



Ecological Impact Assessment

Prepared for JMI Planning

Land to the rear of the Travelodge
Littleshaw Lane, Markfield, Leicester

February 2024

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Methods used to prepare this report, including those carried out in the field, followed The Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.

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1 INTRODUCTION

- 1.1 This report has been prepared by Fauna Forest Ecology Limited. It provides the results of an Ecological Impact Assessment (EclA). The report has been produced in connection with a planning application for proposed development on land to the rear of the Travelodge, Littleshaw Lane, Markfield, Leicester (central Ordnance Survey (OS) Reference SK 47544 11090).
- 1.2 The development proposals are described as “erection of employment units”. At present, the proposals are for outline planning, therefore precise building sizes, landscaping and hard-surfacing details are unknown at the time of producing this report. Based on the current plans there will be three relatively small units (units B1-B3) and three larger units (Units A, C and D) (Figure 1).
- 1.3 This report should be read in conjunction with the Preliminary Ecological Appraisal (PEA) prepared by Griffin Ecology in February 2021. Detailed habitat descriptions, a desk study, botanical species lists, site images and maps can be found in the PEA report. This report has been prepared to specifically address fauna-related recommendations included in the PEA report which are as follows:

A badger survey should be undertaken to fully assess the extent of the use of the site and adjoining habitats by badger. This survey should be undertaken in accordance with appropriate methodology set out in Harris et al 1989. The results of this survey should be used to assess the likely impacts of the proposed as well as inform an appropriate mitigation and enhancement strategy with respect to badger.

Where trees offering potential for bat roosting are to be directly impacted by proposals, a tree climbing inspection should be undertaken to fully assess the suitability of each tree for evidence of bat roosting. Where bat roosting is confirmed suitable roost characterisation surveys and mitigation strategy should be provided in order to inform a Natural England derogation licence where appropriate.

The site is considered likely to lay within the Core Sustenance Zones (CSZ) of nearby established bat roosts and when considering the significant barriers to dispersal created by the M1 and Little Shaw Lane to the north and east of site, this loss of foraging opportunities may adversely impact upon the ecological functionality of these roosts. As such further bat transect surveys should be undertaken, in line with industry standard guidelines, to inform an appropriate mitigation strategy and supporting Ecological Impact Assessment (EclA).

Detailed surveys for reptiles are recommended to better understand their presence or likely absence of reptiles on site. Should presence be established an assessment of population size would be necessary to best inform an appropriate mitigation strategy and supporting Ecological Impact Assessment (EclA).

- 1.4 A suite of protected fauna species surveys was carried out by Fauna Forest Ecology Limited which included the following:

- Badger *Meles meles* surveys.
- six reptile surveys (transect surveys and refugia checks).
- bat surveys.

1.5 A Biodiversity Impact Assessment (BIA) will be provided as a separate document in due course.

2 COMPETENCE OF PERSONS UNDERTAKING ASSESSMENT

David Nixon

2.1 David Nixon MSc MCIEEM MRSB holds Natural England level 3 and 4 bat licences and has extensive experience in surveying for bats as well as surveying reptiles in the UK and overseas.

Beav Binet

2.2 Beav Binet is experienced in reptile surveying and was recently involved with an adder *Vipera berus* study in the Midlands area. Beav also has extensive experience in undertaking nocturnal bat surveys.

Phil Playford

2.3 The badger surveys were carried out by Phil Playford BSc (Hons) MSc MCIEEM MRSB who has extensive experience in surveying for badgers, bats and other British mammals.

EclA report preparation

2.4 The EclA was written by David Nixon and Kelly Hopkins BSc (Hons) who has extensive experience in producing EclAs for a range of sites throughout the UK.

3 METHODOLOGY

Desk Study

3.1 Using freely available resources such as the online MAGIC database, an updated desk study was undertaken to acquire data in relation to local habitats and Sites of Special Scientific Interest (SSSIs). In addition to this, updated records of non-statutory sites and notable wildlife species were provided by Leicestershire and Rutland Environmental Records Centre (LRERC).

Planning Policy Context

3.2 The National Planning Policy Framework (NPPF) sets out the government's requirements for the planning system in England. The original document was published in 2012 with the most recent revision

published in February 2019. A number of sections of the NPPF are relevant when considering development proposals and the environment. As set out within Paragraph 11 of the NPPF *“Plans and decisions should apply a presumption in favour of sustainable development”*. However, Paragraph 177 goes on to state that *“The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site ..., unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.”* This report has been prepared as an appropriate assessment.

- 3.3 The general impetus of the NPPF in relation to ecology and biodiversity is for development proposals to not only minimise the impacts on biodiversity but also to provide enhancement. Paragraph 170 states that the planning system should contribute to and enhance the natural environment by *“...minimising impacts on biodiversity and providing net gains in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...”*.
- 3.4 A number of principles are set out in Paragraph 175, including that where harm cannot be adequately avoided then it should be mitigated for, or as a last resort, compensated for. Paragraph 175 also states *“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”*.
- 3.5 In addition to the NPPF, Circular 06/05 provides guidance on the application of the law relating to planning and nature conservation as it applies in England. Paragraph 98 states *“the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat”*. Whilst paragraph 99 states *“it is essential that the presence or otherwise of a protected species, and the extent that they may be affected by the proposed development, is established before planning permission is granted”*.

Local policy

- 3.6 Policy CS 13 of the Charnwood Local Plan 2011 – 2028 adopted November 2015 states that *“We will conserve and enhance our natural environment for its own value and the contribution it makes to our community and economy. We will do this by:*
 - *Supporting developments that protect biodiversity and geodiversity and those that enhance, restore or re-create biodiversity. We will expect development proposals to consider and take account of the impacts on biodiversity and geodiversity, particularly with regard to:*
 - SSSIs
 - Local Wildlife Sites (LWSs)
 - Regionally Important Geological Sites
 - UK and Local Biodiversity Action Plans

- Priority Habitats and Species
- Protected Species
- Ecological Networks

3.7 *We will only support development that results in the loss of ecological or geological features in exceptional circumstances where the benefit of development clearly outweighs the impact on ecology and geodiversity.*

3.8 *Where there are impacts on biodiversity we will require adequate mitigation; or as a last resort, compensation which results in replacement provision that is of equal or greater value and potential than that which will be lost, and is likely to result in a net gain in biodiversity.*

We will consider this by requiring development proposals to be accompanied by ecological surveys and an assessment of the impacts on biodiversity and geodiversity. We will also work with our partners to secure long term management and investment plans for biodiversity and geodiversity.”

Approach

3.9 Using baseline information captured during field surveys, data were carefully analysed to inform the assessment, undertaken by an experienced ecological consultant using professional judgement and experience when required. A worst-case-scenario approach was adopted for any uncertainties.

3.10 The objective of this EcIA is to assess whether the proposed development footprint will specifically impact upon reptiles, badger or bats. If any constraints are identified, then the objective of this report is to provide advice and mitigation actions as relevant. This EcIA reflects guidance set out by the Chartered Institute and Environmental Management’s (CIEEM) guidance for EcIA, published in 2018.

3.11 Key information used in connection with the EcIA includes local biological records, online data sources, current legislation and land-use policy review and field surveys.

Zone of Influence

3.12 The zone of influence (Zoi), as described by best practice guidance, is the area over which ecological features may be subject to significant effects as a result of the proposal. The size of the zone for the relevant desktop study and field surveys is defined in the relevant sections below and is based upon the professional judgement of the ecologist leading the appraisal. This assessment is based upon the characteristics of the site and the habitats it supports, as well as taking into consideration the wider landscape. For example, bats may not necessarily roost onsite, however loss of an important commuting feature such as a hedgerow within the boundaries of a site may lead to bats seeking alternative commuting routes. In this instance the Zoi would potentially extend beyond the site boundaries.

3.13 The ecological evaluation and impact assessment approach used here is based on Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018¹).

Features of ecological importance

3.14 Ecological features are often important for a variety of reasons and the rationale used to identify them is explained here. Importance may relate, for example, to the quality or extent of the Site or habitats therein; habitat and/ or species rarity; the extent to which such habitats and/ or species are threatened throughout their range, or to their rate of decline.

