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8.62 Bat Survey Report

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1 Introduction

- 1.1.1 This report has been prepared on behalf of Highways England and presents the findings of bat surveys undertaken in 2019 as part of the M42 Junction 6 Scheme (the Scheme).
- 1.1.2 The purpose of the report is to provide supplementary information on the status and distribution of bat roosts and commuting habitat that has the potential to be impacted by the Scheme.
- 1.1.3 The findings of the 2019 bat surveys (presented herein) update the survey information that was gathered over 2017 to 2018 and used to inform the biodiversity assessment of the Scheme, as reported in the following documents which were submitted as part of the Development Consent Order (DCO) application in January 2019.
- Chapter 9 (Biodiversity) of Volume 1 of the Environmental Statement [**APP-054/Volume-6.1**] [REF 1];
 - Deadline 3 Submission - 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 2]; and
 - Appendix 9.18 (Draft Bat Licence) of Volume 3 of the Environmental Statement [**APP-146/Volume 6.3**] [REF 3].
- 1.1.4 The 2019 survey results have informed a re-evaluation of the predicted impacts and effects on the local bat population that are likely to result from the Scheme.

2 Legislation

- 2.1.1 All species of bat and their roosts are protected under the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations) [REF 4] and under the Wildlife and Countryside Act 1981 (as amended) [REF 5]. Taken together, this legislation makes it an offence to deliberately damage, destroy or obstruct access to a bat roost or to deliberately kill, damage, take or disturb bats.
- 2.1.2 A bat roost is defined as ‘any structure or place, which is used for shelter or protection’ or a ‘breeding site or resting place’. Since bats commonly use the same roosts at particular times of the year after periods of absence, the roost is protected whether or not bats are resident.
- 2.1.3 Although the law provides strict protection to bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of European Protected Species Mitigation Licences (EPSML). However, in accordance with the requirements of the Habitats Regulations [REF 4] a licence can only be issued where the following three tests are satisfied:
- i. for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment;
 - ii. there is no satisfactory alternative; and
 - iii. the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 2.1.4 In England, EPSML applications are currently determined by Natural England and take up to five working days to acknowledge receipt and then at least 30 working days to determine. There is a legal responsibility placed on developers to ensure that a Natural England licence is obtained to cover any works that have the potential to result in an offence [REF 4; REF 5].
- 2.1.5 Seven UK bat species are listed as Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 [REF 6], with a species action plan prepared. These are the barbastelle (*Barbastella barbastellus*), Bechstein’s bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat, greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*).

2.1 Biodiversity action plans

Highways England Biodiversity Plan in 2015

- 2.1.1 Through the national Road Investment Strategy (RIS) for the 2015/16 to 2019/20 Road Period [REF 7], Highways England has set an aspiration that the operation, maintenance, and enhancement of the Strategic Road Network should move to a position that reduces no net loss of biodiversity by 2020; and should deliver a net gain in biodiversity across its broader range of works by 2040.

- 2.1.2 Highways England published its Biodiversity Plan in 2015 [REF 8] to demonstrate how it will work with service providers to halt overall biodiversity loss and maintain and enhance habitats and ecological networks. The Government requires Highways England to demonstrate progress against its plan [REF 8] to secure an ongoing annual reduction in the loss of net biodiversity due to its activities. The plan [REF 8] provides a general plan to protect and increase biodiversity.
- 2.1.3 Although the plan [REF 8] supersedes the 2002 Highways Agency (now Highways England) Biodiversity Action Plan (BAP) [REF 9], this still holds some relevance as it lists specific species of conservation concern. Bats are listed in the 2002 Highways Agency BAP [REF 9] as priority species. The objectives of the species action plan for bats is to avoid mortality to bats or loss of bat habitat as a result of construction and operation of the network, and to enhance habitats for bats where this can be achieved safely.

The Warwickshire, Coventry & Solihull Local Biodiversity Action Plan in 2015

- 2.1.4 The Warwickshire, Coventry & Solihull Local Biodiversity Action Plan [REF 10] for bats lists all species of bats recorded in Warwickshire, Coventry and Solihull (Vice-county of Warwickshire along the lines of the historic county of Warwickshire) in addition to their current status (see **Table 2-1**).

Table 2.1: Status of bats within the Vice-county of Warwickshire (Warwickshire, Coventry & Solihull)

Species	Status
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	Common, widespread, not threatened
Soprano pipistrelle	Common, widespread, not threatened
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	Rare, restricted, endangered
Brown long-eared bat	Common, widespread, not threatened
Noctule	Common, widespread, not threatened
Daubenton's bat (<i>Myotis daubentonii</i>)	Frequent, widespread, vulnerable
Whiskered bat (<i>Myotis mystacinus</i>)	Frequent, widespread, vulnerable
Brandt's bat (<i>Myotis brandtii</i>)	Frequent, widespread, vulnerable
Natterer's bat (<i>Myotis nattereri</i>)	Scarce, widespread, vulnerable
Leisler's bat (<i>Nyctalus leisleri</i>)	Scarce, widespread, vulnerable
Serotine (<i>Eptesicus serotinus</i>)	Scarce, widespread, vulnerable
Barbastelle	Rare, restricted, endangered
Lesser horseshoe bat	Scarce, restricted, endangered
Bechstein's bat	may be present/ unknown
Alcathoe bat (<i>Myotis alcathoe</i>)	may be present/ unknown

3 Methods

3.1 Preliminary appraisal

- 3.1.1 A preliminary appraisal of trees and buildings previously not accessible for survey in 2018 was undertaken between June and July 2019, following further access to land parcels being obtained for the Scheme.
- 3.1.2 For the purpose of defining the survey area in accordance with Interim Advice Note (IAN) 116/0813 [REF 11], both mature trees and structures within 100m of an affected area may need to be considered as potential bat roosts. These features are then assessed for indirect impacts as a result of disturbance and/ or change to environmental conditions, which could potentially make commuting, roosting or foraging unsuitable.
- 3.1.3 The spatial extent of the bat surveys needs to be proportionate to the likely ecological importance and impacts. Therefore, in order to provide a proportionate approach given the number of buildings, structures and mature trees located in proximity to the proposed works, only those buildings, structures and trees within the current Order Limits (where access was available) have been assessed (see **Figures 1-1, 1-2**).
- 3.1.4 The preliminary appraisal included initial daytime assessments of Potential Roosting Features (PRFs) to aid the design of the various types of bat surveys necessary to inform specific bat-related impacts and mitigation measures. This information has been assessed against the criteria presented within **Table 3-1**.

Table 3.1: Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement Collins (2016) [REF 12]

Suitability	Description Roosting habitats
Confirmed Roost	Known roost where bats or evidence of bats has been recorded.
High	A tree or structure with one or more PRFs 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.
Moderate	A structure or tree with one or more PRFs 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).
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 hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.

Suitability	Description Roosting habitats
Negligible	Negligible features likely to be used by bats for roosting.

3.2 Daytime inspection of built structures

- 3.2.1 Daytime roost inspections of the previously inaccessible buildings at the Warwickshire Gaelic Athletic Association (WGAA) clubhouse (B4) and associated buildings, and a derelict bungalow next to the A45 (B13) were undertaken in 2019. In addition, survey updates of buildings where bats had previously been recorded (2018) at Heath End House (B1) within the Order Limits were also undertaken between June and August 2019.
- 3.2.2 These assessments were undertaken by experienced and licenced bat ecologists (Class Licence WML CL18; Level 2).
- 3.2.3 The inspections took into account standard guidance provided by the Collins (2016) [REF 12], Mitchell Jones (2004) [REF 13] and Mitchell-Jones & McLeish (2004) [REF 14].
- 3.2.4 The surveys entailed a direct search for evidence of bats on both internal and external features of the structures. The inspections were carried out from the ground and from a ladder. Other supporting equipment included close focusing binoculars, a powerful torch, endoscope and mirrors.
- 3.2.5 The structures were examined externally for features that could support roosting bats and features that could lead to internal features having potential for roost spaces. The structures were subject to detailed internal examination, including the roof void (when safe to do so), assessing the roof timbers, beneath roofing felt and thatch where possible, the ridge line, and behind timber cladding.
- 3.2.6 The presence of roosting bats can be spotted through signs such as bat droppings and staining and/or scratch marks around potential entrance and exit points. However, the absence of droppings/evidence cannot be treated as conclusive evidence that bats are not present, and therefore an assessment was made of the potential of the building to support bats based on the scale provided in **Table 3-1**.

3.3 Ground level tree assessment

- 3.3.1 Daytime inspections of trees in previously inaccessible areas within the Order Limits were undertaken between June and August 2019. These assessments were undertaken by experienced bat ecologists (CIEEM competency grade for bat surveys: accomplished [REF 15]) aided by a torch and binoculars.
- 3.3.2 During the Ground Level Tree Assessment (GLTA), features considered to provide suitable roost sites for bats such as the following were sought (also see **Table 3-1** for details on roost categorisation):
- i. Trunk cavity: Large hole in trunk caused by rot or injury;
 - ii. Branch cavity: Large hole in branch caused by rot or injury;
 - iii. Trunk split: Large split/fissure in trunk caused by rot or injury;

- iv. Branch spilt: Large split/fissure in branch caused by rot or injury;
- v. Branch socket cavity: Where a branch has fallen from the tree and resulted in formation of an access point in to a cavity;
- vi. Woodpecker hole: Hole created by nesting birds suitable for use by roosting bats;
- vii. Lifted bark: Areas of bark which has rotted/lifted to form suitable access point/roost site for bats;
- viii. Hollow trunk: Decay in heartwood leading to internal cavity in trunk;
- ix. Hazard beam failure: Where a section of the tree stem/branch has failed causing collapse and leading to longitudinal fractures/splits/cracks along; and
- x. Ivy cover: Dense/mature ivy cover where the woody stems could create small cavities/crevices.

3.3.3 In some instances where it was not possible to fully assess a tree from every angle, a precautionary approach was adopted with the trees being categorised as moderate or high suitability to ensure further detailed inspections were undertaken.

3.4 Roost presence/absence and characterisation surveys – buildings and structures

3.4.1 Where the preliminary PRF assessment concluded that a structure within the Order Limits had low, moderate or high suitability, further surveys were undertaken. Both of the buildings B4 and B13 (**Figure 1-1**) were recorded as providing suitability for roost bats. In addition, the building B1 where bat roosts had previously been identified was also subject to further surveys to update results to the current survey season. Surveys of buildings and structures undertaken in 2018 which did not record bat roosts were not repeated.

3.4.2 These further surveys comprised emergence and re-entry surveys to assess current usage by bats, including species, number and where possible roost characterisation. These surveys entail observers noting whether bats emerged from, or entered roosting sites, their foraging/ commuting activity and other behaviour using direct observation and bat detectors. These surveys were undertaken, following best practice outlined in Collins (2016) [REF 12], as well as the Mitchell-Jones & McLeish (2004) [REF 14].

3.4.3 Roost emergence and re-entry surveys were undertaken at one building, a confirmed roost site at B1. In line with published guidance [REF 12], this building was subject to three survey visits; one evening emergence survey and two dawn re-entry surveys undertaken between May and September 2018.

3.4.4 Two other built structures; location B4 and associated buildings, and B13 were assessed as providing Moderate suitability for roosting bats. In line with published guidance [REF 12] the buildings B4 and B13 were each subject to one evening emergence survey and one dawn re-entry survey.

- 3.4.5 Emergence surveys commenced approximately 15 minutes before sunset, finishing 1.5 - 2 hours after sunset. Dawn/re-entry surveys commenced 1.5 - 2 hours before sunrise, finishing approximately 15 minutes after sunrise. Surveys were undertaken in good weather conditions, within the range of conditions required by published guidance. An experienced bat ecologist [REF 15] was present during each survey visit.
- 3.4.6 During the dusk and dawn survey periods the surveyors observed potential access/egress points. Surveyors carried echolocation detectors (Elekon Batlogger M, Titley Scientific Anabat Scout, Wildlife Acoustics Echometer EM3, Wildlife Acoustics EM Touch) to detect bats and assist in species identification.
- 3.4.7 A Cannon XA11 camcorder with a Nightfox XB5 infrared illuminator was used on roost surveys of confirmed roosts to supplement identification and counts of bat roosts.
- 3.4.8 The time, location, number, species (where possible) and direction of flight were recorded for each bat pass (discrete burst of echolocation heard, or bat activity observed) encountered during the survey. The sound files were analysed using Wildlife Acoustics Kaleidoscope and Titley Scientific Analoow software, where possible down to species level following the call parameters outlined in Russ (2012) [REF 16].
- 3.5 Aerial survey, presence/absence and roost characterisation surveys - trees**
- 3.5.1 A large number of trees containing PRFs are present within the Order Limits. The spatial extent of the roost surveys needs to be proportionate to the roost suitability and therefore the likely ecological importance and impacts. In order to provide a proportionate approach given the large number of mature trees located in proximity to the Scheme, it was necessary to differentiate between roost suitability types in line with standard guidance outline in Collins (2016) [REF 12].
- 3.5.2 Furthermore, roost switching behaviour is acknowledged as common amongst tree dwelling bat species, which causes tree roosting data to generally have a shorter validity period than building roosting data. As a result of this, individual trees may only form part of the roosting requirements of individual roosting bats in any one season (Forestry Commission England (2005) [REF 17]).
- 3.5.3 Further surveys were not undertaken for trees with negligible or low suitability PRFs (identified from the ground level tree assessments) in line with standard guidance.
- 3.5.4 Due to the extensive survey area, it was considered sufficient to include on plans and results tables only those trees assessed to provide low, moderate or high suitability for roosting bats, in addition to confirmed roosts, see **Figure 1-2**.

3.6 Aerial tree inspections

- 3.6.1 Where safe to do so, and access was available, an aerial PRF inspection (tree climbing survey) was undertaken of:
- all newly identified trees subject to GLTA in 2019 that were assessed as supporting moderate and high roosting suitability within the Order Limits; and
 - trees within the Order Limits with moderate and high roosting suitability not previously subject to aerial inspection.
- 3.6.2 The number of trees subject to aerial tree climbing inspection in 2019 totalled 38. The aim of this survey was to identify and locate signs of bats or bat roosts within trees. In addition, this survey enabled a more accurate assessment of bat roosting potential through close examination of PRFs to re-classify (downgrade or upgrade) PRFs where appropriate. Any trees downgraded as part of this exercise in 2019 to low suitability were not subject to further survey.
- 3.6.3 The aerial tree inspection surveys were undertaken by staff certified to both climb trees and perform aerial rescue (NPTC Level 2 CS-38 Climb Trees and Perform Aerial Rescue) and who held a Natural England bat survey licence (Class Licence WML CL18; Level 2). The climbing methodology used follows that detailed within the Arboriculture and Forestry Advisory Group (AFAG) Tree Climbing Operations Leaflet (AFAG40115) [REF 18].
- 3.6.4 Features identified as providing potential to support roosting bats during the climbing inspection were thoroughly examined using endoscopes, mirrors and torches. Evidence of bat occupation sought included: the physical presence of bats, droppings, urine staining, and mammalian oil staining. Identification and assessment of PRFs was based on methods, examples and the combined experience of ecologists as described in the Bat Tree Habitat Key [REF 19; REF 20].

3.7 Presence/absence and roost classification survey of trees

- 3.7.1 The following details the approach taken for further surveys which were based upon the results of the GLTAs and, where applicable, a subsequent aerial PRF survey).
- 3.7.2 The scope of survey work in 2019 comprised:
- Trees within the Order Limits in newly accessible areas (i.e. those subject to GLTA and, where applicable, a subsequent aerial PRF survey);
 - Trees not subject to a full set of further surveys in 2018 (including the remaining trees subject to an aerial PRF survey this survey season and other trees where a full set of surveys was not previously undertaken). It should be noted that trees T268, T270, T271, T278, T281, T282, T298 & T303 mentioned in the Deadline 3 Submission - 8.38 Bat Survey Report 2018 [REP3-014] [REF 2] submitted to the Examining Authority as being carried over to 2019 have been scoped out as they fall outside the Order Limits; and
 - Trees where bat roosts had previously been recorded and were subject to the draft EPSML application were all subject to further surveys to update records.

- 3.7.3 A total of 43 roost surveys were completed on trees in 2019. In line with standard guidance of Collins (2016) [REF 12] trees with moderate and high suitability for roosting bats were subject to two (moderate) or three (high) survey visits (emergence and re-entry surveys). Trees with confirmed bat roosts were subject to three survey visits (emergence and re-entry surveys).
- 3.7.4 Emergence surveys commenced approximately 15 minutes before sunset, finishing 1.5 - 2 hours after sunset. Dawn re-entry surveys commenced 1.5 - 2 hours before sunrise, finishing approximately 15 minutes after sunrise.
- 3.7.5 Surveys were undertaken in good weather conditions, within the range of conditions required by published guidance. An experienced bat ecologist [REF 15] was present during each survey visit.
- 3.7.6 During the dusk and dawn survey periods the surveyors observed potential access/ egress points. Surveyors carried echolocation detectors (Elekon Batlogger M, Titley Scientific Anabat Scout, Wildlife Acoustics Echometer EM3, Wildlife Acoustics EM Touch) to detect bats and assist in species identification.
- 3.7.7 The time, location, number, species (where possible) and direction of flight were recorded for each bat pass (discrete burst of echolocation heard, or bat activity observed) encountered during the survey. All sound files have been analysed using Analook W software, with some recordings made using Batbox Duet detectors analysed using Batsound 3.31. Where possible species identification was made to species level following the call parameters outlined in Russ (2012) [REF 16].
- 3.7.8 A Cannon XA11 camcorder with a Nightfox XB5 infrared illuminator was used on tree roost surveys of confirmed roosts to supplement identification and counts of bats roosting at the trees.

3.8 Bat hibernation surveys

- 3.8.1 No underground sites or features suitable to support large numbers of hibernating bats have been identified within the Order Limits to date.
- 3.8.2 An assessment of the potential for trees to support hibernation bat roosts was made during the course of GLTA and climbed inspections based on the potential or confirmed presence of deep cavities. The results of these assessments are presented in **Annex E**.

3.9 Swarming surveys

- 3.9.1 No additional sites that are suitable for swarming activity were identified in 2019. No underground sites or features suitable to support large numbers of hibernating bats were identified within the Order Limits. Therefore, no specific swarming surveys were undertaken as no suitable locations have been identified.

3.10 Bat activity surveys

- 3.10.1 No bat activity surveys were undertaken in 2019.

3.11 Bat crossing point surveys

- 3.11.1 Berthinussen and Altringham (2015) [REF 21] established a methodology for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure. Appendix G of that report details the establishment of baseline monitoring of crossing points, i.e. potential bat commuting links which would be severed by a proposed linear transport network.
- 3.11.2 In order to identify locations that may potentially be suitable for pre- and post-construction monitoring linear habitat features that crossed the Scheme and would be severed were identified. The importance of any such linear features as bat commuting routes was assessed by:
- i. examination of wider landscape connectivity through aerial imagery and mapped hedgerows as presented in Appendix 9.3 Hedgerow Report within Volume 3 of Volume 1 of the Environmental Statement [APP-054] [REF 22]; and
 - ii. bat activity recorded during roost survey and activity surveys, both walked transects and static monitoring during across the site (8.38 Bat Survey Report 2018 [REP3-014] [REF 2]).
- 3.11.3 Professional judgement was then made on the basis known bat activity across the site and the presence of potential connective linear landscape features.
- 3.11.4 Three locations were identified for crossing points surveys at linear landscape features potentially severed by the Scheme. A description of the three crossing point survey locations is given in **Table 3-2** and shown in **Figure 1-3**.

