.860	29	13	0.629	5	4	0.108	6	3	0.130	19	11	0.412	11	3	0.239	1	1	0.022	0	0	0	0	0	0	0	0	0	
U17			46:05:41	40.569	1870	1669	631	36.208	133	65	2.885	20	7	0.434	13	4	0.282	23	7	0.499	8	2	0.174	3	1	0.065	0	0	0	0	0	0	1	1	0.022	
U26			46:05:41	70.485	3249	2524	925	54.757	635	575	13.776	34	17	0.738	12	4	0.260	42	11	0.911	2	1	0.043	0	0	0	0	0	0	0	0	0	0	0	0	
U16	22/08/2024 27/08/2024		54:49:17	57.167	3134	2286	685	41.699	784	335	14.301	37	11	0.675	13	6	0.237	8	3	0.146	4	3	0.073	2	2	0.036	0	0	0	0	0	0	0	0	0	
U17			54:49:17	28.547	1565	1401	803	25.556	75	24	1.368	18	9	0.328	29	8	0.529	16	6	0.292	17	11	0.310	9	5	0.164	0	0	0	0	0	0	0	0	0	
U18			54:49:17	6.731	369	130	62	2.371	157	85	2.864	44	15	0.803	21	6	0.383	2	2	0.036	11	6	0.201	4	3	0.073	0	0	0	0	0	0	0	0	0	
U20			54:49:17	1.934	106	18	7	0.328	35	24	0.638	20	7	0.365	19	9	0.347	5	2	0.091	7	3	0.128	2	1	0.036	0	0	0	0	0	0	0	0	0	
U21			54:49:17	13.097	718	519	246	9.467	38	17	0.693	36	25	0.657	65	27	1.186	46	37	0.839	14	6	0.255	0	0	0	0	0	0	0	0	0	0	0	0	
U19A			43:43:33	121.004	5291	5221	1741	119.403	16	6	0.366	8	4	0.183	26	15	0.595	12	8	0.274	3	2	0.069	5	2	0.114	0	0	0	0	0	0	0	0	0	0
U19B			55:48:26	102.119	5699	5250	1892	94.074	114	43	2.043	251	176	4.498	60	22	1.075	7	4	0.125	10	5	0.179	7	4	0.125	0	0	0	0	0	0	0	0	0	0
U11	12/09/2024 17/09/2024		61:50:58	27.615	1708	1571	1003	25.400	43	23	0.695	29	11	0.469	31	10	0.501	11	7	0.178	15	7	0.243	8	5	0.129	0	0	0	0	0	0	0	0	0	
U21			61:50:58	5.594	346	30	12	0.485	216	200	3.492	72	23	1.164	19	5	0.307	5	2	0.081	4	2	0.065	0	0	0	0	0	0	0	0	0	0	0		
U37			61:50:58	16.443	1017	951	754	15.376	25	13	0.404	12	4	0.194	13	7	0.210	3	3	0.049	7	4	0.113	6	6	0.097	0	0	0	0	0	0	0	0	0	
U38			61:50:58	5.934	367	215	94	3.476	77	38	1.245	45	12	0.728	19	7	0.307	6	3	0.097	3	3	0.049	2	1	0.032	0	0	0	0	0	0	0	0	0	
U23	17/10/2024 22/10/2024		73:41:26	4.247	313	212	72	2.877	21	9	0.285	68	27	0.923	4	2	0.054	6	2	0.081	2	2	0.027	0	0	0	0	0	0	0	0	0	0	0	0	
U24			73:41:26	4.682	345	188	136	2.551	6	3	0.081	142	83	1.927	1	1	0.014	4	2	0.054	4	4	0.054	0	0	0	0	0	0	0	0	0	0	0		
U25			73:41:26	2.551	188	172	72	2.334	1	1	0.014	3	2	0.041	3	2	0.041	5	3	0.068	4	2	0.054	0	0	0	0	0	0	0	0	0	0	0		
U28			73:41:26	5.157	380	320	98	4.342	33	18	0.448	14	8	0.190	5	3	0.068	5	2	0.068	3	1	0.041	0	0	0	0	0	0	0	0	0	0	0		
U29			73:41:30	4.845	357	274	103	3.718	18	5	0.244	47	19	0.638	10	5	0.136	6	5	0.081	2	2	0.027	0	0	0	0	0	0	0	0	0	0	0	0	
Totals:			1607:25:39	29.041	46682	39796	1892	24.758	4088	575	2.543	1702	176	1.059	431	27	0.268	331	37	0.206	247	24	0.154	80	7	0.050	5	3	0.003	1	1	0.001	1	1	0.001	