3.15 Importance should be considered within a defined geographical context. The following frame of reference has been used in this case, relying on known/ published accounts of distribution and rarity where available, and professional experience:

- International
- Regional
- County
- Local

3.16 The importance of the various habitats has been measured against published selection criteria where available and relevant. Examples of relevant criteria includes descriptions of habitats listed on Annex 1 of the Habitats Directive; Local Wildlife Site Selection Criteria; and Habitat Action Plans (HAPs) contained within Local Biodiversity Action Plans.

3.17 In assigning a level of importance to a species, it is necessary to consider their distribution and status, including a consideration of trends where relevant. Reference has therefore been made to published lists and criteria where appropriate. Examples of relevant lists and criteria include species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive or Annex 1 of the Birds Directive) and Birds of Conservation Concern (BoCC).

3.18 For the purposes of this report ecological features of local importance or greater and/ or subject to legal protection have been subject to detailed assessment. Effects on other ecological features are considered unlikely to be significant in legal or policy terms and have therefore been omitted from the assessment process.

Impact assessment

3.19 The impact assessment involves the following steps:

- Identifying and characterising potential impacts
- Incorporating measures to avoid and mitigate these impacts

¹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester

- Assessing the significance of any residual effects after mitigation
- Identifying appropriate compensation measures to offset significant residual effects (where appropriate)
- Identifying opportunities for ecological enhancement

3.20 Where appropriate, consideration has been given to the following when describing impacts:

- Positive or negative
- Extent
- Magnitude
- Duration
- Timing
- Frequency
- Reversibility

3.21 The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g., the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of wet grassland.

3.22 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure, and functions, as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Significant effects

3.23 The concept of ecological significance is addressed in paragraphs 5.24 through to 5.28 of the CIEEM guidelines (2018). Significance relates to the weight that should be attached to effects when decisions are made. For the purpose of EclA, a significant effect is an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national/ local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.

Cumulative effects

- 3.24 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a proposed development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects.
- 3.25 The potential for the proposed development to act in combination with other proposals has been assessed through a review of the Warwickshire Council planning website to ascertain whether any additional development proposals exist within 1km of the application site such that a cumulative effect may arise.

Avoidance, mitigation and compensation

- 3.26 The mitigation process is as follows:

- Avoidance
- Mitigation
- Compensation
- Enhancement

Field Surveys

Badger

- 3.27 Follow-up badger surveys were completed by Fauna Forest Ecology Limited after the PEA field visit. Phil Playford BSc (Hons) MSc MCIEEM MRSB carried out a detailed daytime assessment for evidence of badger on 4th September 2023. During the field visit, the surveyor followed the standard methods outlined in Cresswell, Harris & Jeffries (1989)² and Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.³. The surveyor walked transects across the site searching for typical badger evidence. A GPS device was used to record the location of any setts or field signs of badger activity, and any sett status was identified. Setts were classified as follows:

- Main sett: in most cases there is only one main sett for each group of badgers. Usually, main setts consist of several holes with substantial spoil heaps. Main setts often appear well-used and are obvious when redundant.
- Annexe setts: these setts are usually near the main sett, typically less than 150m away and are connected by pathways. Annexe setts are not always in use even if the main sett is.
- Subsidiary sett: most of these setts are no closer than 50m to the main sett and lack obvious paths linking to the other setts.

² http://www.mammal.org.uk/wp-content/uploads/2016/04/Surveying_Badgers_Mammal_Society.compressed.pdf

³ file:///C:/Users/david/OneDrive/Desktop/Dropbox/Fauna%20Forest%20Ecology/survey%20guides%20-%20tips%20-%20papers%20-%20sheets%20-%20survey%20sheets%20-%20tick%20sheets%20-%20other%20useful%20information/Mammals/Badger/Surveying-for-Badgers-Good-Practice-Guidelines_V1.pdf

- Outlier setts: Evidence of spoil can be found at the entrance holes but no paths to the other setts are usually evident.

Remote camera surveillance for badger

- 3.28 Two remote cameras were deployed and left to record from 5th - 20th September 2023 with a view to capture badger movement, behavioural patterns and numbers present. Table 1 below shows the position of each camera and other relevant information.

Table 1: Static surveillance camera positioning

Camera No.	Approx. grid. ref	Direction	Notes
1	SK 47511 11030	West of sett	Positioned near sett overlooking camera 2. Grid ref. is approx.
2	SK 47517 11035	East	Directed towards sett. Grid ref. is approx.

Reptile surveys

- 3.29 Reptile surveys should be undertaken in optimum weather conditions in temperatures between 10 to 17 degrees C, ideally during intermittent sunny periods and during the main reptile season from March to October. To aid detection, a combination of refugia are deployed in suitable locations where reptiles are likely to occur. They usually include a mix of felt squares and corrugated tin sheets. Reptiles are attracted to refugia for thermoregulation. In addition to use of refugia, it is also important to use walking transects as part of the survey methodology, as reptiles will actively bask when temperatures beneath refugia become too warm. For this site, a reptile survey transect route was plotted using alphabetical transect marker points. Each transect involved the surveyor walking slowly towards each marker points in alphabetical order (Figure 4). The standard methodology included in the Herpetofauna Workers' Manual recommends that sites are visited at least five times in suitable weather conditions to give a reasonable chance of finding all the reptile species present⁴.
- 3.30 A total of 60 refugia were deployed on 16th August 2023. Additional refugia were deployed on 6th September 2023 as replacements because some were removed from site. They were positioned along the hedge margins and in locations within the grassland that were suitable for use by reptiles (see limitations) (Figure 3). Where possible, they were well hidden in vegetation or beneath the hedge but equally, they were still exposed to sun. Refugia locations are listed in the below table.

⁴ Gent, A.H., & Gibson, S.D., eds. 172165267998 *Herpetofauna Workers' Manual*. Peterborough, Joint Nature Conservation Committee

Table 2: Reptile refugia locations

Refugia Number	Grid Reference
1	SK47620 11227
2	SK47616 11246
3	SK47605 11258
4	SK47584 11274
5	SK47568 11285
6	SK47551 11284
7	SK47551 11281
8	SK47546 11272
9	SK47538 11265
10	SK47531 11260
11	SK47526 11250
12	SK47542 11234
13	SK47543 11237
14	SK47562 11230
15	SK47573 11208
16	SK47513 11235
17	SK47518 11225
18	SK47515 11207
19	SK47493 11194
20	SK47490 11158
21	SK47460 11142
22	SK47464 11136
23	SK47442 11119
24	SK47453 11095
25	SK47424 11100
26	SK47431 11058
27	SK47483 11140
28	SK47493 11130
29	SK47512 11132
30	SK47518 11130
31	SK47544 11129
32	SK47559 11109
33	SK47553 11108
34	SK47547 11100
35	SK47542 11088

36	SK47544 11080
37	SK47567 11110
38	SK47588 11111
39	SK47606 11096
40	SK47613 11090
41	SK47573 10990
42	SK47584 10976
43	SK47585 11013
44	SK47605 11037
45	SK47617 11061
46	SK47623 11073
47	SK47623 11060
48	SK47641 11054
49	SK47665 11036
50	SK47708 11018
51	SK47632 11050
52	SK47633 11039
53	SK47614 11019
54	SK47614 11004
55	SK47605 10985
56	SK47577 11076
57	SK47581 11059
58	SK47575 11071
59	SK47578 11075
60	SK47581 11071

- 3.31 Refugia were given two weeks to bed-in before inspection. The refugia were checked on eight separate occasions. Surveys were carried out by ecologists David Nixon and Beav Binet.

Transect bat surveys

- 3.32 Monthly transect surveys were carried out during August, September and October. Transect routes were designed during the desk study with a view to determine bat activity in a variety of parts of the site, such as along woodland edge as well as in open grassland areas (Figure 14). Point count stops were mapped so the surveyor could make regular five-minute (approximately) stops along the route during the survey. All bat activity was recorded during each of these point count stops.
- 3.33 Each transect survey commenced at sunset and continued for approximately two hours. The surveyor walked relatively slowly during the survey, using a full-spectrum bat detector to record calls. Detectors

included Anabat Scout and Echo Meter Touch 2 PRO devices coupled to either Apple iPhones or Samsung phones.