Table 3.2: Crossing Point Survey locations

Crossing Point	Description*
CP1	Located in the northern part of the site where two hedgerows (H9 and H127) meet at right angles, with each hedgerow connecting to further linear networks to the west (H79) and east (H127). It is noted that west of H127 the existing Catherine De Barnes Lane represents a potential barrier to potential commuting and foraging links further east around Bickenhill village.
CP2	Located both east and west of Catherine-de-Barnes Lane, which may itself provide an existing barrier to potential foraging and commuting routes. East of Catherine De Barnes Lane the survey location included Shadowbrook Lane which itself is bordered by mature hedgerows (H42 and H54) with mature trees. West of Catherine-de-Barnes Lane the survey point focussed on a hedgerow (H84) in-between two fields of the WGAA facility which provided a potential linear network further west.
CP3	Located east of Catherine-de-Barnes Lane along hedgerow (H38) to the east of an un-named block of broadleaf woodland.

*Hedgerow numbering referred to herein are consistent with those presented in Appendix 9.3 Hedgerow Report within Volume 3 of Volume 1 of the Environmental Statement [APP-054] [REF 22].

3.11.5 Following recommended methodology (Appendix G of Berthinussen and Altringham (2015) [REF 21]) for establishing a baseline all three 'crossing points' were subject to emergence surveys in September 2018, June and August 2019 by two experienced and licenced bat workers with the aid of a FLIR T1000 thermal imaging camera (FLIR Systems, Wilsonville, Oregon, United States), a Cannon XA11 camcorder with a Nightfox XB5 infrared illuminator and bat echolocation detectors (Elekon Batlogger M) to detect bats and assist in species identification. The use of thermal imaging technology and infra-red illuminated camcorder allowed increased confidence in survey results by allowing observation of bat behaviour and flight paths irrespective of light conditions.

3.12 Limitations and assumptions

General

- 3.12.1 Ecological surveys are limited by factors which affect the presence of animals such as the time of year, migration patterns and behaviour. Bat roosts are transient, and bats may make use of landscape features outside of the survey dates and in the future. The absence of bat activity from any particular location during the surveys cannot be taken as conclusive proof that the species is not present or that it will not be present in the future. Whilst the roost categories attempt a standard terminology, there would be instances where an experienced ecologist may categorise a structure as having lower potential to support roosting bats than based purely on the features of the structure. For example, sources of disturbance may reduce the potential of a feature to support roosting bats, such as exterior light spillage reducing the potential for light sensitive species, or proximity to fast moving road or rail traffic. The potential of a structure which appears to have features suitable for roosting bats but which is isolated from suitable foraging and commuting habitat may also be reduced. Conversely, good foraging and commuting habitat directly adjacent to a structure can enhance the potential for roosting bats.
- 3.12.2 The identification of individual *Myotis* species are difficult to separate based on echolocation calls alone (Russ 2012) [REF 16]. Where it was not possible to differentiate calls to species level, the genus or likely bat species (based on other relevant observations) are documented instead. Calls from brown long-eared bats are directional and usually very quiet, which makes them difficult to pick up using the detector. In order to reduce the significance of this limitation, visual observation was used to complement recordings, which enabled the location of such species to be identified during the surveys.
- 3.12.3 Long-eared bats encountered are assumed to be brown long-eared as the grey long-eared bat's range is restricted to southern England (Barlow and Briggs 2012) [REF 23].

3.12.4 Data from a single surveyor position during the nocturnal surveys of building B13 and trees T25.4, T43, T54, T90, T261 & T311 has not been fully assured due to unforeseen corrupted digital data files. However, data from this building and trees was collected by pairs of surveyors, and in each case the second data source has been collected and assured and included within this report. It is therefore considered that no significant bat roosts or observations of individual species have not been identified for inclusion, and the data presented in this report is sufficient to provide and evaluation of the results.

Trees

- 3.12.5 Tree climbing was not undertaken at two trees (T432 and T433) rated as moderate suitability for bats roosts within newly accessible land areas due to the timing of land access permissions. Roost surveys (evening emergence and dawn re-entry) were undertaken at both trees and this is therefore not considered to limit the results.
- 3.12.6 No tree-climbing was undertaken as several trees identified as suitable to support bat roosts located within Aspbury's Copse (T239, T240, T241, T242, T243 and T444) and at the T25 group (T25.2, T25.3, T25.4, T25.5, T25.6 and T25.7). All trees were subject to roost surveys in either 2018 or 2019 and therefore the lack of tree-climbing inspections is not considered to limit the results.
- 3.12.7 No further surveys (tree climbing or roost surveys) were undertaken of the trees within the boundary of Bickenhill Meadows Site of Special Scientific Interest (SSSI): trees T127-T138, T144, T167-T173, T177-T185 and T191-T214 inclusive. This is not considered to limit the results as these trees would not be directly impacted by the Scheme.
- 3.12.8 With the exception of those trees within Bickenhill Meadows SSSI, it has been assumed that any trees on the boundary of the Order Limits will be retained / protected; however, due to their proximity to the Scheme and location within the Order Limits these have been included in scope to any roosts have been identified.
- 3.12.9 At tree (T295) where a single brown long-eared bat was recorded emerging only two dusk/dawn roost surveys have been undertaken to date. This is not considered to limit the results as a third survey is scheduled for September 2019 and a climbed inspection survey was additionally undertaken on 28 June 2019, with no evidence of bats recorded, which has been considered as one of three visits (this is not explicitly stated in the survey guidelines [REF 12] but accepted by Natural England as a suitable alternative in some instances).

Hibernation surveys

- 3.12.10 Hibernation sites within buildings suitable to support individual / low numbers of overwintering bats have not been surveyed, as the aim of the hibernation survey was defined as to identify any important hibernation sites that are used by larger number of bats. The suitability of buildings, structures and trees to provide suitable hibernation roosts have been assessed as part of the inspection of these features for roosting suitability. This is not considered to limit the results.

4 Results

4.1 Buildings

Preliminary appraisals

- 4.1.1 Within the Order Limits two additional buildings not previously accessible were surveyed and assessed, the WGAA clubhouse and buildings (B4) and a derelict house next to the A45 (B13).
- 4.1.2 In addition, an updated survey was undertaken at Heath End House (B1), where bats had previously been confirmed as roosting.
- 4.1.3 Results of these surveys are summarised in **Table 4-1**, with locations of buildings and structures shown in **Figure 1-1**. Full results of the survey assessments and updates are shown in **Annex A**.
- 4.1.4 In surveys undertaken in March and August of 2018, small roosts of brown long-eared bats and Pipistrelle species were previously confirmed with small numbers of bat droppings were found inside roof voids (8.38 Bat Survey Report 2018 [REP3-014] [REF 2]).
- 4.1.5 In August 2019 an updated external and internal assessment was undertaken of B1 confirmed that while the building is no longer used as a dwelling there are no material changes to the assessment; with no additional evidence of bat activity and continued suitability as a roost (full results are given in **Annex A**). The building could provide some limited hibernation potential within cavity walls or the roof void itself.
- 4.1.6 The two structures B4c and B13 were both assessed as providing moderate suitability for roosting bats. No evidence of bats was confirmed at these buildings during the 2019 surveys. Full results are presented in at **Annex A**.
- 4.1.7 The other buildings B4a and B4b at the WGAA facilities were assessed as providing negligible suitability for bats and no further surveys undertaken.

Table 4-1: Summary of buildings assessed for bat potential

Reference Building	Brief Description	Likely Impacts	Status
B1	Heath End House. Empty detached bungalow.	Direct loss.	Small brown long-eared day roost. Small common pipistrelle day roost. Local significance only
B4a	Páirc na hÉireann (WGAA). Pitch-side shelters.	Presumed direct loss.	Negligible suitability
B4b	Páirc na hÉireann (WGAA). Portacabins	Presumed direct loss.	Negligible suitability
B4c	Páirc na hÉireann (WGAA). Clubhouse.	Presumed direct loss.	Moderate suitability. Two roost surveys completed – no bats.

Reference Building	Brief Description	Likely Impacts	Status
B13	Derelict house	Presumed direct loss.	Moderate suitability. Two roost surveys completed – no bats.

Roost surveys - Buildings

- 4.1.8 Full results of the roost surveys of buildings and structures are shown in **Annex B** and **Figure 1-4**. Raw data for the confirmed roost is provided in **Annex G**.
- 4.1.9 At location B1, roost surveys recorded a single suspected brown long-eared bat and small numbers of common pipistrelle roosting at the building:
- On 1 July 2019 a single common pipistrelle bat was observed to emerge from the side of the chimney on the western gable end, with an additional single common pipistrelle bat suspected of having emerged from the south-east corner of the roof.
 - On 16 July 2019 a single brown long-eared bat was swarming around the chimney on the western gable end of the building, possibly re-entering the building, and one common pipistrelle re-entered the building via a gap in mortar within the chimney stack above the roof line, with an additional possible re-entry on northern side of building.
 - On 31 July 2019 a single common pipistrelle bat was observed to re-enter a gap in missing mortar on the chimney stack on the western side of the building.
- 4.1.10 Two roost surveys were undertaken at B4c and B13 which were assessed as providing Moderate suitability for roosting bats. No bats were recorded roosting at either feature on any of the survey occasions and bats are considered absent from these buildings.

Hibernation surveys

- 4.1.11 Buildings were assessed for their potential suitability as hibernation sites. B1 was considered to provide some limited hibernation potential within cavity walls or the roof void itself for the single brown long-eared bat recorded as this species frequently occupies the same site for much of the year. None of the remaining buildings were considered to provide suitable hibernation roost habitat.

4.2 Trees

- 4.2.1 The location of trees with bat roosting potential are shown in **Figure 1-2**.

Ground level tree assessment (preliminary appraisal)

- 4.2.2 Following the further GLTA as part of the 2019 surveys in previously inaccessible areas an additional 27 trees were identified within the Order Limits. These comprised one tree that was assessed as high suitability, seventeen trees rated as moderate suitability and nine trees rated as low suitability for bat roosts. Full results of the GLTA are presented in **Annex C**.

Aerial tree inspections

4.2.3 Thirty-eight trees rated as providing moderate or high suitability for bats by the initial GLTA within the Order Limits that were not previously climbed were subject to further direct inspection through a tree climbing survey. From this 38:

- eight trees rated as high (T43, T119, T269, T274, T284, T295, T311 and T418);
- eleven trees as moderate (T117, 276, T289, T403, T404, T408, T409, T410, T414, T421 and T424);
- ten low (T116, T118, T261, T262, T263, T280, T406, T413, T416 and T417);
- eight downgraded to negligible suitability for bats (T120, T121, T122, T277, T401, T419 and T420); and
- a single tree classed as Moderate potential could not be climbed for safety reasons (T267).

4.2.4 Full results of the tree climbing assessment of trees are given in **Annex D**.

4.2.5 From the surveys undertaken, no evidence of confirmed bat roosts, from droppings or actual bats present, was found during any GLTA or climbed inspection of trees.

Roost surveys – Trees

4.2.6 Roost surveys (evening emergence and dawn re-entry) were undertaken at forty-three trees in 2019:

- 11 of these were trees were located within newly accessible land areas;
- 28 were carried over from 2018 when roost surveys were not possible at these trees¹ (for various reasons of timing and access refer to 8.38 Bat Survey Report 2018 [REP3-014] [REF 2]; and
- re-surveys of four trees (T17.1, T17.2, T21 and T242) to update roost records for the draft European Protected Species Mitigation Licence (EPSML). Please note the tree T17 has been split into two separate tree locations that had been surveyed as a pair; T17.1 & T17.2.

4.2.7 During 2019 roost surveys, confirmed or suspected roosts were recorded at T25.6, T43, T88, T90, T261, T274, T295, T311 and T414; with one bat of a common species recorded using seven of these trees as a day roost on a single survey occasion; one bat of a two separate common species using one tree.

4.2.8 A summary of roosting status at these trees is provided in **Table 4-2**. Results of tree roost surveys for these nine tree roosts confirmed in 2019, together with all tree roost surveys is provided in **Annex F**. Raw data for the confirmed roosts is provided in **Annex G**.

¹ A number of trees carried over were scoped out following tree climbing surveys in 2019. The trees and the rationale for being scoped out for inclusion within 2019 surveys are presented within 8.38 Bat Survey Report 2018 [REP3-014] [REF 2].

Table 4.2: Summary of roosting status of confirmed tree roosts

Tree Number	Tree species and initial bat roosting suitability assessment score	Species and maximum count	Roost status
T25.6	Moderate	One common pipistrelle (suspected)	Small day roost. Maximum count 1. Local significance only.
T43	High	One noctule bat	Small day roost. Maximum count 1. Local significance only
T88	High	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T90	High	One brown long-eared (suspected)	Small day roost. Maximum count 1. Local significance only.
T261	High	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T274	High	One common pipistrelle, one soprano pipistrelle	Small day roost. Maximum count 1 (each species). Local significance only
T295	Moderate	One brown long-eared bat	Small day roost. Maximum count 1. Local significance only
T311	Moderate	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T414	Moderate	One brown long-eared	Small day roost. Maximum count 1. Local significance only.

4.2.9 No bats were recorded emerging from or returning to roosts in 2019 where bat roosts had been confirmed in 2018 (T17.1, T17.2, T21, T22 and T242).

4.2.10 Repeat surveys were not undertaken at other trees where roosts were confirmed in 2018 (T80, T83 and T85.2) as these were not impacted by the Scheme and were not included as part of the Appendix 9.18 Draft Bat Licence within Volume 3 of the Environmental Statement [APP-145/Volume 6.3] [REF 3].

4.2.11 During roost surveys of trees, common pipistrelle, soprano pipistrelle and noctule bats were frequently observed and recorded across the site, foraging near trees and commuting along hedge lines. Occasional *Myotis* species, brown long-eared, *Nyctalus* species (either Leisler's or noctule) and serotine bats were also recorded foraging or commuting near to surveyed trees. A small number of pipistrelle bat calls were assigned as possible common or Nathusius' pipistrelle bats due to low peak frequencies, with one Nathusius pass confirmed on a single survey occasion. As presented in 8.38 Bat Survey Report 2018 [REP3-014] [REF 2] a small number of Nathusius' pipistrelle were recorded during activity surveys in September and October 2018, but not earlier in the year.

Hibernation surveys

4.2.12 An assessment of the potential for trees to support hibernation bat roosts was made during the course of GLTA and climbed inspections based on the potential or confirmed presence of deep cavities. The results of these assessments are presented in **Annex E**.

4.3 Crossing point surveys

4.3.1 Results of the crossing point surveys are summarised in **Table 4-3** with full results provided in **Annex H**.

- **Crossing point 1:** No bats were recorded during the September 2018 survey; one serotine and one common pipistrelle were observed commuting along the hedgerows (H9 and H127) through the crossing point location on 26 June 2019; and one common pipistrelle observed crossing on 19 August 2019.
- **Crossing point 2:** One two occasions small numbers of common pipistrelle were recorded crossing the existing Catherine-de-Barnes Lane between Shadowbrook Lane hedgerows (H42 and H54) and a hedgerow (H84) in-between two fields of the WGAA facility. At the end of July 2019 sixteen common pipistrelle were recorded crossing.
- **Crossing point 3:** Small numbers of common pipistrelle were recorded crossing along the hedgerow (H38) east of the small area of woodland on each survey occasion. A single *Myotis* species bat was additionally recorded commuting alongside the hedgerow on one occasion. During all three surveys, and particularly the two surveys undertaken in 2019, a greater number of common pipistrelle bat passes, including foraging, were recorded to the west of the survey focus around the edge of the small area of woodland. In addition, a small number of noctule bats and a single serotine bat pass were recorded in the vicinity of this crossing point, but not observed following the hedgerow at any occasion.

Table 4-3: Summary of crossing point survey results

Location	Survey 1	Survey 2	Survey 3
Crossing point 1	10/09/2018 No bats recorded.	26/06/2019 1 common pipistrelle & 1 serotine.	19/08/2019 1 common pipistrelle
Crossing point 2	24/09/2018 2 common pipistrelle recorded crossing.	03/07/2019 Six common pipistrelle crossings road/hedgerow.	31/07/2019 Sixteen common pipistrelle crossings road/hedgerow.
Crossing point 3	12/09/2018 2 common pipistrelle recorded crossing. Other common pipistrelle and one soprano pipistrelle recorded to the west around the woodland.	27/06/2019 4 common pipistrelle recorded crossing the hedgerow. 1 <i>Myotis</i> species bat recorded alongside the hedgerow. Near constant bat activity to the west around the woodland.	20/08/2019 1 common pipistrelle (on TI) recorded crossing along hedgerow.

5 Summary of Findings

5.1 Buildings

5.1.1 The following summarises the survey findings from 2019 surveys of B1, B4 & B13. The findings of surveys for all other buildings and structures remains as reported in the within 8.38 Bat Survey Report 2018 [REP3-014] [REF 2].

Health End House (B1)

5.1.2 Updated surveys of Heath End House (B1) in 2019 re-confirmed the previous status as a small day roost for brown long-eared (maximum count one in both 2018 and 2019) and common pipistrelle (maximum count four in 2018 and two in 2019) bats. The small day roosts in building B1 are assessed to be of Local conservation importance and therefore there is no change from the previous assessment presented in Chapter 9 within Volume 1 of the Environmental Statement [APP-054/Volume 6.1] [REF 1] and within 8.38 Bat Survey Report 2018 [REP3-014] [REF 2].

WGAA Clubhouse (B4c)

5.1.3 Due to access in 2018, the previous assessment presented in Chapter 9 within Volume 1 of the Environmental Statement [APP-054/Volume 6.1] [REF 1] assumed the presence of a bat maternity colony in building B4c. Access to this building was acquired for inclusion within the 2019 bat surveys.

5.1.4 B4c was assessed as providing Moderate suitability for roosting bats, and roost surveys confirmed that no roosting bats were present. As such, bat roosts are considered absent from this building and is of Negligible importance for bats.

Derelict house adjacent to the A45 (B13)

5.1.5 The previously inaccessible building B13 was included in the scope of 2019 bat surveys.

5.1.6 B13 was assessed as providing Moderate suitability for roosting bats, 2019 roost surveys confirmed that no roosting bats were present. As such, bat roosts are considered absent from this building and is of Negligible importance for bats.

5.2 Trees

5.2.1 A summary of the results of the survey of those trees within the Order Limits from 2018 and 2019 are provided in **Annex E**.

Ground level tree assessments

5.2.2 GLTAs undertaken in 2019 in previously inaccessible areas recorded a further 27 trees with suitability to support bat roosts within the Order Limits. Where climbing constraints permitted, the 27 newly identified trees and those other trees within the Order Limits that were unable to be climbed in 2018 were captured within the 2019 tree climbing assessments.

5.2.3 A complete assessment of all trees within the Order Limits has been undertaken. GLTA surveys undertaken in 2018 and 2019 identified 255 trees and two tree groups (T51, T92 & TG1) with suitability to support bat roosts. Of this:

- 28 trees were assessed as providing High suitability for bats;
- 120 offering Moderate suitability and one tree group (T51) with Moderate suitability; and
- 107 individual trees and two tree groups (**see Annex E**) with Low suitability.