- 3.34 Based on the habitat quality in terms of suitability for bats, a single survey should have been undertaken each month (habitats were considered to overall provide moderate suitability for bats). However, given the transect surveys commenced during the second half of the survey season (14th August 2023), two were completed during September and October.

Static monitoring

- 3.35 In addition to transect surveys, two Song Meter Mini static monitoring devices were deployed in discreet locations where bats were likely to commute and forage. Monitoring was carried out from August through to October 2023 (see limitations relating to theft of memory cards in August). Monitoring dates were as follows:

Monitoring device unit 1: SMU00355

- 14th – 18th August 2023 (ref. point 1 in Figure 5)
- 9th – 13th September 2023 (ref. point 4 in Figure 5)
- 28th September 2023 – 2nd October 2023 (ref. point 3 in Figure 5)
- 25th – 29th October 2023 (ref. point 2 in Figure 5)

Monitoring device unit 2: SMU00719

- 14th – 18th August 2023 (ref. point 5 in Figure 5)
- 9th – 13th September 2023 (ref. point 8 in Figure 5)
- 28th September 2023 – 2nd October 2023 (ref. point 7 in Figure 5)
- 25th – 29th October 2023 (ref. point 6 in Figure 5)

- 3.36 Each device was placed in four separate locations along the transect routes. Additional monitoring was carried out to maximize data collection, as best practice guidelines recommended only five days of monitoring per month for sites of moderate quality for bats. The additional monitoring was due to theft of SD cards during August and given the monitoring and transects commenced during the second half of the survey season.

- 3.37 Kaleidoscope Pro was used to analyse all bat calls recorded during this period.

4 BASELINE ECOLOGICAL CONDITIONS AND SURVEY RESULTS

Desk Study

- 4.1 Details of designated sites provided by LRERC will be included in the BIA.
- 4.2 Records of badger, reptiles and bats from within a 1km radius of the site were provided in January 2024 and are listed below in Table 3:

Table 3: Records for badger, reptiles and bats provided by LRERC

Species	Number of records within 1km radius	Closest record to site (m)
Badger	12	157
Unknown bat species	8	845
Common pipistrelle	33	447
Soprano pipistrelle	10	477
Nathusius' pipistrelle	5	863
Brown long-eared	6	996
Noctule	9	863
Leisler's	3	1007
Natterer's	2	863
Whiskered/Brandt's	1	520
Whiskered	2	973
Brandt's	1	973
Daubenton's	4	863
<i>Myotis</i> species	3	863
Serotine	3	863
Common lizard	2	1049

Field surveys

Badger survey results

- 4.3 The site itself and habitats beyond the boundaries represented suitable foraging and commuting habitats for badger. Many of the surrounding fields and those onsite were bound by mature hedgerows that provided a network of connectivity to the wider landscape. These hedgerows provided linear corridors for animals such as badger. The grassland habitats provided badger with open spaces where the species could forage freely. Moreover, local woodlands and hedgerows, including those onsite, provided opportunity for the species to create setts.

- 4.4 The field survey carried out on the 4th September 2023 found the one hole outlier sett at grid reference SK47511 11030 (Figure 1) described by the previous survey carried out by Griffin Ecology in February 2021. The entrance was overgrown with bramble *Rubus fruticosus* agg and ivy *Hedera helix*. It was filled with leaves and not in current use (occupied within the last 21 days of the survey date).



Image 1: One hole outlier sett at SK 47511 11030 not in current use. Entrance filled with debris and overgrown by brambles and ivy.

- 4.5 Additionally, two further holes were found within the same woodland at grid references SK47536 10991 and SK47610 10936. They were both small at less than 300mm in diameter and were both likely to have been created by rabbit *Oryctolagus cuniculus*. They were both filled in with leaves and debris and did not appear to be currently in use (Image group 2).



Image group 2: Photographs of rabbit holes at SK47536 10991 and SK47610 10936.

- 4.6 The two inactive holes mentioned in the PEA report were not found and no evidence was found for badger setts within 50m of the site boundaries. Both during the field survey and subsequent nocturnal bat transects on the 28th September, 9th October and 25th October found no field signs for badgers on site, although muntjac deer *Muntiacus reevesi* were observed and heard along the southern boundary adjacent to the quarry margins.
- 4.7 No badgers were found to use the sett while the remote camera traps were running between 5th and 20th September 2023.

Reptile survey results

- 4.8 At the time of the surveys most of the semi-natural habitats onsite were considered to provide a suitable environment for reptiles. The hedgerows, scrub and tall ruderal provided opportunity for commuting, foraging and shelter. The shorter tussocky vegetation adjacent to the hedgerows had potential to be used for basking.

Table 4: Reptile survey conditions

Date	Start	Finish	Temp °C	Humidity	Wind	Cloud	Rain	Notes
22/08/2023	08:00	09:15	17	80%	10km/h	40%	Dry	N/A
29/08/2023	08:00	09:30	15	75%	19km/h	50%	Dry	N/A
10/09/2023	09:00	10:00	14	75%	10km/h	10%	Dry	N/A
19/09/2023	08:50	09:50	16	75%	10km/h	100%	Dry	N/A
23/09/2023	16:15	17:30	15	70%	12km/h	10%	Dry	N/A
30/09/2023	10:30	11:35	14	70%	15km/h	60%	Dry	N/A
05/10/2023	10:00	11:10	11	65%	20km/h	50%	Dry	N/A
10/10/2023	10.30	11:50	13	60%	15km/h	60%	Dry	N/A

- 4.9 No evidence of reptiles was discovered during the surveys.

Site assessment to establish 'suitability habitat for bats'

- 4.10 The site was considered to provide moderate suitability habitat for bats, largely because the woodland constituted to only a small percentage of the overall site and none of that woodland was within the area of impact. Additionally, with exception to the hedgerows, much of the site was dominated by grassland habitat. Finally, there may have potentially been alternative commuting and foraging corridors in the surrounding habitat that were used more extensively in comparison with the site, because a number of connectivity barriers associated with the site were identified during the desk study, such as the local road networks for instance.

Transect bat survey results

Table 5: Transect bat survey conditions

Date	Sunset	Start	Finish	Temp °C	Humidity	Wind	Cloud	Rain	Notes
14/08/2023	20:34	20:34	22:52	17	80%	20km/h	95%	Dry	N/A
04/09/2023	19:44	19:44	22:20	26	75%	10km/h	0%	Dry	N/A
28/09/2023	18:50	18:50	20:54	14	80	10km/h	100%	Dry	N/A
09/10/2023	18:24	18:24	20:40	15	75%	15km/h	0%	Dry	N/A
25/10/2023	17:44	17:44	19:55	11	70%	12km/h	10%	Dry	N/A

4.11 Results from the bat transect surveys are presented below in tables 6-10. Results show that over the course of the five transect surveys, bats utilised the linear corridors between all point counts.

14th August 2023

Table 6: Transect bat survey point counts – 14th August 2023

Point count	Time	Species	Behaviour	Number of passes
1	20:34			
2	20:42			
3	20:49			
4	20:57	Common pipistrelle	Commuting	1
5	21:06	Common pipistrelle	Commuting	5
		Noctule	Commuting	1
6	21:12	Common pipistrelle	Commuting	4
7	21:18	Common pipistrelle	Commuting	2
8	21:23	Common pipistrelle	Commuting	3
		Noctule	Commuting	1
		Brown long-eared	Commuting	1
9	21:28	Common pipistrelle	Foraging	4
10	21:35	Common pipistrelle	Foraging	1
11	21:40	Common pipistrelle	Foraging	2
		Noctule	Commuting	1
1	21:54	Common pipistrelle	Foraging	1
2	21:58			
3	22:03	Noctule	Commuting	1
4	22:09			
5	22:15			

6	22:19	Common pipistrelle	Foraging	2
		Noctule	Commuting	1
7	22:24	Soprano pipistrelle	Commuting	1
8	22:32			
9	22:36	Common pipistrelle	Foraging	1
10	22:41	Common pipistrelle	Commuting	1
11	22:45	Common pipistrelle	Commuting and foraging	4
Finish	22:52			

4th September 2023

Table 7: Transect bat survey point counts – 4th September 2023

Point count	Time	Species	Behaviour	Number of passes
11	19:44			
1	19:56			
2	20:03	Noctule	Foraging	1
3	20:10			
4	20:18	Soprano pipistrelle	Foraging	2
5	20:22	Common pipistrelle	Foraging	1
6	20:28	Soprano pipistrelle	Foraging	1
7	20:36	Soprano pipistrelle	Foraging	1
8	20:41			
9	20:48			
10	20:53			
11	21:00			
1	21:09			
2	21:11			
3	21:24			
4	21:29			
5	21:34			
6	21:42			
7	21:53			
8	22:02			
9	22:07			
10	22:15			
Finish	22:20			

28th September 2023

Table 8: Transect bat survey point counts – 28th September 2023

Point count	Time	Species	Behaviour	Number of passes
7	18:50			
8	18:55			
9	19:04			
10	19:15	Common pipistrelle	Commuting and Foraging	1
11	19:19	Common pipistrelle	Foraging	1
1	19:25	Common pipistrelle	Foraging	1
2	19:29			
3	19:34	Common pipistrelle	Foraging	1
4	19:41	Noctule	Commuting	1
5	19:49			
6	19:55	Noctule	Commuting	1
7	19:59			
8	20:05	Common pipistrelle	Foraging	2
9	20:09			
10	20:13			
11	20:20			
1	20:27			
2	20:32			
3	20:40			
4	20:45			
5	20:48			
6	20:50			
Finish	20:54			

9th October 2023

Table 9: Transect bat survey point counts – 9th October 2023

Point count	Time	Species	Behaviour	Number of passes
3	18:24			
4	18:32			
5	18:38			
6	18:44			

7	18:51	Common pipistrelle	Foraging	1
8	18:58			
9	19:03			
10	19:08			
11	19:12			
1	19:17			
2	19:24	Common pipistrelle	Foraging	2
3	19:29			
4	19:35	Common pipistrelle	Foraging	2
5	19:41	Common pipistrelle	Foraging	1
6	19:53	Common pipistrelle	Foraging	1
7	20:04	Common pipistrelle	Foraging	1
8	20:12	Common pipistrelle	Foraging	1
9	20:16			
10	20:22			
11	20:24			
1	20:29			
2	20:35			
Finish	20:40			

25th October 2023

Table 10: Transect bat survey point counts – 25th October 2023

Point count	Time	Species	Behaviour	Number of passes
2	17:44			
3	17:55			
4	18:01			
5	18:07			
6	18:13			
7	18:18	Common pipistrelle	Foraging	1
8	18:22	Common pipistrelle	Foraging	1
9	18:26	Common pipistrelle	Foraging	1
10	18:33	Common pipistrelle	Foraging	1
11	18:42	Common pipistrelle	Foraging	1
1	18:47	Common pipistrelle	Foraging	1
2	18:54			
3	18:59			

4	19:05			
5	19:11			
6	19:17			
7	19:22			
8	19:27			
9	19:34			
10	19:41			
11	19:46			
1	19:51			
Finish	19:55			

Static monitoring results

4.12 Static monitoring results are presented below in tables 11-16. Results show that pipistrelle bats accounted for 92% of the bats recorded. No annex II species were recorded and all bat species are considered common and widespread in the area. Static SMU00355 25th-29th October 2023 was the static with most bat activity recorded with 1448 bat calls recorded. With just 84 bat calls, static SMU00719 25th-29th October 2023 had the lowest level of activity on site.

*MYO = *Myotis* species, Nn = noctule, PPI = common pipistrelle, PPY = soprano pipistrelle, Pa = brown long-eared, Nyctalus = *Nyctalus* species

Table 11: SMU00355: 9th – 13th September 2023

Row Labels	MYO	MYO,Nn	Nn	Pa	Pa,PPI	PPI	PPI,Nn	PPI,Pa	PPI,PPI	PPI,PPY	PPI,PPY,MYO	PPY	(blank)	Grand Total
Sep	10		13	18	1	413	1	2	4		1	12		475
09/09/2023	1		1	5		27					1	2		37
10/09/2023	2		8	9	1	250		1	4			3		278
11/09/2023	7		4	4		136	1	1				7		160
12/09/2023	4		6	5		100	1	1		2		4		123
13/09/2023	13	1	8	8		252						1		283
Grand Total	37	1	40	49	2	1178	3	5	8	2	2	29		1356

Table 12: SMU00355: 9th-13th October 2023

Row Labels	MYO	MYO,PPI	Nn	Nn,PPI	Pa	PPI	PPY	(blank)	Grand Total
09/10/2023	10		4	1		136	1		152
10/10/2023	4	1	3		9	89	1		107
11/10/2023	2		1		2	17			22

12/10/2023			7			17	2		26
13/10/2023						1			1
Grand Total	16	1	15	1	11	260	4		308

Table 13: SMU00355: 25th-29th October 2023

Row Labels	MYO	Nn	Pa	PPI	PPI,PPI	PPI,PPY	PPY	PPY,MYO	PPY,Nn	PPY,PPI	(blank)	Grand Total
25/10/2023	10			84								94
26/10/2023		6	1	6			7					20
27/10/2023		1		8		2	478		1	3		493
28/10/2023				15			5					20
29/10/2023				303	1	38	474	1	1	3		821
Grand Total	10	7	1	416	1	40	964	1	2	6		1448

Table 14: SMU00719: 9th September – 13th September 2023

Row Labels	MYO	Nn	Nyctalus	Pa	PPI	PPY	(blank)	Grand Total
09/09/2023	1		1	1	18	1		22
Grand Total	1	1	1	1	18	1		22

Table 15: SMU00719: 9th-13th October 2023

Row Labels	Nyctalus	Pa	PPI	PPI,Nn	PPI,Nyctalus	PPI,Pa	PPY	(blank)	Grand Total
09/10/2023	16		215	1	2	2			236
10/10/2023	6	2	4						12
11/10/2023	1		3						4
12/10/2023	1		8				2		11
13/10/2023									
Grand Total	24	2	230	1	2	2	2		263

Table 16: SMU00719: 25th-29th October 2023

Row Labels	MYO	Nn	Nyctalus	Pa	PPI	PPY	PSP	(blank)	Grand Total
25/10/2023	1								1
26/10/2023	1	3		1	6				11
27/10/2023			3	1	10	1			15
28/10/2023					4	5	1		10
29/10/2023			2		40	5			47
Grand Total	2	3	5	2	60	11	1		84

Limitations

- 4.13 Dense scrub in some parts of the site restricted searches for badger setts to a degree. The possibility of other setts existing or being created post-surveys should not be discounted.
- 4.14 Memory cards were stolen from the static devices deployed in August 2023 resulting in loss of data, although the devices themselves were not taken. This was not noticed until these devices were put back out so additional recording in August was not possible. Also, device SMU00719 appeared to malfunction during the recording period 9th-13th September 2023. During this period it recorded only on the night of 9th September. The loss of August's data and data between 9th – 13th September does not have a significant impact on the overall assessment because a worst-case scenario approach has been adopted in relation to bat mitigation onsite.

5 IMPACTS ASSESSMENT AND MITIGATION

Requirement for further ecological work

- 5.1 It is acknowledged that in the report produced by Griffin Ecology in February 2021, the following recommendation was made in relation to BNG:
- The site is located within close proximity to the Cliffe Hill Quarry SSSI and when considering this designation, the proposals are unlikely to have a significant impact on the geological value provided by this SSSI. However, the habitats associated with this quarry and those present on site are considered to offer value to a range of species and as such it is recommended that a supporting Ecological Impact Assessment (EclA) be compiled to address this. Within such an assessment, consideration should be made to the biodiversity impacts of the proposals supported by a Biodiversity Impact Assessment (BIA) using the Defra Biodiversity Metric 2.0 calculator to demonstrate how the proposals will ensure a measurable net gain in biodiversity post development in line with the relevant policy and legislation. Within this, consideration should be given to the opportunity for primary habitat creation seeking to expand and join up existing habitat patches and improve the connections between them.*
- 5.2 In view of above, the BIA document is to be prepared (using the latest metric) based on specific details relating to the scheme layout once this has been provided.