Aerial Tree Inspections

5.2.4 Aerial tree climbing inspection was undertaken on a total of 105 trees within the Order Limits. As a result of tree climbing surveys, this process refined the number of suitable trees to support bat roosts to:

- 23 with High suitability;
- 38 with Moderate suitability;
- 33 trees and one tree group (T51) were downgraded to Low suitability; and
- 10 trees were downgraded to Negligible suitability.

Roost Surveys - Trees

5.2.5 Roost surveys were undertaken on 83 individual trees within the Order Limits over 2018 and 2019 (**Annex E**). This included:

- 61 trees rated as High or Moderate following aerial inspection surveys and a further 15 trees moved straight to roost surveys without a climbed assessment (a total of 76 trees);
- Four of the 83 trees (T22, T68, T74 & T262) had roost surveys commenced but were subsequently downgraded to Low potential following a climbed assessment. At that point further roost surveys were halted on these trees;
- Three of the 83 trees (T75, T76 & T77) assessed as Low suitability were subject to roost surveys due to their proximity to other trees where surveys were undertaken in areas where trees would be lost; and
- Four of the trees were subject to roost surveys in both 2018 and repeated in 2019 to update records for the draft EPSML (trees T17.1, T17.2, T21 and T242 were included in the draft licence).

5.2.6 Detailed results of the tree roost surveys undertaken in 2018 in the Order Limits are provided in 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 2]. As detailed in that report, bat roosts were recorded in six trees (T17.2, T21, T80, T83, T85.2 and T242). Small common pipistrelle bat roosts have also been confirmed by others in the boundary of the Scheme in trees T54 (Aspbury's Copse pLWS), although no bats were recorded entering or emerging from these trees during separate surveys in 2018 [REF 24].

5.2.7 Forty-three roost surveys were undertaken on trees in 2019. Confirmed or suspected bat roosts were recorded at nine trees: T25.6, T43, T88, T90, T261, T272, T295, T311 and T414.

- 5.2.8 Eight roost records involved a single roosting bat of a common species recorded using the trees as a day roost on a single survey occasion, with one tree recording two separate common species (three survey occasions on each confirmed or suspected roost). These results included a single day roost for a new species of local significance only, noctule bat which is common and widespread throughout Warwickshire [REF 10]. Otherwise no new species were recorded with no change in roost status as all roosts were assessed as day tree roosts.
- 5.2.9 On this basis the status of these roosts are considered to be consistent with the previous findings and characteristic of the species and available roosting features known to be present within the Order Limits. As reported within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1] [REF 1] all tree roosts are considered to be of Local importance.
- 5.2.10 A summary of all bat roosts recorded within the Order Limits is provided in **Table 5-1** with locations illustrated in **Figure 1-5**.

Table 5-1 - Summary of all bat roosts recorded within the Order Limits

Building or Tree number	2018 Species and maximum count	2019 Species and maximum count	Roost status
B1 Heath End House	One brown long-eared, Four common pipistrelle	One brown long-eared, Two common pipistrelle	Small day roost. Maximum count 1 (brown long-eared), 4 (common pipistrelle). Local significance only.
T17.2	One common pipistrelle	None	Small day roost. Maximum count 1. Local significance only.
T21	One common pipistrelle (suspected)	None	Small day roost. Maximum count 1. Local significance only.
T25.6	N/A	One common pipistrelle (suspected)	Small day roost. Maximum count 1. Local significance only.
T43	N/A	One noctule bat	Small day roost. Maximum count 1. Local significance only.
T80	Two soprano pipistrelle	None	Small day roost. Maximum count 2. Local significance only.
T83	Two common pipistrelle	None	Small day roost. Maximum count 2. Local significance only.

Building or Tree number	2018 Species and maximum count	2019 Species and maximum count	Roost status
T85.2	Four common pipistrelle	None	Small day roost. Maximum count 4. Local significance only.
T88	None	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T90	None	One brown long-eared (suspected)	Small day roost. Maximum count 1. Local significance only.
T242	One soprano pipistrelle	None	Small day roost. Maximum count 1. Local significance only.
T261	N/A	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T274	N/A	One common pipistrelle One soprano pipistrelle	Small day roost. Maximum count 1 of each species. Local significance only.
T295	N/A	One brown long-eared bat	Small day roost. Maximum count 1.
T311	N/A	One common pipistrelle	Small day roost. Maximum count 1. Local significance only.
T414	N/A	One brown long-eared (suspected)	Small day roost. Maximum count 1. Local significance only.

5.3 Crossing points

Crossing Point 1

- 5.3.1 No bats were recorded using the connective habitats at Crossing Point 1 as a linear commuting network. It can therefore be concluded that this location does not provide a significant commuting route.

Crossing Point 2

- 5.3.2 At Crossing Point 2 low numbers of common pipistrelle were recorded commuting across the existing Catherine De Barnes Lane; between hedgerows either side of Shadowbrook Road and a hedgerow at the WGAA facilities. On a single survey occasion a total of 16 common pipistrelle were observed commuting across Catherine-de-Barnes Lanes at this location. This represents a statistically significant number of commuting bats; in accordance with the recommendations of Berthinussen and Altringham (2015) [REF 21] pre- and post-construction monitoring could (if needed) be completed and tested statistically.
- 5.3.3 Crossing Point 2 survey location was located adjacent to the garden of Heath End House (B1), which has been recorded as a small day roost for brown long-eared and common pipistrelle bats. However, the peak count of bats for 2019 was one and four bats respectively, corresponding with the small non-breeding roosts present (see Section 5.1). Bat roost surveys at B1 recorded more bat passes north of the house, near the Crossing Point 2 survey location, than either associated with the building or areas to the south of it. This may be either due to either a small number (one or more) of bats foraging around the north of the property and near the Crossing Point 2 location or, consistent with the Crossing Point 2 survey of 31 July 2019, several bats commuting near this location.

Crossing Point 3

- 5.3.4 At Crossing Point 3 low numbers of common pipistrelle were recorded using this hedgerow as a commuting routes. On all three survey occasions this was well below the threshold of ten bats using a commuting link suggested by Berthinussen and Altringham (2015) [REF 21] as a minimum number of bats required to allow pre and post construction monitoring to be undertaken (i.e. for any monitoring to be statistically valid).
- 5.3.5 In addition to common pipistrelle, the only other species of bat recorded using the hedgerow was a single *Myotis* species bat, which was observed commuting adjacent to the hedgerow on one occasion. It can be concluded that this hedgerow does not provide a significant commuting route for bats.

On the crossing point survey at this location, greater number of bat passes were recorded from the edge of the woodland to the west of the survey location. It is notable that very low numbers of bats were recorded or observed using the hedgerow to the east (the crossing point survey location) as a commuting route, either to or away from this woodland. It is considered that this indicates that bat foraging around this woodland would not be significantly impacted by any severance of this hedgerow (H38).

- 5.3.6 Throughout all crossing point surveys at this location, in addition to common pipistrelle bats, a single *Myotis* species bat, a single soprano pipistrelle and Noctule bats were recorded; only the single *Myotis* species was observed 'crossing' on one occasion, with the other bat species commuting or foraging in the wider area. No other species of bats were recorded.

6 Conclusion

6.1 Re-evaluation & assessment of bat roosts

- 6.1.1 Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1] and 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 2] reported that the proposals would result in the loss of roosts associated with building Heath End House (B1) and trees T17, T21 and T242.
- 6.1.2 In addition, of the new roosts recorded in 2019 trees T25.6 and T274 would be lost and there is potential for the trees T90 and T414 to be impacted by changes to the reconfigured WGAA facility.
- 6.1.3 None of the remaining roosts (T43, T88, T261, T295 and T311) would be directly impacted by the Scheme.
- 6.1.4 As reported in Appendix 9.18 Draft Bat Licence within Volume 3 of the Environmental Statement [**APP-145**] [REF3] a Letter of No Impediment to a draft EPMSL application for bat roosts at B1, T17, T21 and T242 was issued from Natural England. It is considered that the addition of tree roosts, T25.6, T90, T274 and T414 to any full EPMSL application would not affect the licence being expected to be issued as:
- i. there is no change in species or roost status, i.e. common pipistrelle, soprano pipistrelle and brown long-eared day roosts only; and
 - ii. sufficient mitigation for lost roosts is already provided in the draft EPMSL application in the form of additional compensatory bat boxes.
- 6.1.5 Mitigation in the form of alternative roosting locations will be provided and detailed in the licence documents. The Environmental Masterplan [**APP-095/Volume 6.2**] for the Scheme illustrates the locations where bat boxes will be installed for mitigation and enhancement. These bat boxes will be installed prior to any licenced works to the buildings and trees on site. Such measures are considered to be appropriate and suitable to maintain the Favourable Conservation Status of bats.
- 6.1.6 Subject to confirmation from Natural England it is considered the information herein would not affect the ability of Natural England to issue the full licence application.
- 6.1.7 As detailed Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1] and the 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 2], the felling of any trees directly impacted by the Scheme, without roosts confirmed, will follow a Method Statement to limit the potential for bat roosts to be impacted. This is due to the transitional nature of many bat roosts within trees and to ensure that any tree being felled that has potential features suitable for bat roosts is not occupied by bats in-between the surveys being undertaken and works carried out.

6.1.8 Notwithstanding the above, it is considered that the additional data collected during 2019 for the suitability and presence of bat roosts within the Order Limits does not change the findings and or conclusions as presented within Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 1**] [REF 1].

6.2 Re-evaluation of Commuting and Foraging

6.2.1 Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1] and the 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 2] reported that the levels of bat activity were considered to be low and typical of the habitats present. Peak counts during these surveys were sporadic and unevenly distributed suggesting highly variable (low) levels of bat activity.

6.2.2 The potential impact of the loss of bat foraging and commuting habitat as reported in Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1] are considered to remain unaltered and are not considered further here. The following assessment considers the impacts of habitat fragmentation and bat mortality.

6.2.3 In assessing the fragmentation impacts of the Scheme, Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1] states:

“connectivity around the margins of the proposed scheme and into the wider landscape will be maintained, for example, by the wider hedgerow network, watercourses and the corridor of the nearby railway line. The proposed scheme will also mitigate potential fragmentation impacts by establishing a mix of hedgerows, grassland, scrub and wetland (reed bed) that is designed to connect with retained habitats, including those known to be regularly used by bats.

*“loss of hedgerows will lead to the fragmentation of inter-connected habitat that is used by the local bat population for travelling between roost sites and favoured foraging areas. The impact of this loss upon the larger, stronger-flying bat species, such as *Nyctalus* sp., is likely to be less as these bats are capable of crossing open areas. It is also relevant that connectivity across the footprint of the proposed scheme is already limited by the interruption of habitat network by the existing road corridor of Catherine-de-Barnes Lane / B4438.”*

6.2.4 The assessment concludes that while there would be some severance impacts and disturbance to commuting and foraging routes, this would be limited to Local significance and no key flight paths and or foraging routes of significant maternity roosts have been recorded.

6.2.5 At Crossing Point 2, surveys identified that ten bats were recorded commuting across the route of the proposed mainline link road over the existing Catherine de Barnes Lane. At this location hedgerows and tree lines to the east and west of the existing Catherine-de-Barnes lane provide navigation cues used by commuting bats, albeit with a significant gap at the location of the existing road.

- 6.2.6 The Scheme would alter the nature of this 'gap', being slightly wider and in a cutting, but does not remove an uninterrupted habitat corridor. The very low numbers of bats recorded are consistent with the poor quality of the available habitat at this location. However, based on the additional data collected during 2019, it is considered that the assessment as presented within Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF1] of an adverse impact from fragmentation of Local significance, reducing to Negligible over the mid-term, remains unchanged.
- 6.2.7 The results of the 2019 crossing point surveys demonstrate that statistically significant numbers of bats were recorded at one location (Crossing Point 2) on one occasion. However, it is noted, that statistical significance is not the same as ecological significance. As described above, the results indicate that statistical analysis of changes in activity could be monitored. However, as the effects upon the bat population are not significant it is considered that there is no requirement for future monitoring.
- 6.2.8 Based on the additional data collected during 2019, it is considered that the potential impact of accidental mortality through collision, which relates only to common species of bat, also remains unchanged and as reported in Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] [REF 1].

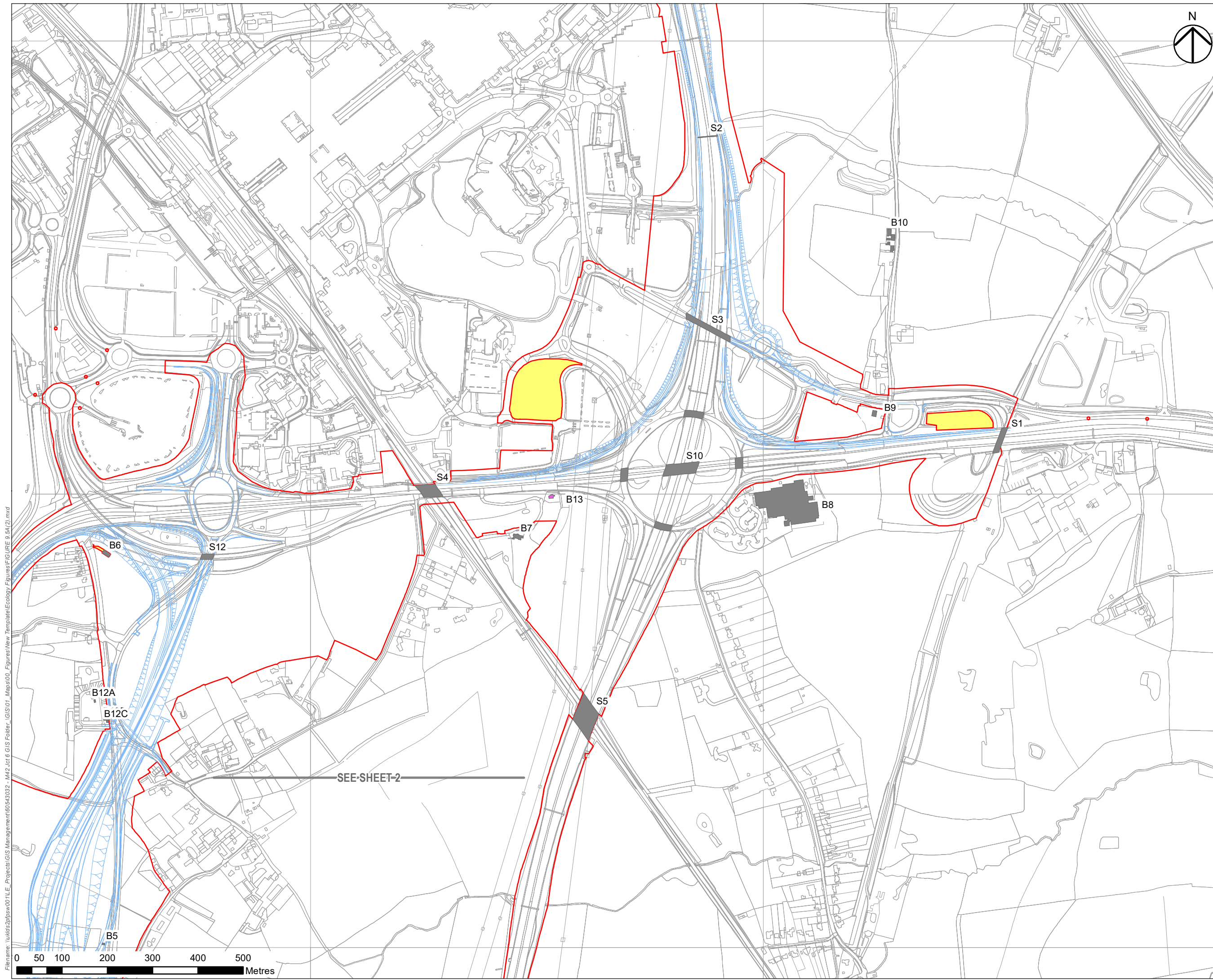
7 References

Reference number	Source
REF1	Chapter 9 (Biodiversity) of Volume 1 of the Environmental Statement https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010027/TR010027-000142-TR010027_M42J6_6-1_Environmental_Statement_Chapter_9.pdf [accessed 17.09.19]
REF2	Deadline 3 Submission - 8.38 Bat Survey Report 2018 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010027/TR010027-000534-TR010027_M42J6_8.38_Bat_Survey_Report_2018.pdf [accessed 17.09.19]
REF3	Appendix 9.18 (Draft Bat Licence) of Volume 3 of the Environmental Statement https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010027/TR010027-000233-TR010027_M42J6_6-3_Environmental_Statement_Appendices_Appendix_9.18.pdf [accessed 17.09.19]
REF4	The Conservation of Habitats and Species Regulations 2017
REF5	The Wildlife and Countryside Act 1981 (as amended)
REF6	Natural Environment and Rural Communities (NERC) Act 2006
REF7	Department for Transport (2015) Road Investment Strategy for the 2015/16 to 2019/20 Road Period
REF8	Highways England (2015) Highways England Biodiversity Action Plan
REF9	Highways Agency (2002) Biodiversity Action Plan (BAP) https://webarchive.nationalarchives.gov.uk/20101110134540/http://www.highways.gov.uk/aboutus/723.aspx [accessed 19.09.19]
REF10	Warwickshire Wildlife Trust (2015 to 2017) Warwickshire Coventry and Solihull Local Biodiversity Action Plan
REF11	Highways Agency (2008) Interim Advice Note 116/08: Nature conservation advice in relation to bats. : IAN 116/08 Page 15 of 57 October 2008 http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian116.pdf
REF12	Collins, J. (ed.) (2016). Bat Surveys for Professional ecologists: Good Practice Guidelines (3rd ed). The Bat Conservation Trust, London.
REF13	Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines. English Nature, Peterborough
REF14	Mitchell-Jones, A.J. and McLeish, A.P. (eds) (2004) Bat Workers' Manual (3rd edn). JNCC, Peterborough
REF15	CIEEM (2013) Technical Guidance Series Competencies for Species Surveys – Bats; and CIEEM (undated) Competency Framework Competence Levels
REF16	Russ, J.M. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.
REF17	Forestry Commission England (2005) Woodland Management for Bats. Forestry Commission Publications, Wetherby
REF18	Arboriculture and Forestry Advisory Group (AFAG) Tree Climbing Operations Leaflet (AFAG40115).

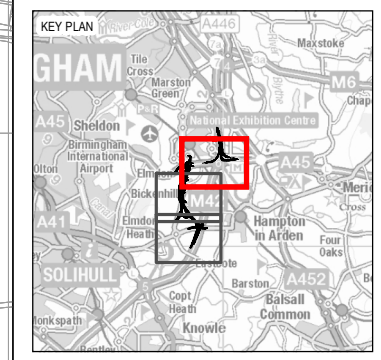
Reference number	Source
REF19	Andrews H et al. (2016) Bat Tree Habitat Key (3rd Edition). AEcol, Bridgwater
REF20	Bat Tree Habitat Key (2018). http://battreehabitatkey.co.uk/ [accessed 14/08/2018]
REF21	Berthinussen, A. and Altringham, A. (2015) Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure DEFRA report WC1060
REF22	AECOM (2108a) Appendix 9.3 Hedgerow Report of the Environmental Statement [TR010027/APP/6.3]. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010027/TR010027-000219-TR010027_M42J6_6-3_Environmental_Statement_Appendicies_Appendix_9.3.pdf [accessed 17.09.19]
REF23	Barlow, K.E. and Briggs, P.A. (2012) Grey long-eared bat surveillance 2012. JNCC Report No 478
REF24	Wardell Armstrong (2018b) Motorway Service Area (MSA) and New Junction between Junctions 5 & 6 of the M42, Solihull. Bat Roost Survey Report – 2018 Update. July 2018

Figures

Figure 1-1: Structures and Buildings with Potential for Roosting Bats



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 - S1 STRUCTURE REFERENCE
 - B1 BUILDING REFERENCE
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS**
- 2018
 - 2019



FIRST ISSUE	GB	JG	21/08/19	C01
Revision Details	By	Check	Date	Suffix

Purpose of Issue
DCO SUBMISSION

Client
Highways England
Floor 5
Two Colmore Square
38 Colmore Circus
B4 6BN



Development Consent Order Number
TR010027

Project Title
M42 JUNCTION 6 IMPROVEMENT

Drawing Title
FIGURE 1-1 STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS SHEET 1 OF 3

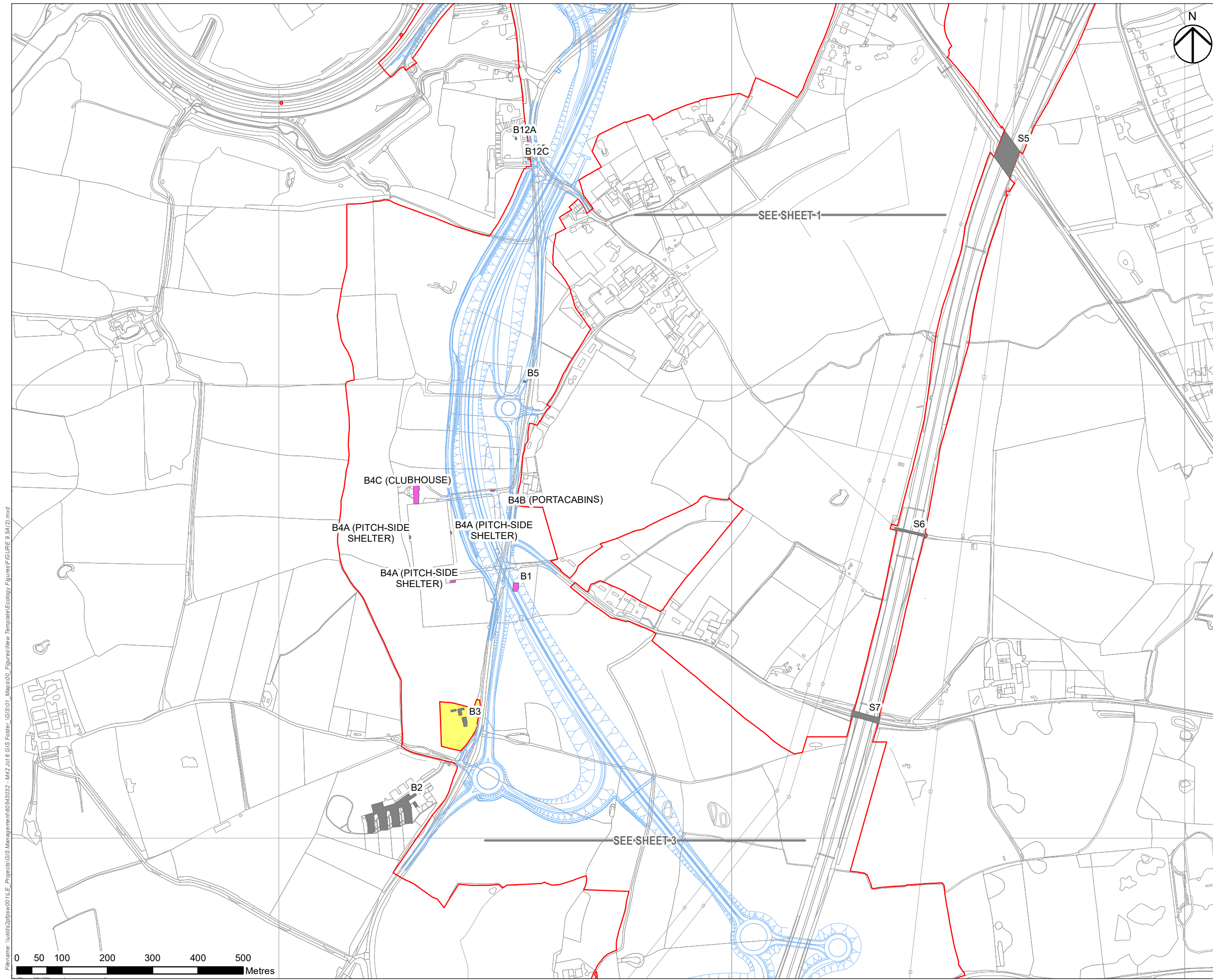
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Internal Project No 60543032	Suitability D7			
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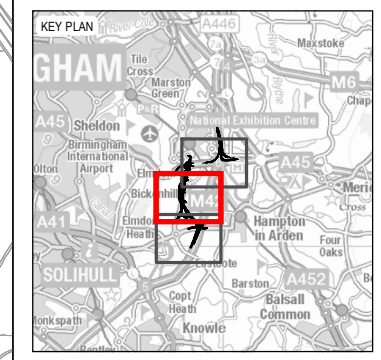
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Location M42 SW ZZ ZZ	Type 1	Role 1	Number 1

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SEE-SHEET-2



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 - S1 STRUCTURE REFERENCE
 - B1 BUILDING REFERENCE
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS**
- 2018
 - 2019



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TR010027

Project Title
M42 JUNCTION 6 IMPROVEMENT

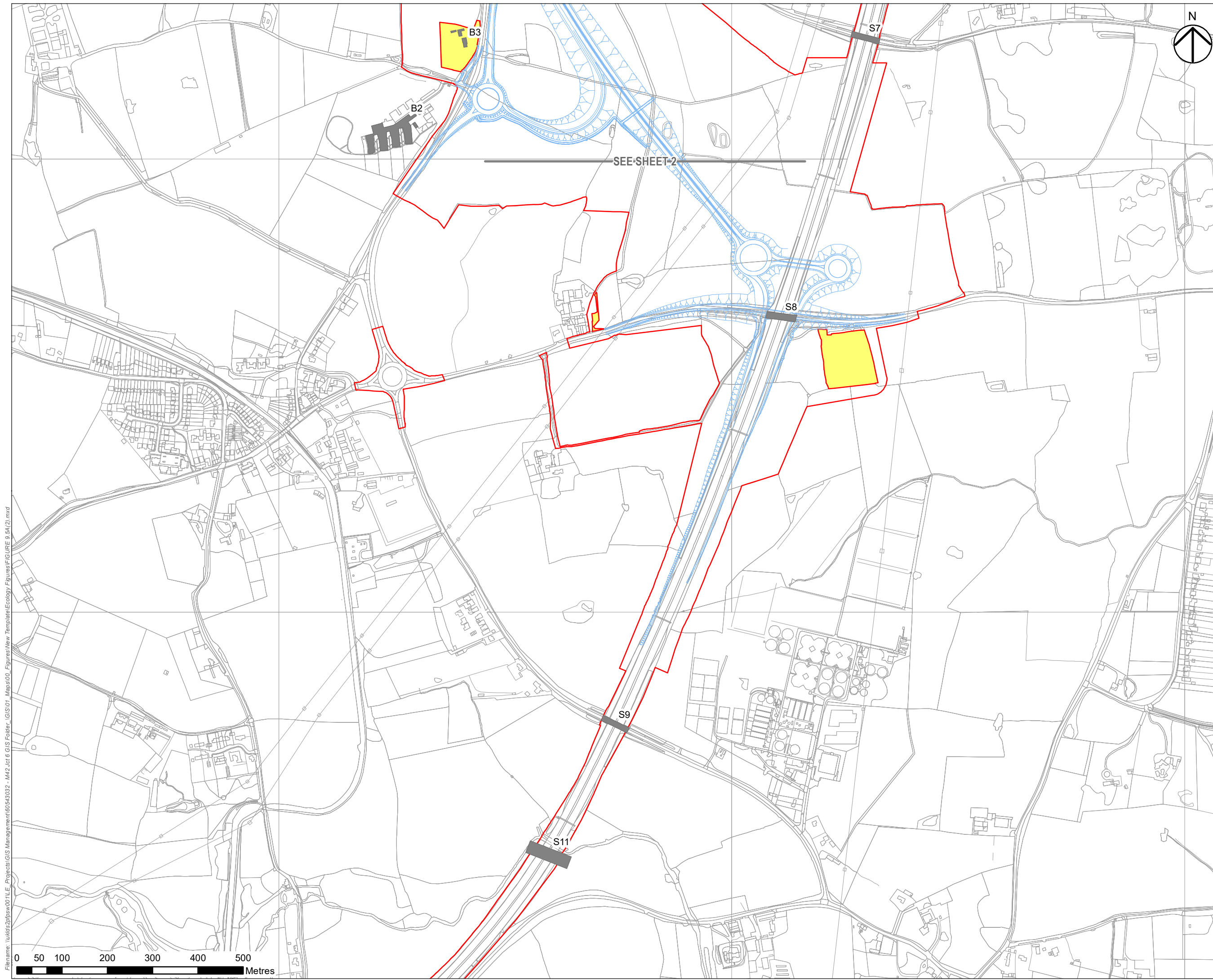
Drawing Title
FIGURE 1-1 STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS SHEET 2 OF 3

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Internal Project No 60543032		Subsidiary D7		
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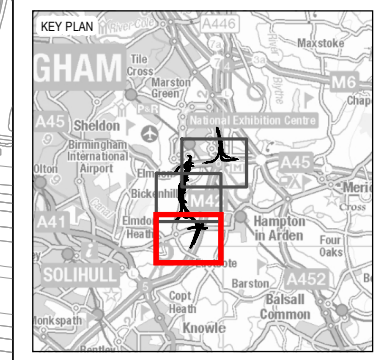
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Filename: \\mids2p2psw001\LE_P\Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder - GIS01 - Maps\00 - Figures\New Template\Ecology Figures\FIGURE 9.5A(2).mxd



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 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - S1 STRUCTURE REFERENCE
 - B1 BUILDING REFERENCE
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS**
- 2018
 - 2019



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TR010027

Project Title
M42 JUNCTION 6 IMPROVEMENT

Drawing Title
FIGURE 9.5A STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS SHEET 3 OF 3

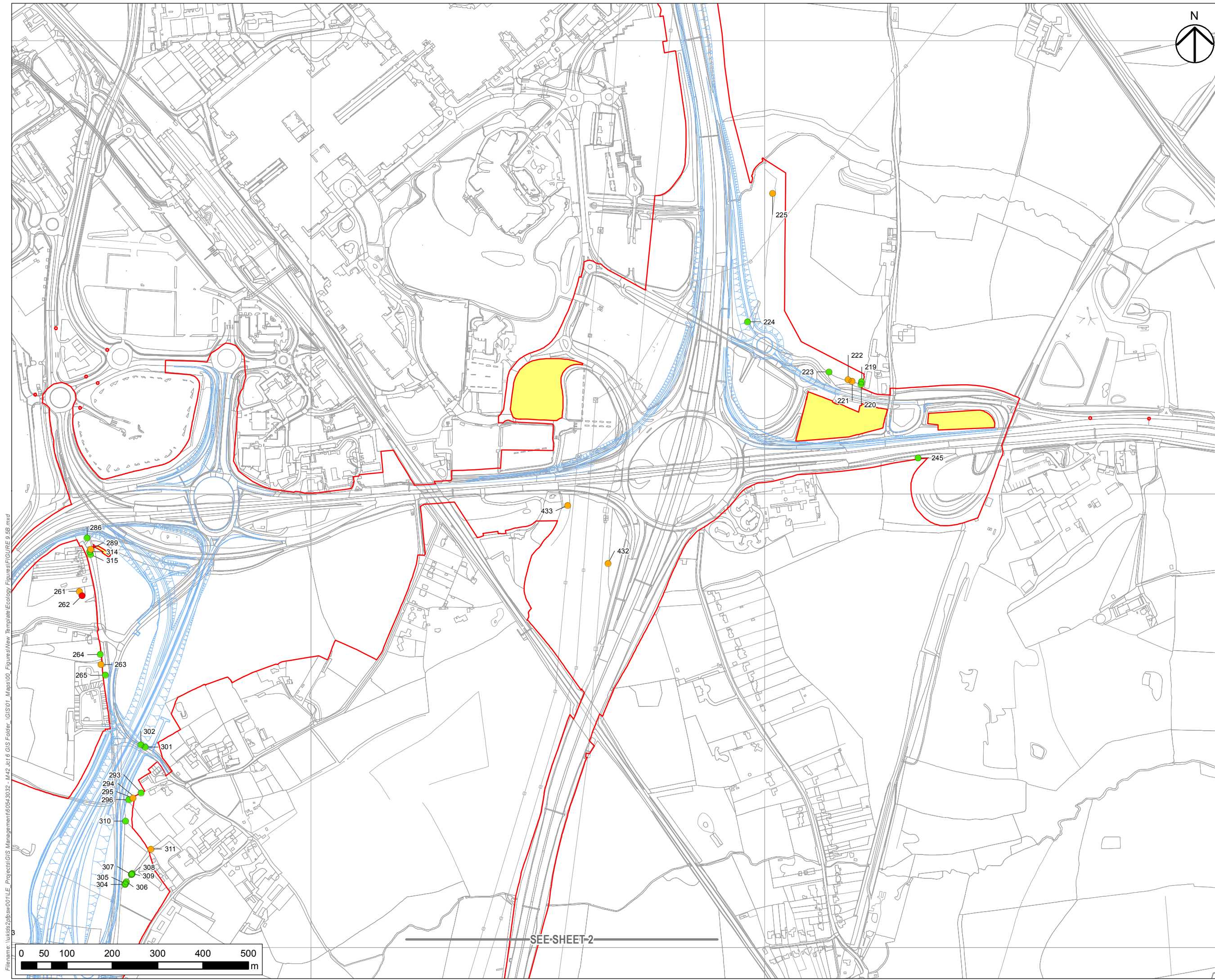
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Location M42 SW ZZ ZZ	Type -DR-DC-0042	Role 1	Number 1

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Figure 1-2: PRF Assessment of Trees



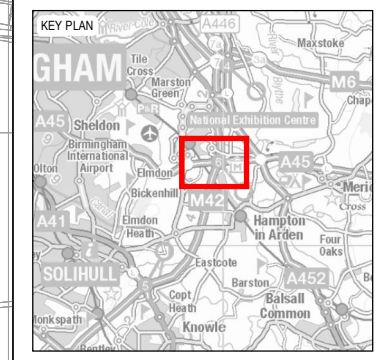
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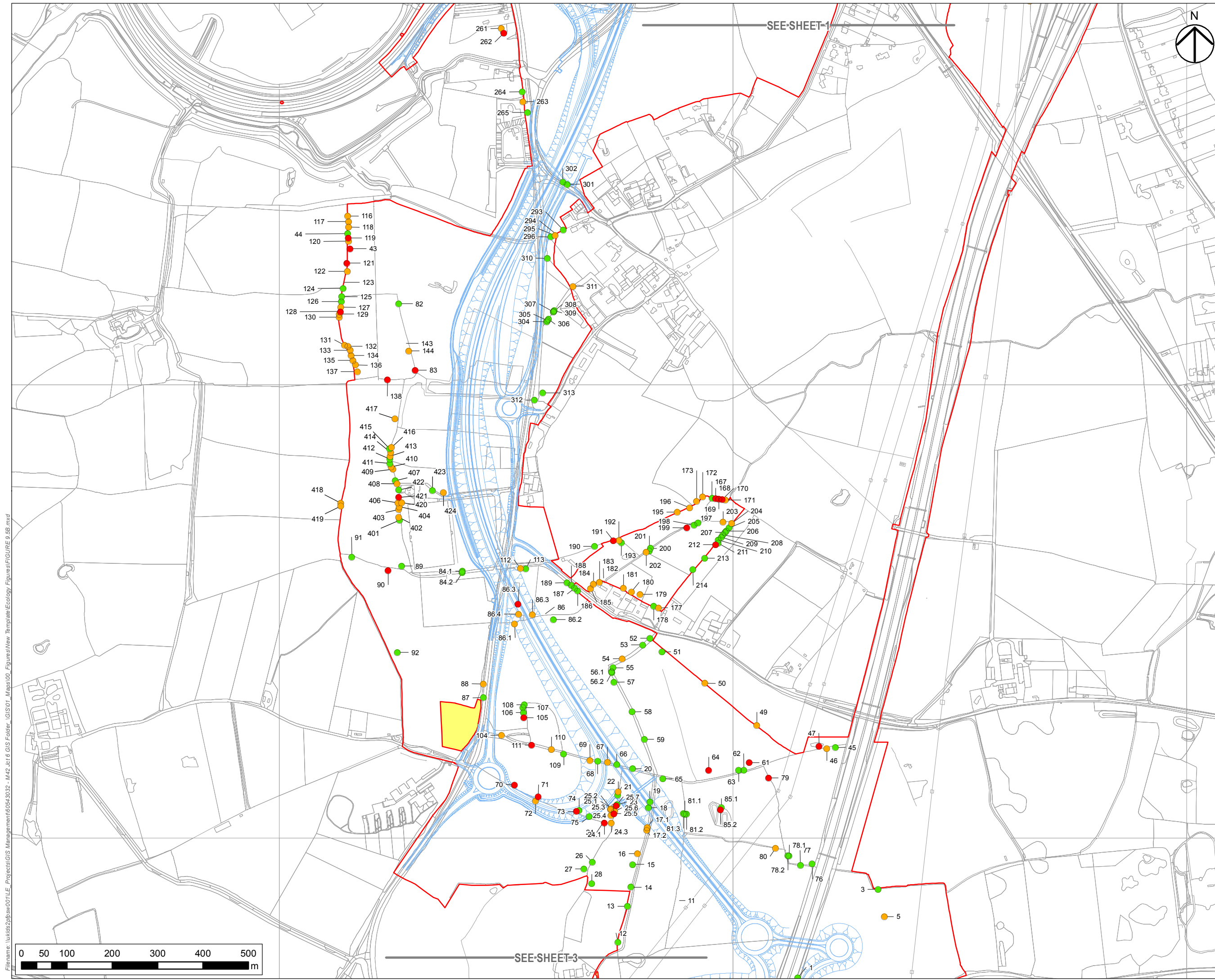
Trees Surveyed for Bat Roost Potential 'Rating following Ground Inspection (GLTA) and subsequent Climbed Inspection (where applicable). And added under three categories for High, Moderate and Low: 'Trees with Negligible potential not shown

- High
- Moderate
- Low



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FIGURE 1-2 PRF ASSESSMENT OF TREES SHEET 1 OF 3				
Designed	Drawn	Checked	Approved	Date
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M42_SW_ZZ_ZZ	-DR-DC-0043			
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SEE-SHEET-1