Badger

Potential impacts

- 5.3 Evidence of badger setts has been recorded online by Griffin Ecology in 2021 and during the survey carried out by Fauna Forest Ecology Limited in 2023, although not all sett entrances could be located during 2023, potentially due to the presence of dense scrub habitat within the woodland compartment. Whilst no active setts or other evidence of badgers was discovered, the possibility of the species

occurring onsite should not be discounted. There is also a potential that new sett creation could have taken place between the last site visit and works commencing.

- 5.4 Based on recent survey results, potential impacts to badger onsite include harm to individuals during the construction phase, loss of commuting and foraging habitat, pollution and disturbance by inappropriate use of nocturnal lighting.
- 5.5 It is considered the ZOI relating to badgers extends far beyond the site boundaries given the species is known to commute relatively long distances in a night. Loss of significant hedgerow sections may cause individuals to seek alternative commuting routes.
- 5.6 On the assumption badger populations utilise the site, mitigation should be implemented to ensure no harm comes to badgers during the construction phase and to ensure the species is able to commute freely across the site and disperse into the wider landscape.

Effect without mitigation

- 5.7 Absence of adequate mitigation would potentially lead to significant negative impact to badger populations at site level and it may also lead to the wider community being impacted if badgers were injured or killed during the construction phase. The wider badger community may also be impacted should the site become unusable for foraging or commuting as a result of restricting connectivity.

Required mitigation

- 5.8 Badger is protected in Britain under the *Protection of Badgers Act 1992* and *Schedule 6 of the Wildlife and Countryside Act 1981* (as amended).

The legislation affords protection to Badgers and Badger setts and makes it a criminal offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a Badger, or to attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a Badger sett; or
- to disturb a Badger when it is occupying a sett.

- 5.9 Woodland retention and creation of green infrastructure corridors are a key element of mitigating against loss of badger habitat. The proposals have been designed in such a way that there is no requirement for woodland clearance and buffer zones will be created along edges of the site to provide connectivity across the site (Landscape Plan below). These buffer zones should be created as wide as possible, they should be left to naturalise and if feasible they should be edged by species-rich hedgerows with a view to create specific corridors.



Landscape Plan

- 5.10 Prior to any works commencing onsite and arrival of work personnel a suitably qualified ecologist should carry out an additional badger survey. The purpose of this survey is to identify any changes to the existing former sett and to search for evidence of new sett creations. If additional setts are discovered, more follow-up surveys may be required and the badger mitigation strategy may need to be amended. In the unlikely event an active sett will be affected then a mitigation licence may be required from Natural England to allow works to lawfully proceed.
- 5.11 All holes created during the construction period (e.g. to lay a concrete pad) will be filled in and finalised on the same day so as not to leave any pitfall traps. If this is unavoidable, they should be left with a sloping end or ramp to allow animals that may fall in to escape.
- 5.12 Construction should be carried out in association with the Pollution Prevention Measures for Businesses⁵.
- 5.13 Each day a suitably qualified nominated worker will undertake relevant machinery checks, which may involve installing/changing drip trays for pumps and other associated machinery. Regular checks should also be carried out for oil leaks. Any oil will be appropriately disposed of. Materials associated with the project must be stored away from watercourses or long vegetation – ideally on flat hard standing habitat. If this is not possible, all materials and equipment should be securely stored to prevent run-offs.
- 5.14 Lighting should be carefully considered during the construction phase and post-development. No lighting should be directed towards hedges, any trees, and none should be allowed to spill over into the adjacent fields or the semi-natural vegetation buffer zones. If there is a requirement to install lighting, then a low-level lighting scheme should be implemented to avoid indirect disturbance to nocturnal animals that may utilise local habitats. During the development phase, it is recommended that works are not carried out after dusk and they do not commence until after dawn. Generators and machinery that emit significant noise levels must not be left to run through the night.
- 5.15 Permanent lighting associated with the scheme should be designed by a specialist lighting engineer. The lighting proposals for the development in relation to both external and internal lighting will need to take account of the requirements of badger populations with consideration given to the external lighting of buildings, pathways, car parks, socialising areas, etc., as well as light spill from buildings from windows/glazing.
- 5.16 The use of low lux intensity luminaires coupled with specialist lighting columns where lighting is tightly controlled directionally in both horizontal and vertical planes. It is often better to place column-mounted lighting on the opposite side of the feature/area to be lit. Lighting in the direction of the 'dark zone'

⁵<https://www.gov.uk/guidance/pollution-prevention-for-businesses>

should be a last resort and 'shields' can be poor at limiting light spill. Low-level bollards are not ideal as they are prone to vandalism and once vandalised can cause light spill. Maximising the use of dimmers and timers, motion sensors, etc., to avoid lights being on continuously (i.e., lit when needed) is also advised.

- 5.17 Implementation of these measures would help reduce impacts on bats from lighting associated with the development. It is advised that the lighting design be developed in conjunction with the ecologist and lighting engineer.

Significance of residual effects

- 5.18 The above measures are sufficient mitigation to avoid killing and/or injury of badgers. By implementing these measures the current population level and distribution of badgers will be maintained. There will be no detrimental impact or significant residual effect on badgers at the Local level provided the above mitigation is implemented.

Reptiles

Potential impacts

- 5.19 All native British species of reptile (of which there are 6) are listed in Schedule Five of the Wildlife and Countryside Act (1981) and as such are protected from deliberate killing, injury or trade. Therefore, where development is permitted and there will be a significant change in land use, a reasonable effort must be undertaken to remove reptiles off site to avoid committing an offence. The same act makes the trading of native reptile species a criminal offence without an appropriate licence.
- 5.20 Based on recent survey results there is minimal risk of harm to reptiles. However, should reptiles occur, potential impacts onsite include harm to individuals during the construction phase, pollution and loss of commuting and foraging habitat.
- 5.21 It is considered the ZoI relating to reptiles (should they occur) may extend far beyond the site boundaries given some species such as grass snake *Natrix helvetica* are known to commute some distance between hibernation sites and summer foraging grounds. Loss of significant hedgerow sections, scrub and tall ruderal may cause individuals to seek alternative commuting routes beyond the site boundaries.
- 5.22 Although no reptiles were recorded onsite, a worst-case scenario approach should be adopted, therefore mitigation should be implemented to ensure no harm comes to reptiles during the construction phase and to ensure they are able to commute freely across the site, bask and seek shelter when and where necessary and disperse into the wider landscape.

Effect without mitigation

- 5.23 The magnitude in which reptiles would be impacted in the absence of adequate mitigation is unknown. Based on the record search results provided by LRERC, coupled with the survey results, it is clear reptiles are rarely recorded in the local area. However, the habitats onsite have been found to provide ecological values to reptiles should they locally occur. As such, a worstcase scenario approach must be taken.
- 5.24 In view of above, it would be reasonable to state reptiles are unlikely to occur onsite but if they do, absence of appropriate mitigation would potentially lead to significant negative impact to reptile populations at site level. The wider reptile community may also be impacted if reptiles were injured or killed during the construction phase. The wider reptile community may also be impacted should the site become unusable for foraging or commuting by restricting connectivity and/or loss of basking/hibernation habitat.