SEE-SHEET-3

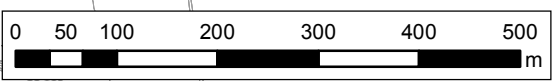


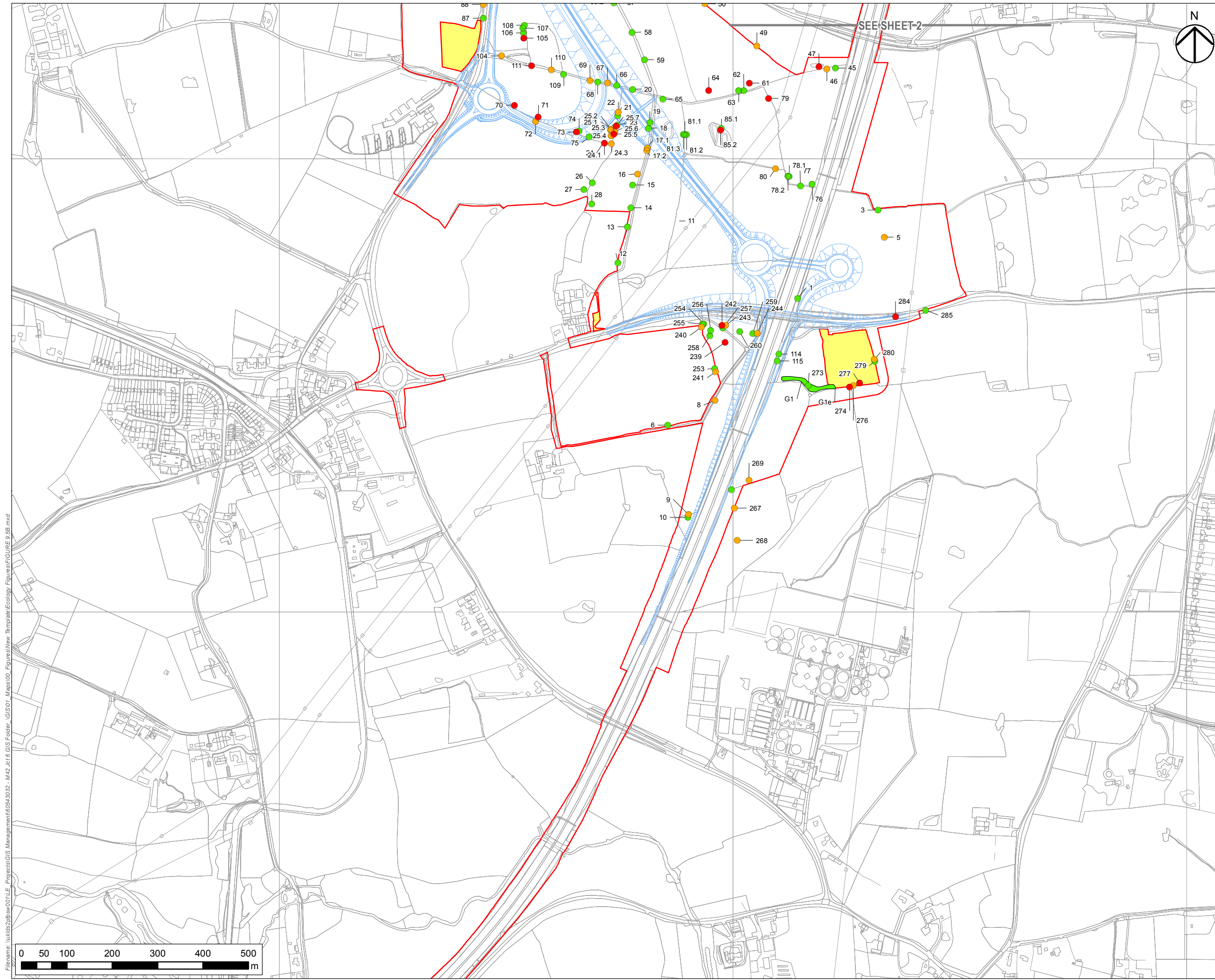
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 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- Trees Surveyed for Bat Roost Potential 'Rating following Ground Inspection (GLTA) and subsequent Climbed Inspection (where applicable). And added under three categories for High, Moderate and Low: 'Trees with Negligible potential not shown**
- High
 - Moderate
 - Low



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Development Consent Order Number	TR010027			
Project Title	M42 JUNCTION 6 IMPROVEMENT			
Drawing Title	FIGURE 1-2 PRF ASSESSMENT OF TREES SHEET 2 OF 3			
Designed	Drawn	Checked	Approved	Date
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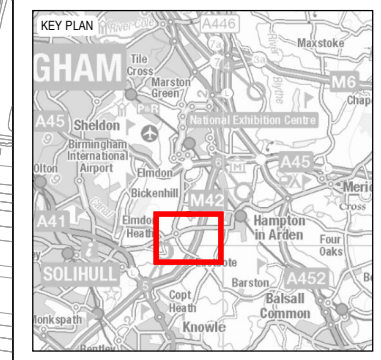
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- LAND NOT INCLUDED WITHIN THE ORDER LIMITS

Trees Surveyed for Bat Roost Potential 'Rating following Ground Inspection (GLTA) and subsequent Climbed Inspection (where applicable). And added under three categories for High, Moderate and Low: 'Trees with Negligible potential not shown

- High
- Moderate
- Low



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Project Title	M42 JUNCTION 6 IMPROVEMENT			
Drawing Title	FIGURE 1-2 PRF ASSESSMENT OF TREES SHEET 3 OF 3			
Designed	Drawn	Checked	Approved	Date
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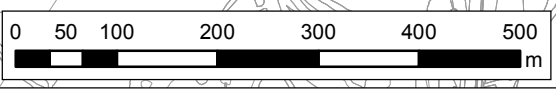
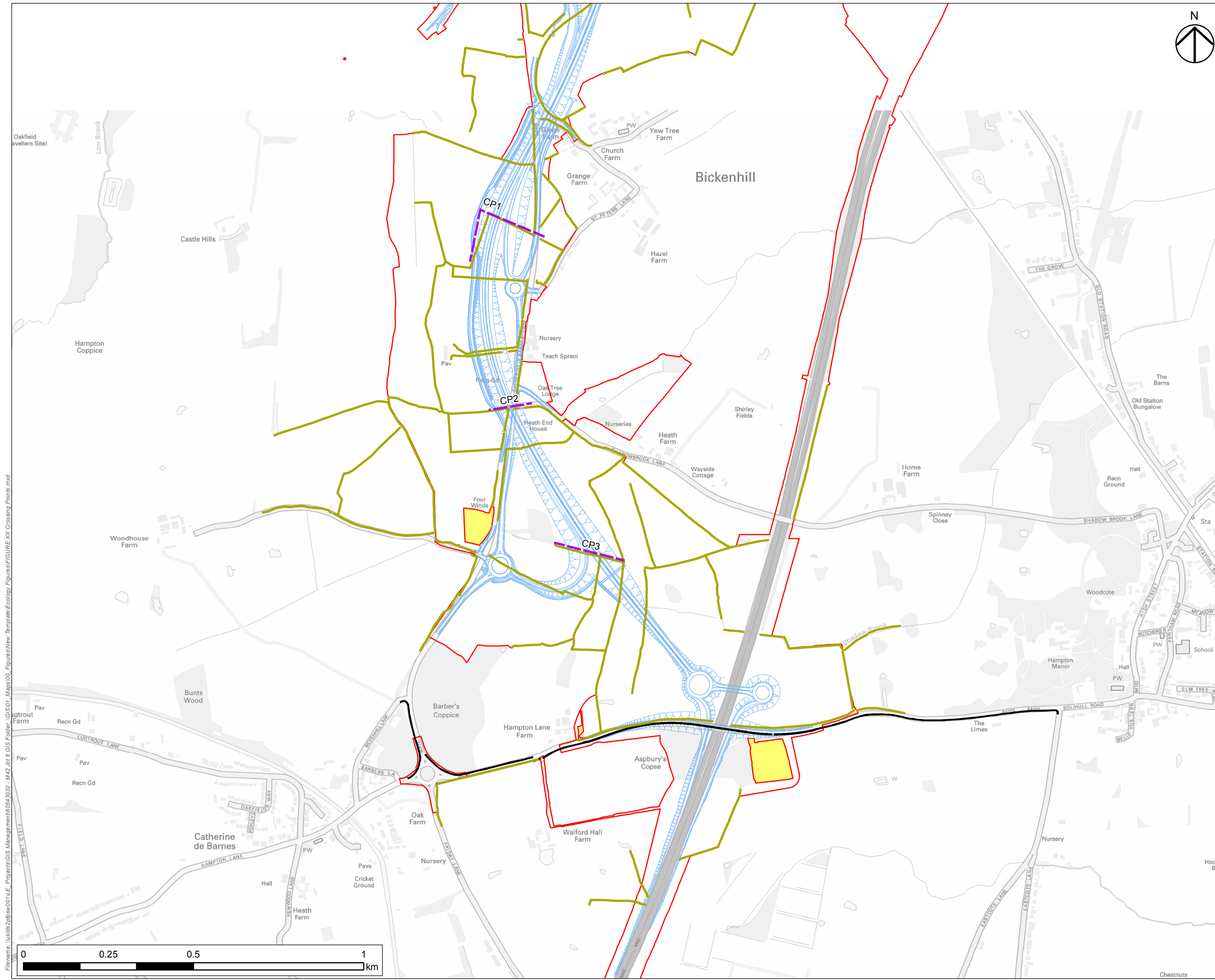


Figure 1-3: Crossing Points



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 - BAT CROSSING POINT SURVEY LOCATION
- HEDGEROW SURVEY
- HEDGEROW



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Project Title
M42 JUNCTION 6 IMPROVEMENT

Drawing Title
FIGURE 1-3 CROSSING POINTS

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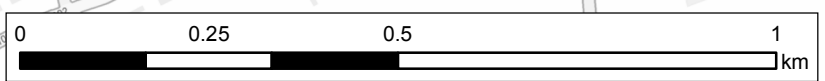


Figure 1-4: Raw Results for Confirmed Roosts



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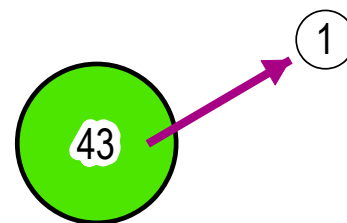
LEGEND

Reference Number



Species

→ Common Noctule



Revision Details	By	Date	Suffix
	Check		

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Drawing Title
FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

Designed	Drawn	Checked	Approved	Date
KC	KC	-	-	12/09/2019

Internal Project No	Suitability
60543032	X

Scale @ A3	Zone
1:40	X

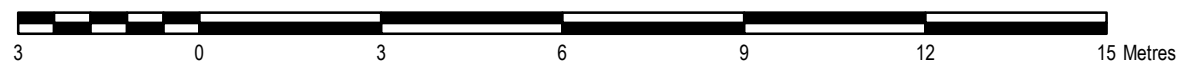
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Drawing Number	Highways England Pin	Originator	Volume	Rev
HE551485	-ACM	-HGN-		P01

Location	Type	Role	Number
M42 ML_PR_CR	-DR-CH-00XX		





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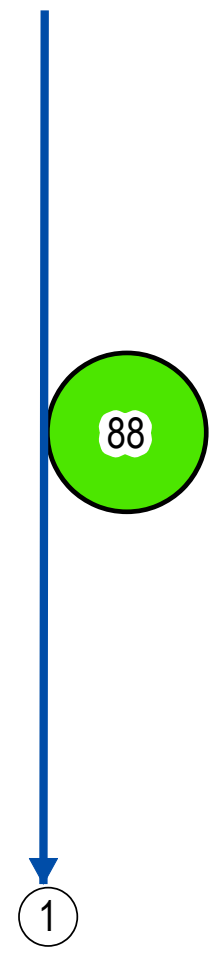
LEGEND

Reference Number



Species

→ Common Pipistrelle



Revision Details	By	Check	Date	Suffix

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Project Title
**M42 JUNCTION 6
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**FIGURE 1-4.
RAW RESULTS FOR
CONFIRMED ROOSTS.**

Designed	Drawn	Checked	Approved	Date
KC	KC	-	-	12/09/2019
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Scale @ A3	Zone			
1:40	X			

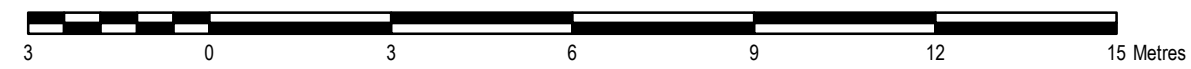
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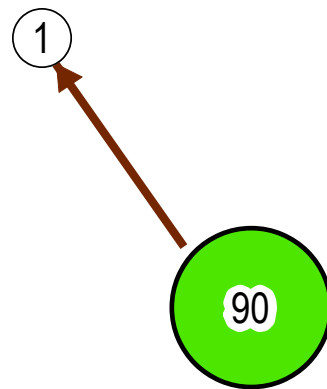
LEGEND

Reference Number

○

Species

➔ Brown Long Eared



Revision Details	By	Date	Suffix
	Check		

Purpose of Issue

FINAL

Client
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 Floor 5
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 B4 6BN

Working on behalf of

Project Title

M42 JUNCTION 6 IMPROVEMENT

Drawing Title

FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

Designed	Drawn	Checked	Approved	Date
KC	KC	-	-	12/09/2019

Internal Project No	Suitability
60543032	X

Scale @ A3	Zone
1:40	X

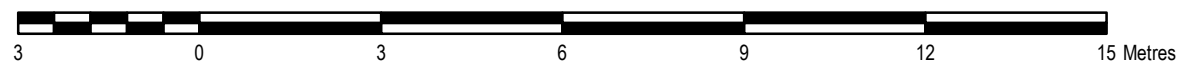
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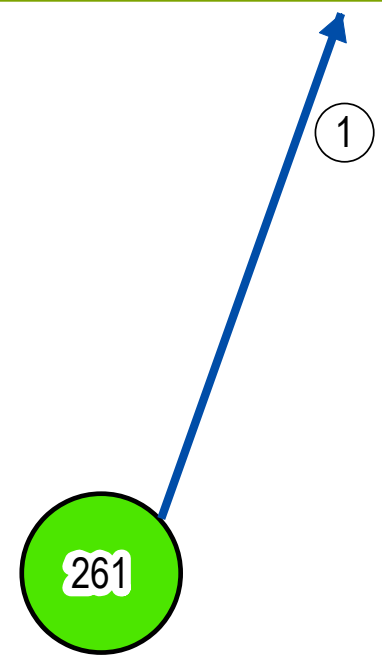
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Line of Trees

—

Species

→ Common Pipistrelle



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Drawing Title

FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

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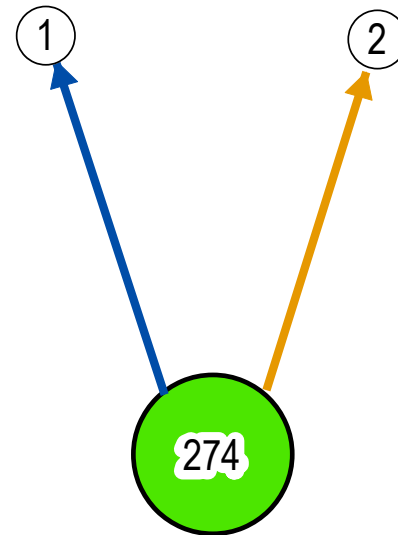
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Reference Number

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Species

→ Common Pipistrelle

→ Soprano Pipistrelle

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**M42 JUNCTION 6 .
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Drawing Title

**FIGURE 1-4.
RAW RESULTS FOR
CONFIRMED ROOSTS.**

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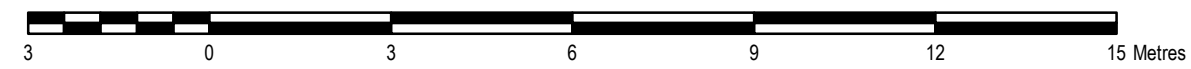
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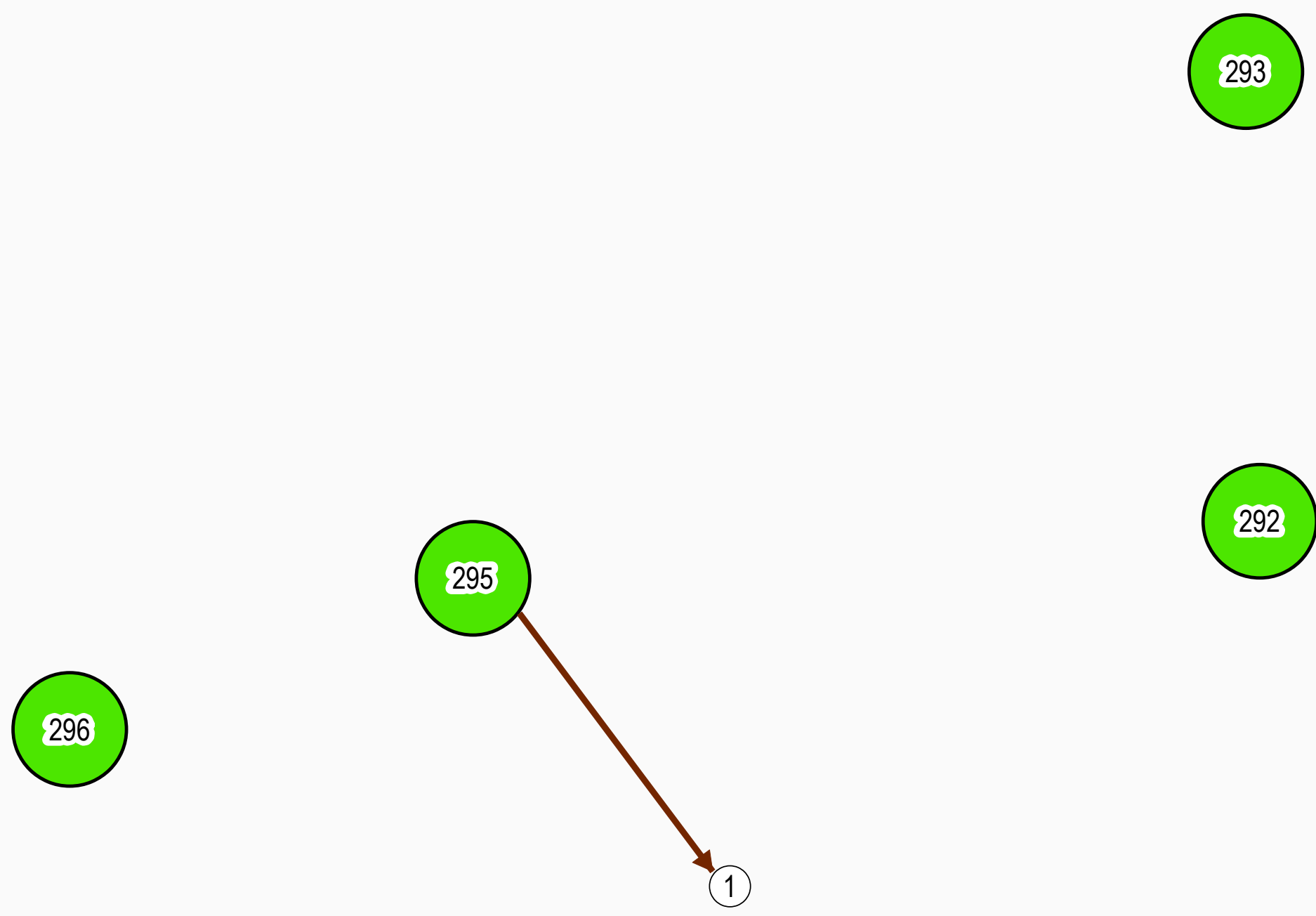
LEGEND

Reference Number

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Species

➔ Brown Long Eared



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38 Colmore Circus
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M42 JUNCTION 6 IMPROVEMENT

Drawing Title
FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

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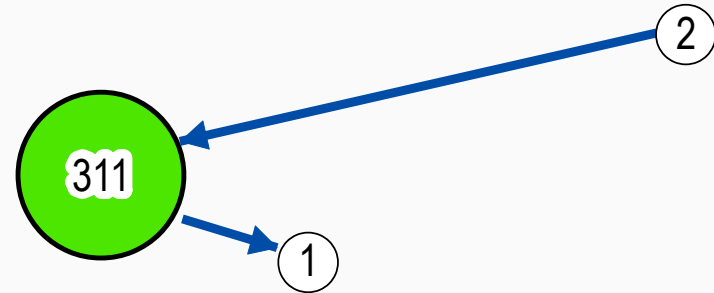
LEGEND

Reference Number

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Species

→ Common Pipistrelle



Revision Details	By	Date	Suffix
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M42 JUNCTION 6 IMPROVEMENT

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FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

Designed	Drawn	Checked	Approved	Date
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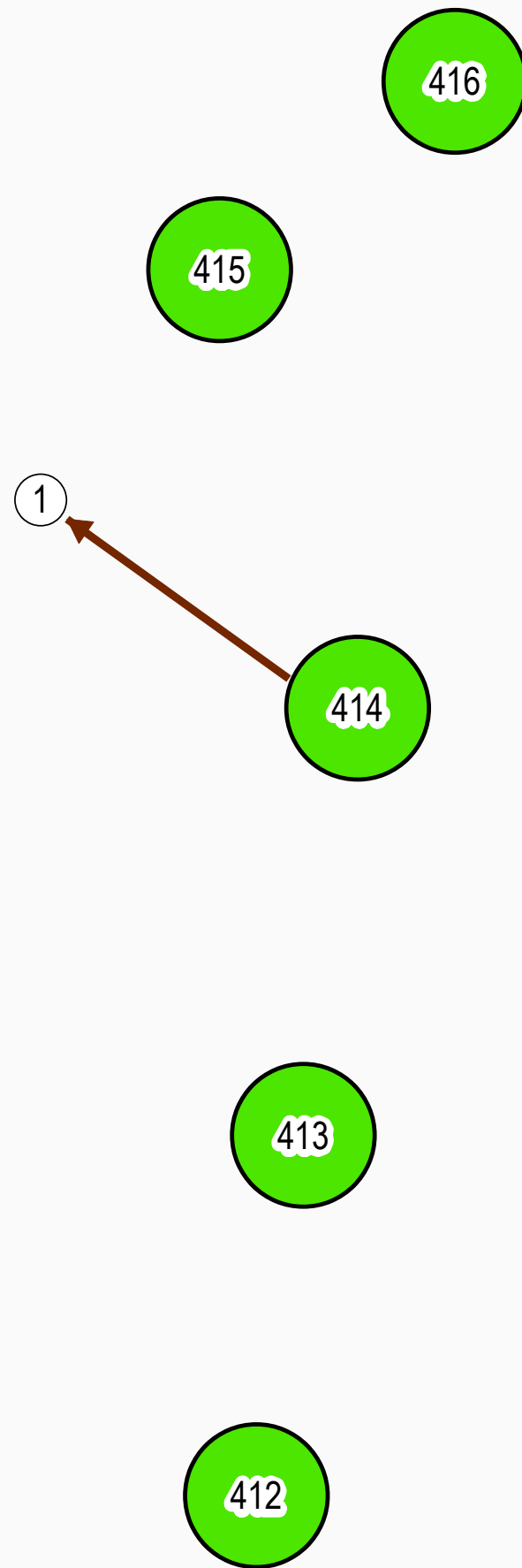
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Reference Number

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Species

→ Brown Long Eared

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Project Title

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FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

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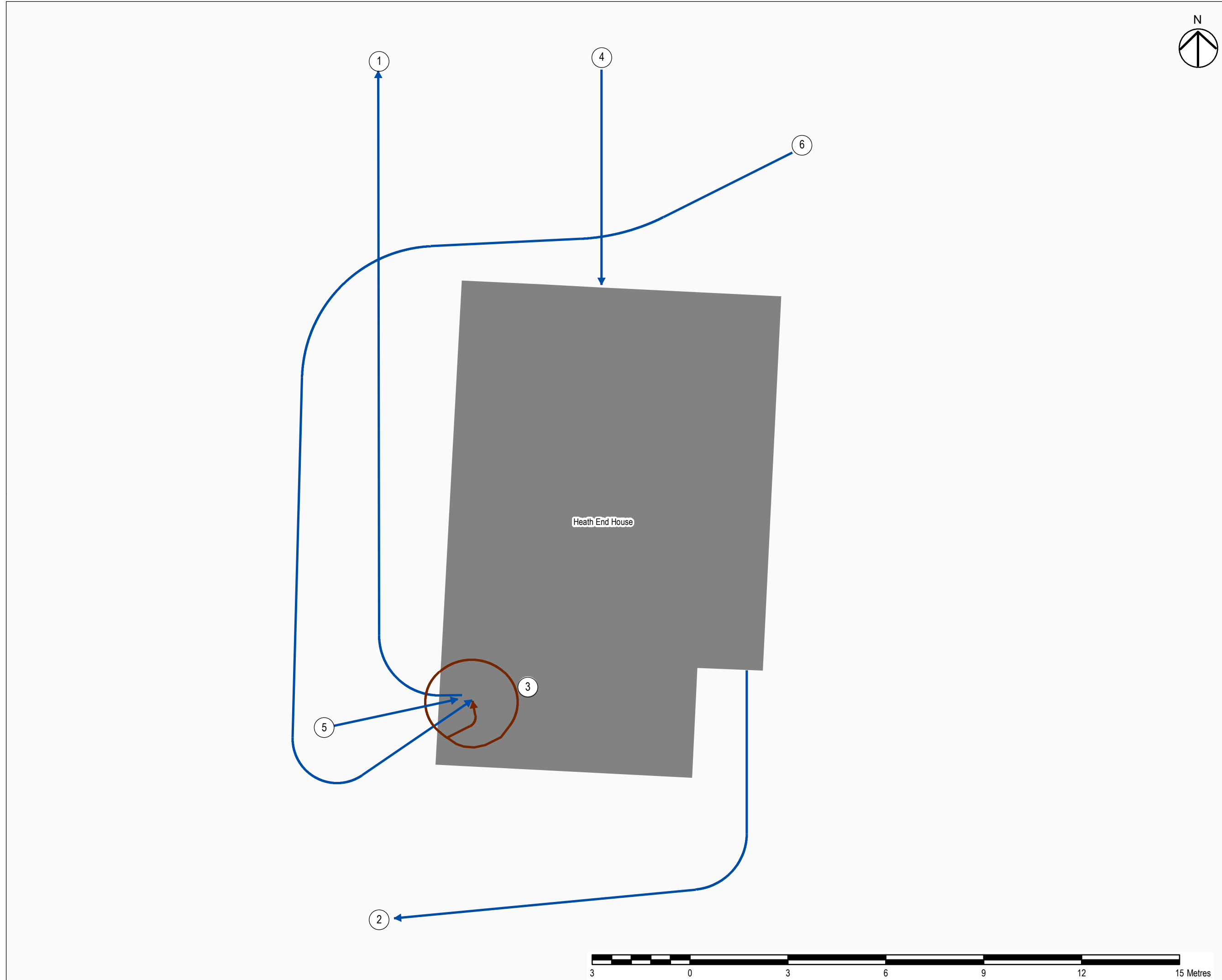
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Reference Number

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Species

→ Common Pipistrelle

→ Brown Long Eared

Revision Details	By	Check	Date	Suffix

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Project Title

M42 JUNCTION 6 IMPROVEMENT

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FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

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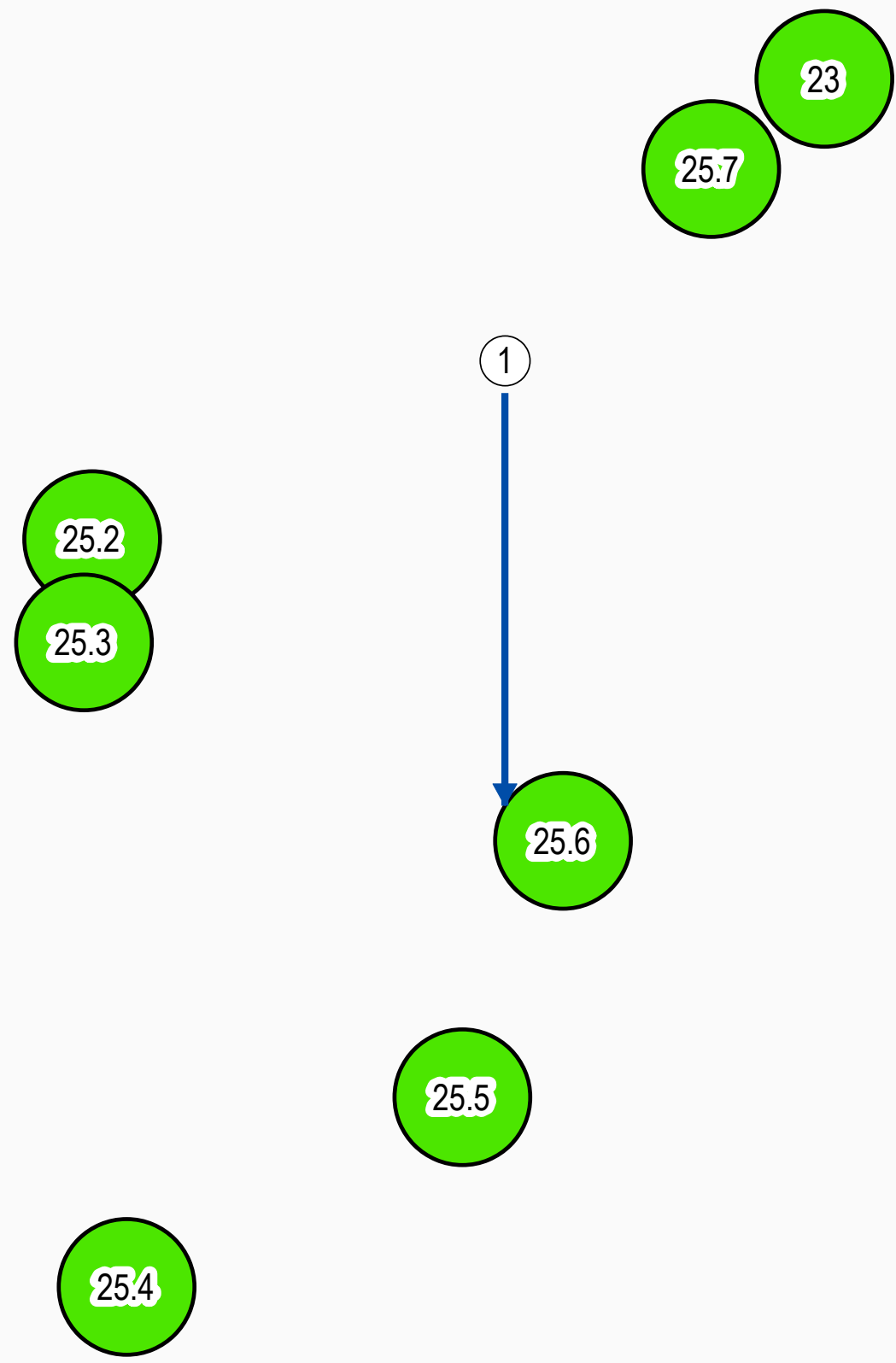
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Reference Number

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Species

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Project Title
M42 JUNCTION 6 IMPROVEMENT

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FIGURE 1-4. RAW RESULTS FOR CONFIRMED ROOSTS.

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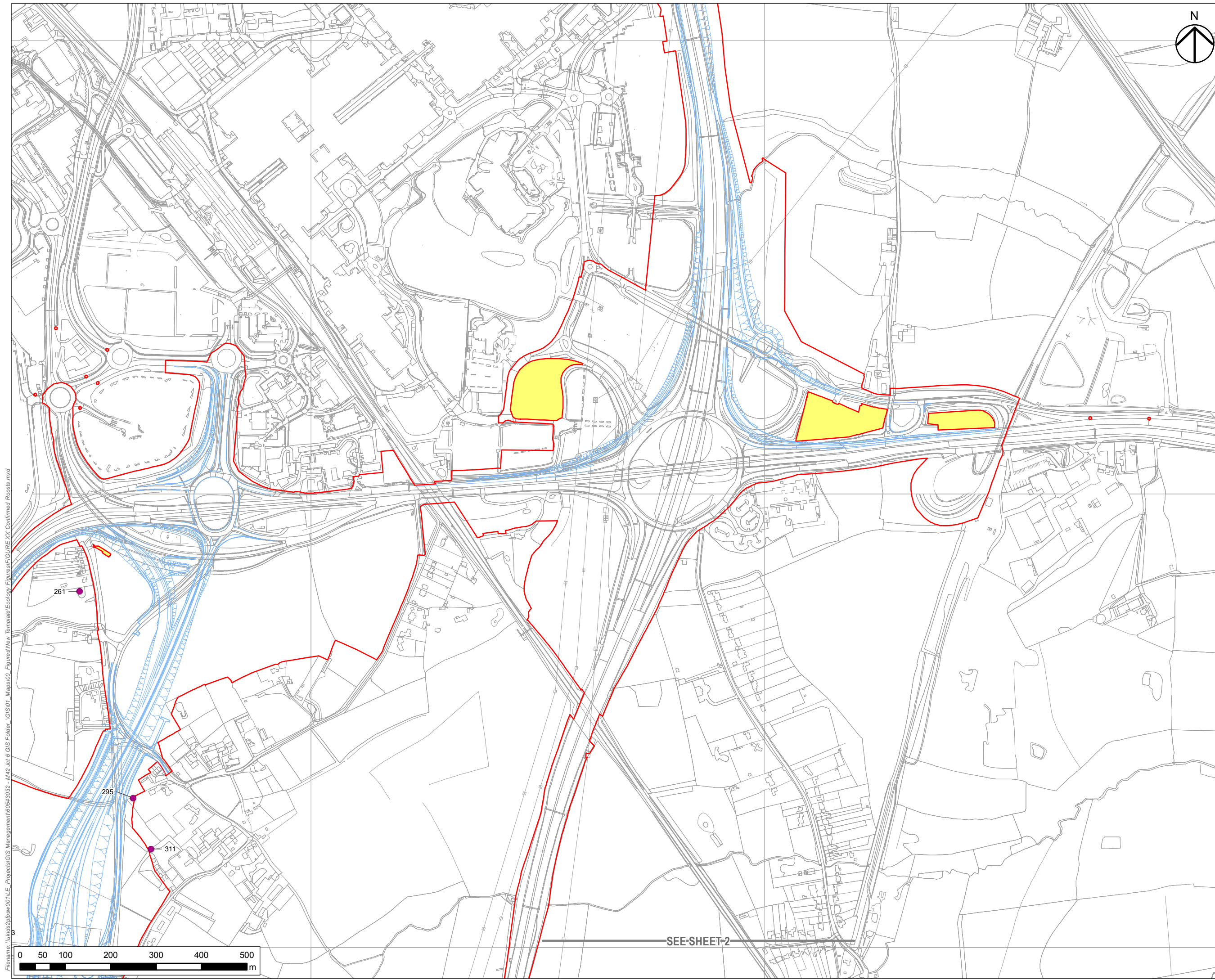
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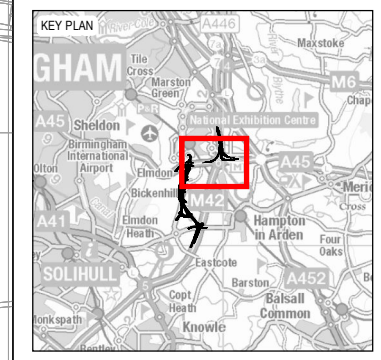
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Figure 1-5: Structure, Buildings and Trees with Confirmed Bat Roosts



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- THE SCHEME
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 - LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - CONFIRMED BAT ROOST IN TREE (2019)



FIRST ISSUE	BO	AR	19/09/19	C01
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Floor 5
Two Colmore Square
38 Colmore Circus
B4 6BN

Development Consent Order Number
TR010027

Project Title
M42 JUNCTION 6 IMPROVEMENT

Drawing Title
FIGURE 1-5 STRUCTURES, BUILDINGS AND TREES WITH CONFIRMED BAT ROOSTINGS SHEET 1 OF 3

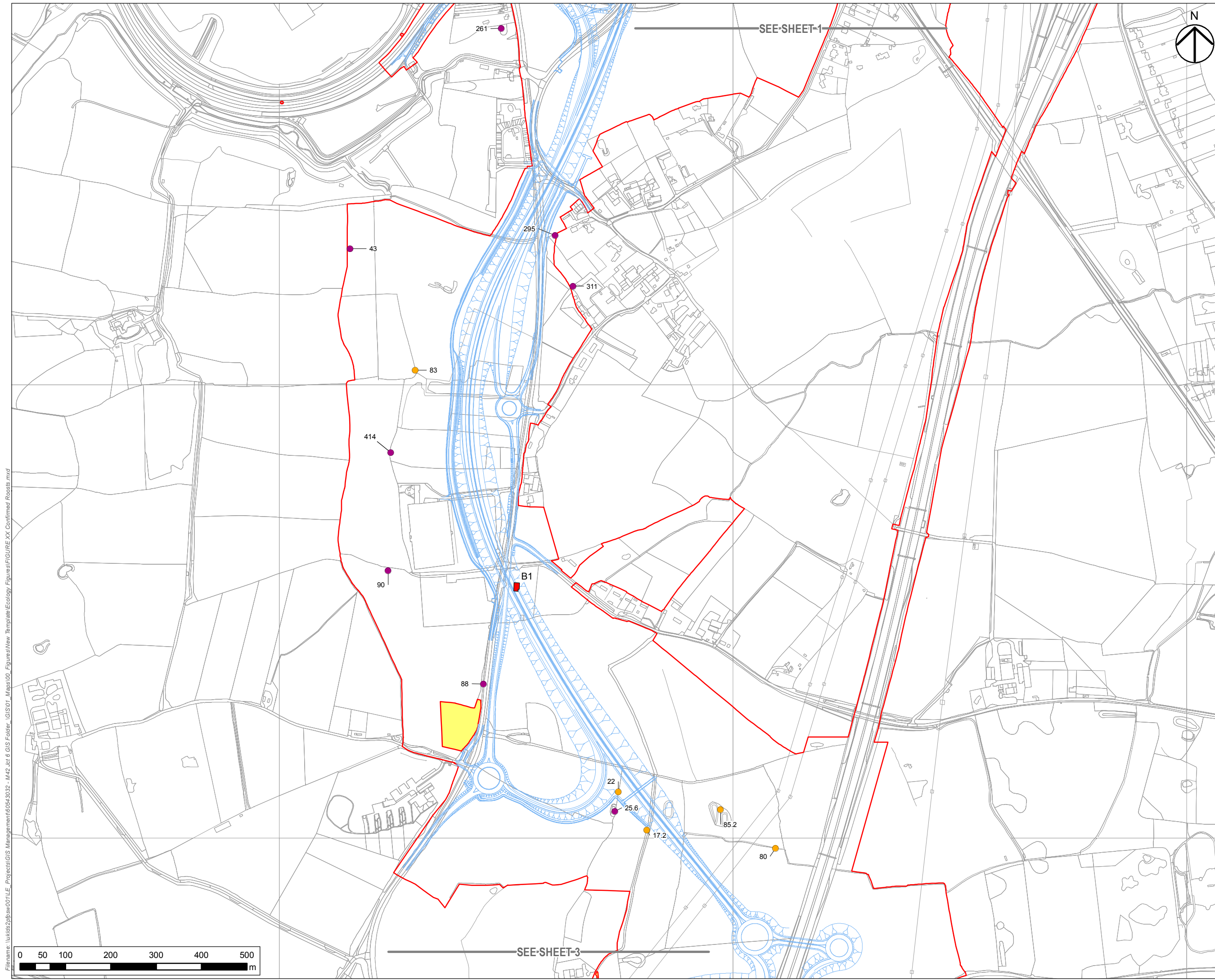
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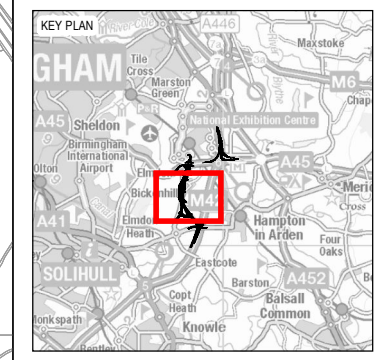
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Location M42 SW ZZ ZZ		Type Role Number -DR-DC-0040	