Required mitigation

- 5.25 As listed in the required mitigation section for badger, any reptiles onsite will benefit from semi-natural buffer zones created along the site edges. To further reduce the risk of reptiles commuting across the area in which the core development will take place, suitable hibernacula areas should be created to provide a mix of shelter and basking spots. The new hibernacula should comprise a mound of brick rubble, boulders and logs capped with topsoil and turf. Margins will be left exposed allowing animals to access the feature. Further to the above, other smaller refugia can be created by leaving standing deadwood/logs, as well as piles of grass cuttings which will eventually compost to provide habitat suitable for use by grass snake. An example is shown below as Figure 1 and images 3 and 4:

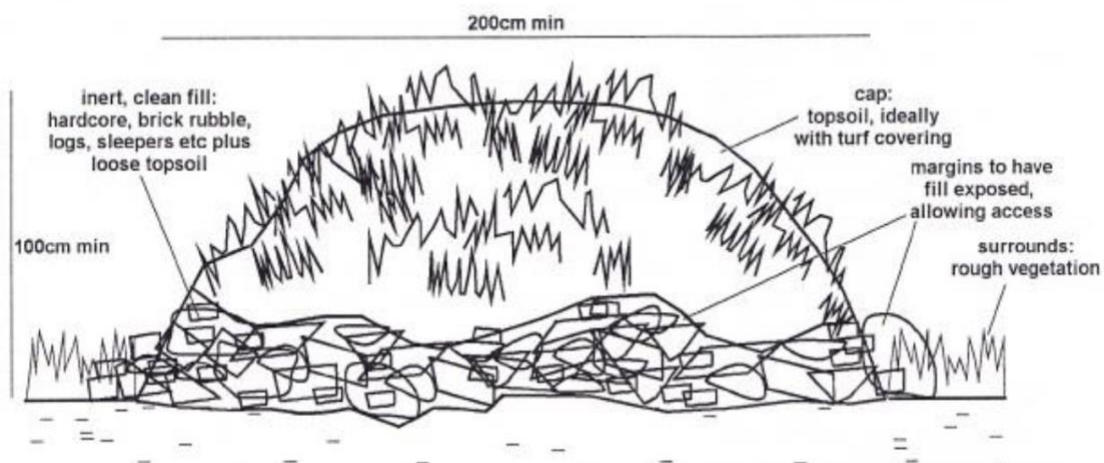


Figure 1: Reptile Refugia Design



Image 3: Example of purpose-made reptile hibernacula



Image 4: Example of purpose-made reptile hibernacula

- 5.26 Prior to clearance of site vegetation, all personnel will receive a toolbox talk by a suitably qualified ecologist. The talk will involve discussions relating to the protection reptiles are afforded in the UK, an overview of current legislation and it will outline details included in this method statement.
- 5.27 A suitably qualified ecologist will undertake a pre-works inspection of the site to search for evidence of reptiles. The inspection should be carried out when they are active (typically between late February – September) and ideally during suitable temperatures (10-24°C) to increase the chance of seeing them. Additionally, scheduled vegetation clearance of potential refugia such as rocks, logs/deadwood, brash piles and/or scrub should also take place during warmer months when reptiles are alert and able to move away from machinery, if required.
- 5.28 The ecologist will remain onsite to undertake a watching brief until all vegetation has been cleared and until confidence is given there is no risk of encountering reptiles.
- 5.29 If reptiles are encountered professional judgement will be made at the time. For example, low numbers may be safely relocated to marginal habitat, such as hedgerow corridors in an area that will not be impacted by the proposals. However, should higher numbers of reptiles be encountered, works will halt while an additional mitigation strategy is derived, which may include construction of a receptor site appropriate for reptiles.
- 5.30 Once the ecologist has declared the area free of reptiles, hand-held trimmers or cutters should be used to trim vegetation to a height of approximately 100mm. Following this, ground vegetation should be carefully raked to give additional confidence the area is free of reptiles. Cut materials should be gathered by hand and removed from the area and may be used to form compost heaps or brash piles in a location onsite that will not be impacted by the proposed development, to provide suitable sheltering or breeding environments for animals.
- 5.31 Habitats cleared of vegetation should be left for three days to allow animals to disperse.

- 5.32 Once trimmed/mowed/cut, habitats likely to be impacted should be regularly maintained to reduce the risk of reptiles utilising any one area. As a temporary measure, retained grassland areas should be regularly mown to make them less appealing for reptiles.
- 5.33 If in the unlikely event reptiles are discovered when an ecologist is not present, works should immediately halt and Fauna Forest Ecology Limited should be contacted for advice.
- 5.34 Building products should be used on the same day of delivery. If there is a requirement to store building products for extended periods of time (e.g. overnight or for more than one day), they should be stored on pallets or retained in bags on pallets to ensure refuges are not created that may attract reptiles (and other animals). Building products should also be sited on existing hard standing or bare ground where possible.
- 5.35 All holes created during the construction period (e.g. to lay a concrete pad) should be back-filled and finalised on the same day so as not to leave pitfall traps. If this is unavoidable, they should be left with a sloping end or ramp to allow any animals that may fall in to escape. Holes should be covered over at night.
- 5.36 Pipes over 100mm in diameter should be capped off at night to prevent reptiles (and other animals) from entering.
- 5.37 Spoil creation from excavations should either be spread and compacted within the area on the same day or be removed from the construction area on the same day. Spoil should not be left in loose heaps overnight.
- 5.38 Construction should be carried out in association with the Pollution Prevention Measures for Businesses⁶.
- 5.39 Each day a suitably qualified nominated worker will undertake relevant machinery checks, which may involve installing/changing drip trays for pumps and other associated machinery. Regular checks should also be carried out for oil leaks. Any oil will be appropriately disposed of. Materials associated with the project must be stored away from watercourses or long vegetation – ideally on flat hard standing habitat. If this is not possible, all materials and equipment should be securely stored to prevent run-offs.

⁶<https://www.gov.uk/guidance/pollution-prevention-for-businesses>

Significance of residual effects

- 5.40 The above measures are sufficient mitigation to avoid killing and/or injury of reptiles. By implementing these measures any current reptile populations and their distribution will be maintained. There will be no detrimental impact or significant residual effect on reptiles at the Local level provided the above mitigation is implemented.

Bats

Potential impacts

- 5.41 In England and Wales, bats and their roosts are protected under the Conservation of Species and Habitats Regulations 2017 (as amended) and the Wildlife & Countryside Act 1981 (as amended). Taken together, this legislation makes it an offence to:

- Deliberately capture (or take), injure or kill a bat
- Intentionally or recklessly disturb a group of bats where the disturbance is likely to significantly affect the ability of the animals to survive, breed, or nurture their young or likely to significantly affect the local distribution or abundance of the species whether in a roost or not
- Damage or destroy the breeding or resting place of a bat
- Possess a bat (alive or dead) or any part of a bat
- Intentionally or recklessly obstruct access to a bat roost
- Sell (or offer for sale) or exchange bats (alive or dead) or parts of bats

A roost is defined as being ‘any structure or place that is used for shelter or protection’ and since bats regularly move roost site throughout the year, a roost retains such designation whether or not bats are present at the time.

- 5.42 Potential risks to bat populations may occur as a result of habitat loss and use of inappropriate use of nocturnal lighting. No annex II bat species were recorded during the transect surveys and supplemented static monitoring and all species recorded in the area were considered common and widespread in context to the local area.
- 5.43 Whilst bat transect surveys were carried in the second half the survey season and there were limitations relating to static recordings, mitigation set out in this report has been designed on a worst-case scenario basis, regardless of species and numbers that do or are likely to utilise the site for foraging and commuting activities. As such, additional survey effort in this instance is considered unnecessary provided trees are not lopped, cut back or felled and substantial hedgerows are not removed.
- 5.44 It is considered the ZoI relating to bats will extend far beyond the site boundaries given the transient nature of bats. The majority of species will travel over 1km between roost sites and their core foraging grounds. As such, regardless of species, Core Sustainance Zones (CSZs) may be impacted without adequate mitigation.

Effect without mitigation

- 5.45 Absence of adequate mitigation would potentially lead to significant negative impact to bat populations at site level. Felling trees without knowing whether bats utilise them would cause disturbance to roosting bats and may cause injury or death to individuals. This would subsequently result in a breach of current legislation.
- 5.46 Clearance of semi-natural habitat such as trees and hedgerows may result in bats seeking alternative routes to commute and forage, and inappropriate lighting may also impact the way in which bats use these habitats.
- 5.47 Any of the unmitigated circumstances listed above could lead to some degree of impact to bat populations further beyond the site boundaries, as many bats have relatively large home ranges.