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SEE SHEET 2

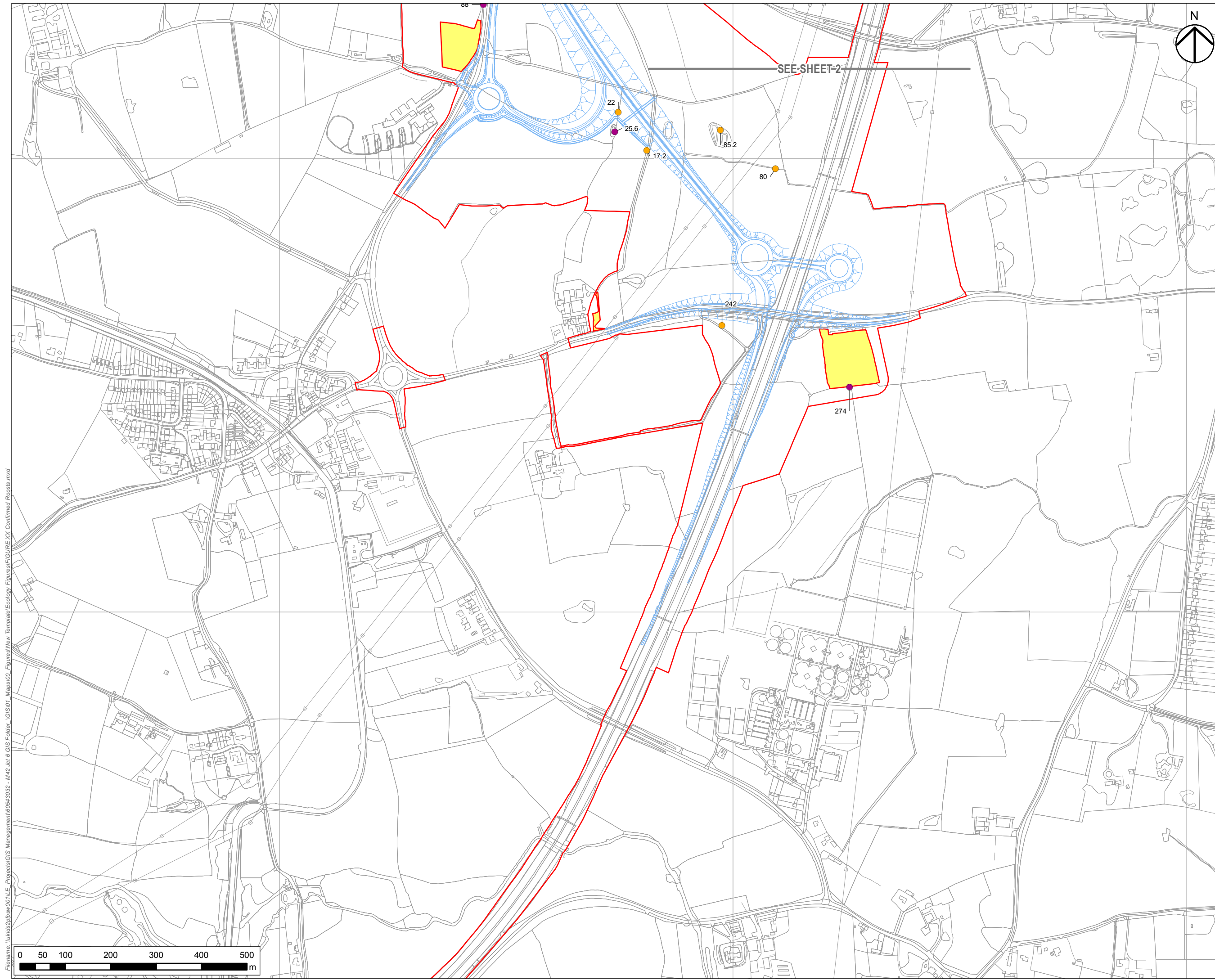


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 - LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS**
- CONFIRMED ROOST (2018 AND 2019)
 - CONFIRMED BAT ROOST IN TREE (2018)
 - CONFIRMED BAT ROOST IN TREE (2019)



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Client				
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Development Consent Order Number				
TR010027				
Project Title				
M42 JUNCTION 6 IMPROVEMENT				
Drawing Title				
FIGURE 1-5 STRUCTURES, BUILDINGS AND TREES WITH CONFIRMED BAT ROOSTINGS SHEET 2 OF 3				
Designed	Drawn	Checked	Approved	Date
JT	BO	AR	JG	19/09/19
Internal Project No			Suitability	
60543032			D7	
Scale @ A3			Zone	
1:7,500			M42	
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Drawing Number		Originator		Rev
HE551485 -ACM		-EGN-		C01
M42 SW ZZ ZZ		-DR-DC-0041		
Location		Type Role Number		

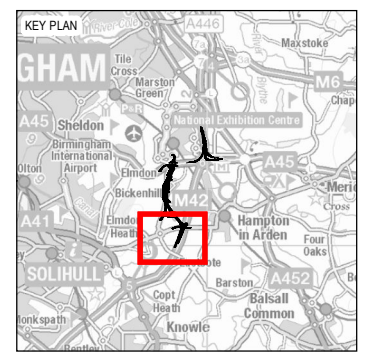
Filename: \\ukids2pfs\sw001\LE_Projects\GIS_Management\60543032 - M42 Jct 6 GIS Folder - \GIS01 - Maps\100 - Figures\New Template\Ecology_Figures\FIGURE XX Confirmed Roosts.mxd



SEE SHEET 2



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 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - CONFIRMED BAT ROOST IN TREE (2018)
 - CONFIRMED BAT ROOST IN TREE (2019)



FIRST ISSUE	BO	AR	19/09/19	C01
Revision Details	By	Check	Date	Suffix

Purpose of Issue
DCO SUBMISSION

Client
Highways England
Floor 5
Two Colmore Square
38 Colmore Circus
B4 6BN

Development Consent Order Number
TR010027

Project Title
M42 JUNCTION 6 IMPROVEMENT

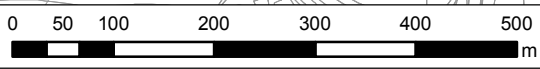
Drawing Title
FIGURE 1-5 STRUCTURES, BUILDINGS AND TREES WITH CONFIRMED BAT ROOSTINGS SHEET 3 OF 3

Designed JT	Drawn BO	Checked AR	Approved JG	Date 19/09/19
Internal Project No 60543032	Suitability D7			
Scale @ A3 1:7,500	Zone M42			

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Drawing Number HE551485	Originator -ACM	Volume -EGN-	Rev C01
Location M42 SW ZZ ZZ		DR-DC-0042	

Filename: \\ukids2pfs\sw001\LE_Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder - \GIS01_Maps\100_Figures\New Template Ecology Figures\FIGURE XX Confirmed Roosts.mxd



Annex A: Buildings and structures assessment 2019

Reference Building /Structure	Description	External Survey	Internal Survey	Bat Roosting Suitability
B1	Heath End House. Detached bungalow with pitched tiled roof and wooden boarding on gable end walls	Updated 20/08/2019 Detached bungalow with pitched tiled roof and wooden boarding on gable end walls. Change since previous surveys and assessment (March and August 2018): all windows and doors have been boarded with metal grill shuttering as the building is no longer occupied.	Updated 20/08/2019 Building is no longer occupied and showing signs of internal damage from intrusive (asbestos) surveys and partial soft stripping. No sign of any bat activity in former living areas. No change to roof voids. As per previous surveys (March and August 2018) a couple of pipistrellus species droppings noted in small void over 1 st floor to the north; no signs of bats at eaves void to the south; and one brown long-eared type bat dropping in the centre of the attic roof void.	Confirmed.
B4a	Páirc na hÉireann (Warwickshire Gaelic Athletic Association). Pitch-side shelters	04/06/2019 Several metal pitch-side shelters. Metal frame sides, but open to the pitch.	N/A	Negligible
B4b	Páirc na hÉireann (Warwickshire Gaelic Athletic Association). Portacabins	04/06/2019 Two portacabins. The western portacabin was old and showing signs of wear. This was of wooden board construction with a tar-felt roof. Small holes and damage were present around wooden soffits, but of insufficient size to be used as potential bat access points. The second portacabin or store was constructed of metal sheet with no features of note.	04/06/2019 N/A. No internal inspections undertaken as the structures did not offer any potential bat access points.	Negligible

Reference Building /Structure	Description	External Survey	Internal Survey	Bat Roosting Suitability
B4c	<p>Páirc na hÉireann (Warwickshire Gaelic Athletic Association).</p> <p>Clubhouse</p>	<p>20/06/2019</p> <p>Clubhouse and changing rooms.</p> <p>Single storey brick building with pitched concrete tiled roof. Some defects to the roof with small gaps between tiles providing potential bat access.</p> <p>Wooden soffits present with several gaps at defect holes and at missing vents. Between the changing rooms top the south and clubhouse to the north a passageway passes through the building with wooden boarded ceiling to the roof void; no gaps were present in this boarding suitable for bat access points.</p>	<p>20/06/2019</p> <p>Internally the building was in active use. A single roof void spans the entire length of the building. The roof void featured A-frame timbers with no ridge beam, F1 bitumen underfelt and insulation between floor beams. Internal concrete block and brick gables walls were present to the north and south. No signs of bat activity (droppings or other signs) were noted. Some old mice and rat droppings present.</p>	Moderate
B13	Derelict bungalow	<p>10/07/2019</p> <p>Derelict building with no/ broken windows, open on all sides and gaps in roof on all facings. Located adjacent to A45 so there may be a high level of disturbance. See pictures for further details.</p>	Not safe to enter	Moderate

Annex B: Buildings and structures roost survey results 2019

Building /Structure number	PRF suitability	Date of survey	Results	Roost present (Y/N)
B1	Confirmed	01.07.19	<p>22:00: 1x common pipistrelle emerged from chimney side and flew north. 27 minutes after sunset.</p> <p>22:14: 1x common pipistrelle flew from south-east corner of building - suspected emergence.</p> <p>A couple of passes of brown long eared bat recorded near the eastern side of the house</p> <p>common pipistrelle social calls, common pipistrelle, soprano pipistrelle, noctule, <i>Myotis</i> species, all heard foraging to the north and north-east.</p>	Y
		16.07.19	<p>03:39: 1x brown long eared bat swarming around the chimney - possible re-entry</p> <p>04:34: 1x common pipistrelle possible re-entry on northern side of building (exact point not recorded).</p> <p>04:35: 1x common pipistrelle re-entry via gap in mortar within the chimney stack above the roof line.</p> <p>Distant noctule heard, possible brown long eared bat seen (not heard) as well as other common pipistrelle activity within vicinity.</p>	
		30.07.19	<p>04:56: 1x common pipistrelle re-entry to chimney, missing mortar on chimney stack just above the eaves roof-line.</p> <p>Common pipistrelle calls and one noctule call also heard.</p>	
B4c	Moderate	02.07.19	Pipistrelle species and <i>Nyctalus</i> species activity frequently throughout the survey. No emergence from the building recorded.	N
		13.08.19	Common pipistrelle activity including social calls recorded through the early morning. No re-entries recorded.	N
B13	Moderate	23.07.19	A maximum of seven common pipistrelle bats recorded through the survey. No re-entries were recorded.	N
		06.08.19	Pipistrelle species activity recorded throughout the night. A maximum of two noctules recorded. No emergences recorded.	N

Annex C: Ground level tree assessments 2019

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF Location	PRF Orientation	Approx. height	PRF Form & general information
	X	Y							
401	418272	281701	Low	03/07/2019	<i>Quercus robur</i>	Trunk	west	6m. 5m	60cm DBH Small rot holes
402	418269	281702	Moderate	03/07/2019	<i>Quercus robur</i>	Main trunk	North, south	5m, 6m	90cm DBH. Mature. Split bark, possible fissure, minor dead wood and rot hole.
403	418260	281728	Moderate	03/07/2019	<i>Quercus robur</i>	Hazard beam	North	8m	70cm DBH. Mature. Hazard beam creating cavities within branch
404	418279	281723	Moderate	03/07/2019	<i>Fraxinus excelsior</i>	Ivy	All round	6m	80cm DBH. Mature. Cavity between thick ivy and main trunk.
406	418248	281729	Moderate	03/07/2019	<i>Quercus robur</i>	Fissure	South	4m. 0-1.5m	40cm DBH. Dead standing. Cavities within tree fissure
407	418253	281792	Low	04/07/2019	<i>Unknown</i>	Trunk	All round	Various	40cm DBH. Dead standing. Next to public footpath. Fissures in main dead-wood trunk and flaking outer layer.
408	418252	281792	Moderate	03/07/2019	<i>Corylus avelanna</i>	Trunk	North, west	1.5m, 3m	Multi-stemmed. Next to path. Second from north leader had a cavity at the top of a callus hole split.

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF Location	PRF Orientation	Approx. height	PRF Form & general information
	X	Y							
409	418246	281799	Moderate	03/07/2019	<i>Quercus robur</i>	Three stems above main trunk	West	3m	90cm, 25cm, 40cm DBH. Callus hole on west most leader. Ivy on main trunk.
410	418247	281819	Moderate	03/07/2019	<i>Quercus robur</i>	Branch	East, crown	N/A, 9m	Mature. 100cm+ DBH. Dead branch. Minor dead wood, flaking & lifted bark, rot hole.
411	418238	281827	Low	03/07/2019	<i>Quercus robur</i>	branch	N/A	2m	Mature. 60cm DBH. Minor callus wound. No shelter
412	418238	281832	Low	03/07/2019	<i>Quercus robur</i>	Main trunk	N/A	N/A	Mature. Ivy creating cavities between tree
413	418238	281838	Moderate	03/07/2019	<i>Quercus robur</i>	Branch	East	4m	Mature. 90cm DBH. East facing branch. Also signs of advanced decay: fissures, loose bark, lifted bark.
414	418239	281845	Moderate	03/07/2019	<i>Quercus robur</i>	Trunk	N/A	N/A	Mature. Lots of ivy creating cavities between the tree
415	418233	481860	Low	03/07/2019	<i>Quercus robur</i>	Lower branches	North	3m	Semi-Mature. 40cm DBH. Dead wood on lower branches and callus roll facing north but is very exposed
416	418233	281860	Moderate	03/07/2019	<i>Quercus robur</i>	Trunk	East	4m	Mature. 90cm DBH. Callus roll facing east. Dead wood at crown.

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF Location	PRF Orientation	Approx. height	PRF Form & general information
	X	Y							
417	418255	281925	Moderate	03/07/2019	<i>Quercus robur</i>	trunk	South east	6m	Mature. Dead wood in crown with minor missing bark. Possible wood pecker hole facing SE. Other features possible.
418	418145	281738	Moderate	03/07/2019	<i>Quercus robur</i>	Main trunk	N/A	7m	Mature. 70cm DBH. Large callus wound with exposed hard wood with gaps and fissures.
419	418145	281738	Moderate	03/07/2019	<i>Quercus robur</i>	Main stem	N/A	N/A	Mature. 90cm DBH. Curved main stem.
420	418270	281763	Moderate	03/07/2019	<i>Acer campestre</i>	Main trunk	N/A	0.5-3m	Mature. 50cm DBH. Fissure split on main trunk.
421	418270	281763	High	03/07/2019	<i>Quercus robur</i>	Trunk	South	7m	Semi-mature. 50cm DBH. Woodpecker hole.
422	418268	281774	Low	03/07/2019	<i>Quercus robur</i>	Main trunk	N/A	N/A	Small mature. 50cm DBH. Dead wood, lifter and missing, stripped bark in crown.
423	418338	281767	Low	03/07/2019	<i>Acer campestre</i>	Main trunk	N/A	N/A	Mature hedgerow tree. Lots of ivy creating cavities between.
424	418364	281753	Moderate	03/07/2019	<i>Salix fragilis</i>	Trunk	N/A	3-4m	Mature. 90cm DBH. Trunk leaning at est.30-degree angle. Upper branches have splits & hazard beam.