Required mitigation

- 5.48 If the proposals change in such a way that there is a requirement to lop or cut back trees or should any trees need to be felled, a suitably qualified ecologist should undertake a ground level tree assessment (GLTA) prior to works commencing to assess roosting potential. Before works to the tree(s) begin, any trees with potential roosting features (PRFs) should be surveyed in accordance with industry guidelines. In the event bats are discovered roosting in trees to be impacted, a bat mitigation licence may be required to prevent a breach of current legislation. A method statement would be produced prior to submission of the licence with a view to safeguard bats at site and local level.
- 5.49 It is understood there will be little in the way of hedgerow loss onsite. At most, small sections will be cut to provide access routes through the site. These hedgerow cut-outs must be kept to a minimum, ideally the width of a single-track road to prevent commuting and foraging bats from being forced to seek alternative routes.
- 5.50 Lighting mitigation requirements are a reflection of those set out for badger. Lighting should be carefully considered during the construction phase and post-development. No lighting should be directed towards hedges, any trees, and none should be allowed to spill over into the adjacent fields or the stream corridor or the semi-natural vegetation buffer zones. If there is a requirement to install lighting, then a low-level lighting scheme should be implemented to avoid indirect disturbance to nocturnal animals that may utilise local habitats. During the development phase, it is recommended that works are not carried out after dusk and they do not commence until after dawn. Generators and machinery that emit significant noise levels must not be left to run through the night.
- 5.51 Permanent lighting associated with the scheme should be designed by a specialist lighting engineer. The lighting proposals for the development in relation to both external and internal lighting will need to take account of the requirements of bats, with consideration given to the external lighting of buildings, pathways, car parks, socialising areas, etc., as well as light spill from buildings from windows/glazing.

- 5.52 The use of low lux intensity luminaires coupled with specialist lighting columns where lighting is tightly controlled directionally in both horizontal and vertical planes. It is often better to place column-mounted lighting on the opposite side of the feature/area to be lit. Lighting in the direction of the 'dark zone' should be a last resort and 'shields' can be poor at limiting light spill. Low-level bollards are not ideal as they are prone to vandalism and once vandalised can cause light spill. Maximising the use of dimmers and timers, motion sensors, etc., to avoid lights being on continuously (i.e., lit when needed) is also advised. Light source choice is important as it affects colour rendering and appearance, with blue/green light having a high deleterious impact on bats.
- 5.53 Light directly from buildings through windows is very difficult to mitigate and difficult to control once a site becomes operational. Lighting from the building through windows may likely be very difficult to prevent on the elevation. Using recessed luminaires (and no up-lighting) inside may help, although should be given to using tinted glazing that reduces/prevents light spill particularly for critical windows facing the dark zone.
- 5.54 Implementation of these measures would help reduce impacts on bats from lighting associated with the development. It is advised that the lighting design be developed in conjunction with the ecologist and lighting engineer.

Significance of residual effects

- 5.55 The above measures are sufficient mitigation to avoid disturbing, killing and/or injury of bats during tree work (should there be a requirement) and they also provide adequate mitigation against loss of commuting and foraging opportunity.
- 5.56 By implementing these measures the current population level and distribution of bats will be maintained at site and local level, regardless of species and their CSZ. There will be no detrimental impact or significant residual effect on bat populations at the Local level provided the above mitigation is implemented.

Cumulative impacts

- 5.57 No large-scale developments within 1km radius were discovered during a study of the local planning portal. As such no significant cumulative effects are anticipated as a result of the proposed development.

APPENDIX A: LEGISLATION SUMMARY

Conservation of Habitats and Species Regulations

The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 came into effect on the day that the United Kingdom exits the EU. In summary they can be considered to state that The Habitats Regulations will continue to remain in force effectively unchanged post exit, until such time as they are specifically replaced by another article of legislation.

Wildlife & Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting.
- Intentionally kill, injure or take any animal listed under Schedule 5 to the act
- Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act
- Intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection.
- Pick or uproot any wild plant listed under Schedule 8 of the Act, or
- Plant or cause to grow in the wild any plant species listed under Schedule 9 of the Act.

Natural Environment & Rural Communities (NERC) Act 2006

The NERC Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations. Section 41 of the Act requires the publication of a list of habitats and species publish which are of principal importance for the purpose of conserving biodiversity. The Section 41 list is used to guide authorities in implementing their duty to have regard to the conservation of biodiversity.

APPENDIX B: MAPS

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Figure 2: Badger Survey Results Map

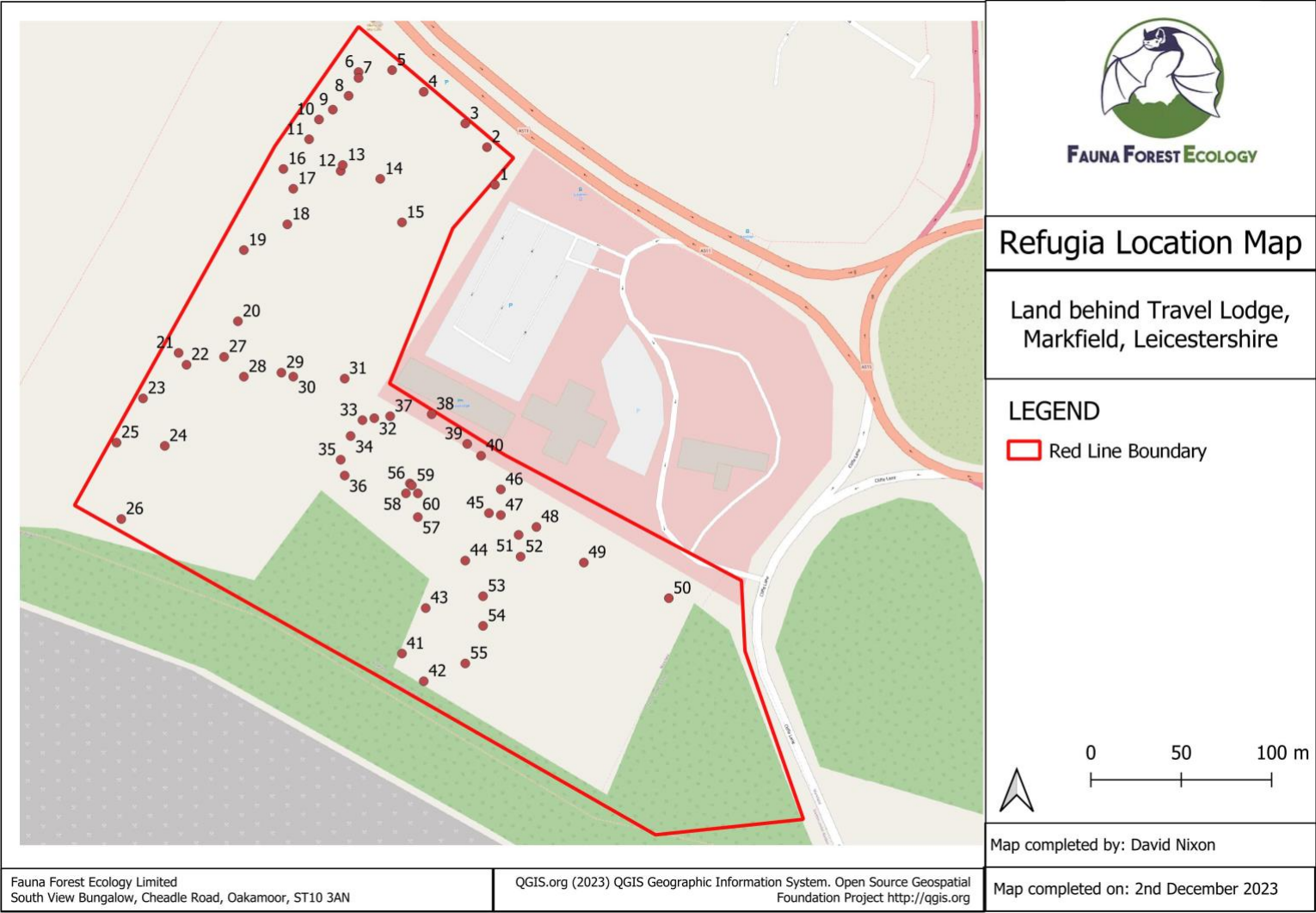


Figure 3: Refugia Location Map (reptiles)

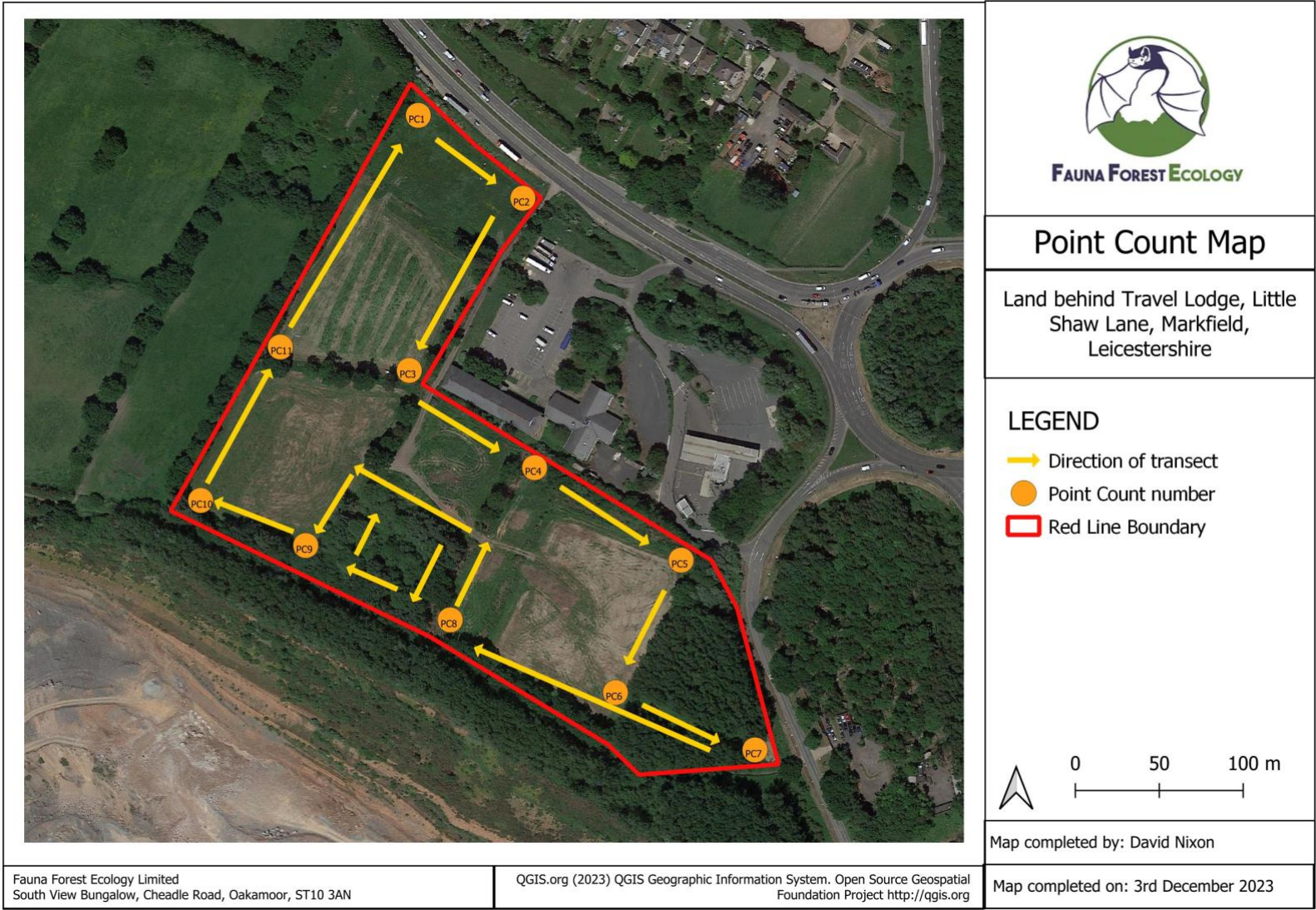


Figure 4: Point Count Map (bat transects)

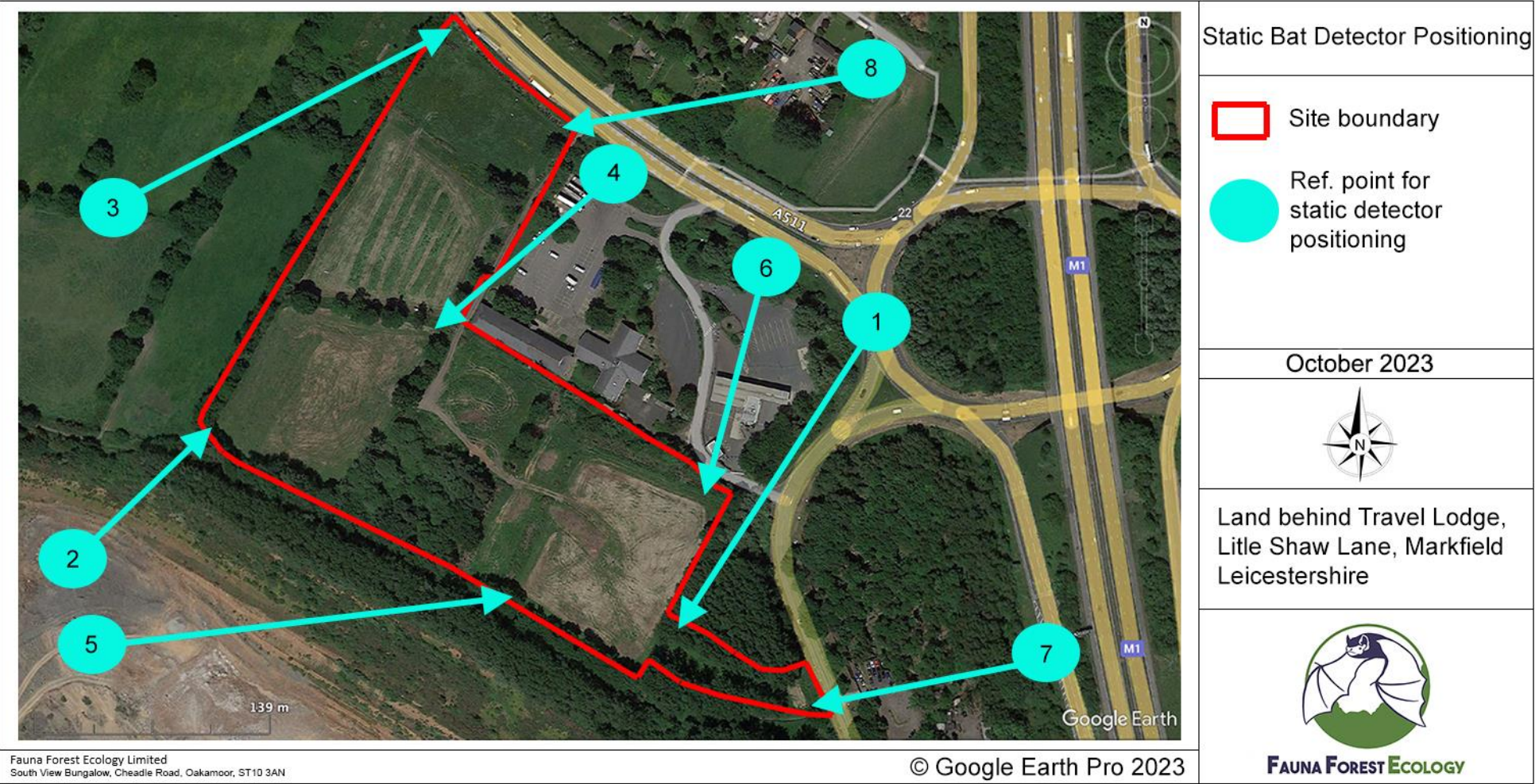


Figure 5: Static Bat Detector Positioning Map

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