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF Location	PRF Orientation	Approx. height	PRF Form & general information
	X	Y							
431	419480	282748	Low	10/07/2019	<i>Quercus robur</i>	Branch	North	8m	Standing dead wood, looks to have been managed. (limbs have been trimmed etc.). Loose bark near the top of the tree. 120cm DBH
432	419655	282847	Moderate	10/07/2019	<i>Acer campestre</i>	Trunk	North-East	1.5m	Large U-shaped cavity. 75cm DBH
433	419566	282975	Moderate	10/07/2019	<i>Salix fragilis</i>	Branch	South to South- East	5m	Mature. Difficult to access base of tree due to dense bramble so precautionary rating given. Woodpecker hole under a broken branch. 150cm DBH.
434	419547	283005	Low	10/07/2019	<i>Quercus robur</i>	Trunk	All facings	Whole trunk	Very dense ivy cover all over trunk possibly masking further features. 80cm DBH

Annex D: Tree climbing results 2019

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T43	<i>Quercus robur</i>	043a	26/06/19	Deadwood. Dead stub with downward developed 20 cm cavity offering optimal shelter.	S	10	N/A	High	High
		043b		Knot hole. Opening 5 cm diameter leading downwards 20 cm into a dry and enclosed cavity with old nesting material inside.	NE	10	N/A		
T116	<i>Quercus robur</i>	116a	26/06/19	Lower branch stub with 15 cm inward developed cavity, damp inside offering limited shelter	E	3.5	N/A	Moderate	Low
T117	<i>Quercus robur</i>	117a	26/06/19	Broken limb. Upper limb fracture with a lateral split along the snapped section with a more vertical split on the tree section; the lateral split offers shelter but is not fully enclosed, the split is also cobwebby; the vertical split is approximately 60 cm deep downward developed with leaf litter in the base and cluttered, however the cavity is extensive and could provide a day roost for a single bat.	S	6	N/A	Moderate	Moderate
		117b		Broken limb. Lower limb fracture with a 10 cm inward developed cavity offering limited shelter.	SW	4	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T118	<i>Quercus robur</i>	118a	26/06/19	Deadwood small cavity within branch collar on attached dead limb offering limited shelter	SW	4	N/A	Moderate	Low
		118b		Substantial areas of lifted /loose bark attached to lower dead limb offering limited shelter	NW	4	N/A		
T119	<i>Quercus robur</i>	119a	26/06/19	Woodpecker hole. Opening 6 cm diameter, leading inwards towards the stem 60 cm deep to a single apex; clean inside with no cob webs and woodlice in the apex.	E	5	N/A	High	High
		119b		Knot hole. Located above the central major branch union, opening 3 x 10 cm leading laterally inwards 20 cm, dry and enclosed with woodlice and slugs currently occupying the feature.	N	3	N/A		
		119c		Callus roll. Long branch scar offering very limited shelter. Smooth internal substrate.	E	4.5	N/A		
		119d		Deadwood. Lower dead limb with side facing aperture leading into a downward developed cavity offering optimal shelter.	NW	5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T120	<i>Quercus robur</i>	120a	26/06/19	Knot hole, upward facing and exposed, full of water	N	11	N/A	Moderate	Negligible
		120b		Broken limb, upward facing and exposed	SE	11.5	N/A		
		120c		Knot hole, upward facing and exposed	W	9	N/A		
		120d		Knot hole, no Cavity	SW	6	N/A		
		120e		Knot hole, shallow cavity at the end of the limb	W	7	N/A		
		120f		Knot hole, shallow cavity at the end of the limb	SW	9	N/A		
T121	<i>Quercus robur</i>	121a	26/06/19	Deadwood, no cavity present	SW	5	N/A	Moderate	Negligible
		121b		Split, no cavities present	N	7	N/A		
		121c		Broken limb, no cavities present	W	5	N/A		
T122	<i>Quercus robur</i>	122a	26/06/19	Ivy cover offering suboptimal shelter	N/A	2	N/A	Moderate	Negligible
T144	<i>Quercus robur</i>	144a	26/06/19	Broken limb with branch stub on lower major limb with splits and callus roll offering very limited shelter	E	4	N/A	Moderate	Negligible

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T261	<i>Quercus robur</i>	261a	28/06/19	Woodpecker Hole. Located in the upper canopy on the underside of limb next to a knot hole, opening 6 cm diameter leading inwards 20 cm to a single apex where there are cobwebs, the cavity is dry and enclosed offering optimal roosting potential.	E	11	N/A	High	Low
				Knot Hole. Upward facing with no further cavities.	SW	12.5	N/A		
				Split. Upward facing and exposed to the elements.	W	12	N/A		
				Knot Hole. On the side of lower major limb, cavity is less than 10 cm offering limited shelter	NW	7	N/A		
				Knot Hole. Opening 5 cm diameter, leading inwards laterally 15 cm and an enclosed point with woodlice in the apex, sheltered but not enclosed.	NE	6	N/A		
				Woodpecker Hole. Feeling hole on the underside or lower limb with a shallow 10 cm deep cavity.	W	5	N/A		
T262	<i>Quercus robur</i>	262a	28/06/19	Basal stem cavities on east and west aspects, both lacking upward cavity development and offering limited shelter	E	0.2	N/A	Moderate	Low
				Split. Number of small fissured attached dead limbs and stubs across the tree offering limited shelter	N/A	5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T263	<i>Quercus robur</i>	263a	27/06/19	Medium density ivy cover across the tree offering sub optimal shelter with no obvious cavities beneath the ivy.	N/A	6	N/A	Moderate	Low
T267	<i>Quercus robur</i>	N/A	27/06/19	Not possible to climb for health and safety reasons.	N/A	N/A	N/A	Moderate	Moderate
T269	<i>Quercus robur</i>	269a	27/06/19	Lifter/loose bark. Large areas of loose bark around the main stem of a dead standing oak tree, sheltered pockets are throughout with splits and apertures leading into the PRF, the majority of the voids are clean and enclosed - unable to fully inspect due to the large scale and limited access behind the bark. Smooth internal substrate.	N/A	3.5	N/A	Moderate	High
		269b		Branch cavity at the end of a lower dead limb - unable to inspect due to the health and safety of the tree	E	4.5	N/a		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T274	<i>Quercus robur</i>	274a	27/06/19	Woodpecker hole. Large near vertical branch cavity with a number of apertures, such as a woodpecker hole, split, knot hole and callus roll all leading into the same branch cavity - approximately 2.5 m in length; substrate is smooth and clean with scratch marks around the callus roll - a dead Jackdaw is stuck in the cavity; the feature has the potential to support a colony of bats ie. maternity roost. Hibernation potential.	NE	7	N/A	High	High
		274b		Callus roll. Large knothole callus roll leading into an 80 cm long almost vertical cavity, dusty substrate, dry and enclosed near the apex with old nesting material at the base.	SE	4	N/A		
		274c		Knothole leading into an upward developed cavity approximately 1.2 long with apertures further up behind the callus offering enclosed optimal shelter; clean and smooth substrate. Hibernation potential.	SW	4	N/A		
		274d		Knot hole. Very large major branch cavity with a small knothole aperture at the base. Clean and smooth substrate and unable to fully inspect due to the size and gnarly substrate. Hibernation potential.	NW	4.5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T276	<i>Quercus robur</i>	276a	27/06/19	Deadwood with no cavities present.	SW	5	N/A	Moderate	Moderate
		276b		Deadwood. Large fallen dead stem with a number sheltered pockets, extending between 15 - 20 cm deep offering feeding / day roost potential.	SE	3.5	N/A		
T277	<i>Crataegus monogyna</i>	277a	27/06/19	Knot hole located on branch elbow (new growth) opening 5 cm diameter, leading inwards 5 cm offering very limited shelter	S	2	N/A	Moderate	Negligible
T280	<i>Sambucus nigra</i>	280a	27/06/19	Trunk cavity. Downward developed 50 cm cavity from first aperture with an additional upward 8 cm deep cavity, top cavity is 15 cm deep and exposed to the elements; optimal roosting conditions are limited within this stand; however a further nocturnal survey is recommended	SE	0.5	N/A	Moderate	Low
T284	<i>Quercus robur</i>	284a	27/06/19	Dense ivy cover across the tree - unable to climb due to the tree's close proximity to a busy road, BT3 only (please see photo for observation points). Possible hibernation potential but impossible to tell at this point.	N/A	0.5	N/A	High	High

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T289	<i>Quercus robur</i>	289a	28/06/19	Small knot hole located vertically on branch elbow, leading into a 20 cm deep downward developed cavity, enclosed and dry.	N	12.5	N/A	Moderate	Moderate
		289b		Below Feature 1, callus roll and protruding dead stub with a 10 cm upward developed cavity behind the callus roll offering limited shelter.	S	11.5	N/A		
		289c		Knot hole. Opening 13 cm leading into a wedge-shaped cavity with fras in the base offering limited shelter.	S	11.5	N/A		
		289d		Branch cavity. Lower desiccated limb with callus roll and elevated cambium layer, offering substantial pockets of enclosed, dry and optimal shelter.	S	6	N/A		
		289e		Old broken limb with associated splits offering very limited shelter.	SW	6.5	N/A		
		289f		Callus roll. Branch welded callus roll with an upward developed cavity inside the lower aperture, extending upwards 20 cm and downwards 10 cm, offering dry, enclosed optimal shelter.	S	4	N/A		
		289g		Knot hole. Opening 8 cm diameter, leading inwards 15 cm and vertically upwards approximately 8 cm into a dry, clean and enclosed cavity offering optimal shelter.	SW	5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
		289h		Callus roll tear / scar on lower stem with shallow splits offering no roosting potential.	E	4	N/A		
T295	<i>Fraxinus excelsior</i>	295a	28/06/19	Deadwood. Opening 5 cm diameter, leading inwards 10 cm and vertically upwards approximately 10 cm into a dry, clean and enclosed cavity offering optimal roosting potential.	N	7.5	N/A	Moderate	High
		295b		Branch cavity. Dead pollarded branch with a callus roll aperture at the base leading into a vertical 70 cm deep cavity, minor clutter around the entrance, the cavity was enclosed, clean and dry with two slugs in the apex.	N	8	N/A		
		295c		Medium density ivy cover across the tree offering limited shelter.	N/A	4	N/A		
T311	<i>Quercus robur</i>	311a	28/06/19	Knot hole aperture in deadwood. opening 5 cm diameter leading inwards 15 cm and upwards 5 cm, some cobwebs inside the feature offering optimal roosting potential.	E	3	N/A	Moderate	High
		311b		Large pockets of elevated bark across the large dead stem, some completely sheltered from the elements, offering optimal roosting potential for multiple bats. Hibernation potential. Smooth internal substrate.	N/A	2.5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
		311c		Deadwood. Old pruning cut with laterally developed cavity, approximately 20 cm deep; some cob webs around the entrance but the cavity is clean and dry.	N	3	N/A		
		311d		Knot hole aperture in deadwood. opening 5 cm diameter leading inwards 15 cm, clean cavity inside offering optimal roosting potential.	E	3.5	N/A		
		311e		Old pruning cut with laterally developed cavity, approximately 10 cm deep, slightly upward facing and potentially exposed to the elements; some cob webs around the entrance	NE	2.5	N/A		
T402	<i>Quercus robur</i>	402a	10/07/19	Split with no cavities	N	5	N/A	Moderate	Negligible
T403	<i>Quercus robur</i>	403a	10/07/19	Hazard beam. Mostly exposed to the elements with a shallow 5 cm cavity at the outer end of the feature.	W	7	N/A	Moderate	Moderate
		403b		Knot hole. On small branch elbow with an upward and downward developed 15 cm cavity, enclosed and dry with woodlice present. Smooth internal substrate.	S	7.5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T404	<i>Fraxinus excelsior</i>	404a	10/07/19	Trunk cavity. Substantial sized basal stem cavity which is heavily cob webbed inside and some areas are exposed from the top	E	0.5	N/A	Moderate	Moderate
		404b		Thick ivy stem growth enveloping the main stem offering good optimal shelter, substrate is clean.	E	1.5	N/A		
		404c		Knot hole. Opening 15 x 7 cm leading inwards 15 cm to a cone shaped apex, offering optimal shelter but lots of woodlice currently present.	SE	SE	N/A		
		404d		Dense ivy cover offering areas to shelter potentially as a day roost.	N/A	N/A	N/A		
T406	<i>Quercus robur</i>	406a	10/07/19	Knot hole. Shallow cavity and possibly exposed to the elements. Smooth internal substrate.	SE	2.5	N/A	Moderate	Low
		406b		Long trunk split with 10cm depth near the base offering very limited shelter.	S	1	N/A		
		406c		Deadwood. Number of splits fissures around the upper canopy offering very limited shelter. Smooth internal substrate.	N/A	5	N/A		
T408	<i>Corylus avellana</i>	408a	09/07/19	Callus roll. 20 cm deep upward developed, very enclosed and damp inside with slugs' woodlice in the apex	W	1	N/A	Moderate	Moderate
		408b		Callus roll. 35 cm deep upward developed, moist, bobbly substrate with few woodlice in the apex	W	1.5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T409	<i>Quercus robur</i>	409a	09/07/19	Lifted/loose bark. Medium density ivy cover offering limited shelter and lacking in stem growth, obscuring no additional PRFs.	N/A	1.5	N/A	Moderate	Moderate
		409b		Callus roll. 40 cm x 12 cm deep with smooth substrate and slight cob webbing in the base with old nesting material.	W	3	N/A		
T410	<i>Quercus robur</i>	410a	09/07/19	Lifted/loose bark. Area of lifted bark around dead limb offering sub optimal shelter and exposed to the elements	E	9	N/A	Moderate	Moderate
		410b		Knot Hole. No developed cavity	SE	9	N/A		
		410c		Deadwood. Two cavities, one on top and one on the side of lower dead limb, both 15 cm long, dry and enclosed	E	6	N/A		
		410d		Knot Hole. Shallow cavity	E	6	N/A		
		410e		Callus roll. Exposed to the elements	NE	4	N/A		
		410f		Lifted/loose bark. Small desiccated limb with a 30 cm long cavity offering optimal roosting shelter	N	5	N/A		

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T413	<i>Quercus robur</i>	413a	09/07/19	Branch cavity. Upper dead limb cavity behind callus roll, developing slightly upwards 15 cm into a dry and enclosed cavity with frass in the base	SW	8m	N/A	Moderate	Low
		413b		Callus roll. Upward facing branch scar offering limited shelter	W	7.5m	N/A		
		413c		Deadwood. Small 10 cm deep cavity within fissured deadwood. Smooth internal substrate.	W	4.5m	N/A		
T414	<i>Quercus robur</i>	414a	09/07/19	Ivy cover. Dense ivy cover across the tree including thick stems with enough cover to offer optimal shelter in some areas; unable to fully inspect the whole ivy.	N/A	3m	N/A	Moderate	Moderate
		414b		Trunk cavity. Although the cavity was offering an optimal roosting environment, the entrance is very low to the ground with cobwebs within the aperture.	NW	0.5m	N/A		
T416	<i>Quercus robur</i>	416a	09/07/19	Callus roll. Long lower branch scar with associated callus roll, approximately 1.3 m long facing sideward, no developed cavities or fissures offering limited roosting opportunities, apart from a very tight 5 cm deep cavity near the collar with woodlice present	E	4m	N/A	Moderate	Low

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T417	<i>Quercus robur</i>	417a	09/07/19	Lifted loose bark around a dead limb offering sub optimal shelter.	SE	6m	N/A	Moderate	Low
		417b		Knot hole. Opening 5 cm diameter leading into an open and exposed decayed limb offering no shelter	SE	5m	N/A		
		417c		Woodpecker hole. Feeding hole on lower dead limb offering very limited shelter. Smooth internal substrate.	NE	4.5	N/A		
T418	<i>Quercus robur</i>	418a	10/07/19	Dead wood. Large area of deadwood within the canopy offering limited shelter.	N/A	7	N/A	High	High
		418b		Callus roll. Cavity extending from a small knot hole at the top of a callus roll, approximately 70 cm long, offering enclosed, dry, optimal shelter; substrate is clean and smooth with woodlice in the apex, suitable for multiple bats. Hibernation potential.	S	4	N/A		
		418c		Trunk cavity. Large trunk cavity with two apertures at the base leading into an upward developed 80 cm deep cavity with a clean substrate and cob webs at the apex.	N/A	0.5	N/A		
T419	<i>Quercus robur</i>	N/A	10/07/19	No PRFs to record	N/A	N/A	N/A	Moderate	Negligible

Tree no.	Species	PRF no.	Date	PRF Form	PRF Orientation	Approx. PRF Height	Evidence of bat presence	GLTA rating (Before climb)	Roosting suitability after climbing
T420	<i>Acer campestre</i>	420a	10/07/19	Split, long healed split fissure on main stem offering very limited shelter with two small upward facing cavities	E	2.5	N/A	Moderate	Negligible
T421	<i>Quercus robur</i>	421a	10/07/19	Knot hole within upper branch collar, opening 6 cm diameter, leading latterly inwards 25 cm to a wedge-shaped apex, fras in the base and enclosed at the end offering optimal shelter. Smooth internal substrate.	S	8	N/A	Moderate	Moderate
T424	<i>Salix fragilis</i>	424a	09/07/19	Knot hole. Old snapped out upper limb with inward developed cavity within the branch collar, 10 cm deep with fras in the base. Smooth internal substrate.	NE	3.5	N/A	Moderate	Moderate
		424b		Trunk cavity. Large 2 m long cavity extending from the base to a small knot hole (see photo) at the top, cluttered in areas but overall clean, dry and specious inside; the outside is cluttered with tree foliage and some brambles / nettles offering shelter for multiple bats. Hibernation potential	SE	0.5	N/A		

Annex E: Bat roost potential of trees after GLTA and tree climbing in 2018 and 2019

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
1	<i>Quercus robur</i>	High	Low	Scoped out	No
2	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
3	<i>Quercus robur</i>	Low	Low	Scoped out	No
4	<i>Quercus robur</i>	Low	Negligible	Scoped out	No
5	<i>Quercus robur</i>	Moderate	Moderate	2018	No
6	<i>Crataegus monogyna</i>	Moderate	Low	Scoped out	No
8	<i>Fraxinus excelsior</i>	Moderate	Moderate	2018	Yes
9	<i>Quercus robur</i>	Moderate	Moderate	2018	No
10	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
11	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
12	<i>Quercus robur</i>	Low	-	Scoped out	No
13	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
14	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
15	<i>Quercus robur</i>	Low	-	Scoped out	No
16	<i>Quercus robur</i>	Moderate	Moderate	2018	Yes
17.1	<i>Quercus robur</i>	Low	Moderate	2018, 2019	No
17.2	<i>Quercus robur</i>	Low	Moderate	2018, 2019	No
18	<i>Quercus robur</i>	Low	-	Scoped out	No
19	<i>Quercus robur</i>	Low	-	Scoped out	No
20	<i>Quercus robur</i>	Low	-	Scoped out	No
21	<i>Quercus robur</i>	Moderate	Moderate	2018, 2019	No
22	<i>Fraxinus excelsior</i>	Moderate	Low	2018	No
23	<i>Quercus robur</i>	Low	-	Scoped out	No
24.1	<i>Populus alba</i>	High	High	2018	Yes
24.3	<i>Fraxinus excelsior</i>	Moderate	Moderate	2019	Yes
25.2	<i>Quercus robur</i>	Moderate	- ^e	2019	Yes
25.3	<i>Quercus robur</i>	Moderate	- ^e	2019	Yes
25.4	<i>Quercus robur</i>	Moderate	- ^e	2019	Yes

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
25.5	<i>Fraxinus excelsior</i>	High	- ^e	2019	Yes
25.6	<i>Quercus robur</i>	Moderate	- ^e	2019	Yes
25.7	<i>Fraxinus excelsior</i>	High	- ^e	2019	Yes
25.8	<i>Quercus robur</i>	Low	-	Scoped out	Yes
26	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
27	<i>Quercus robur</i>	Low	-	Scoped out	No
28	<i>Quercus robur</i>	Low	-	Scoped out	No
42	<i>Quercus robur</i>	Low	-	Scoped out	No
43	<i>Quercus robur</i>	High	High	2019	Yes
44	<i>Quercus robur</i>	Low	-	Scoped out	No
45	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
46	<i>Quercus robur</i>	Moderate	Moderate	2019	No
47	<i>Fraxinus excelsior</i>	High	High	2018	Yes
49	<i>Fraxinus excelsior</i>	Moderate	Moderate	2019	Yes
50	<i>Quercus robur</i>	Moderate	Moderate	2019	No
51	<i>Fraxinus excelsior & Quercus robur</i>	Moderate	Low	Scoped out	No
52	<i>Quercus robur</i>	Low	-	Scoped out	No
53	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
54	<i>Quercus robur</i>	High	Moderate	2018	Yes
55	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
56.1	<i>Quercus robur</i>	Low	-	Scoped out	No
56.2	<i>Quercus robur</i>	Low	-	Scoped out	No
57	<i>Quercus robur</i>	Low	-	Scoped out	No
58	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
59	<i>Quercus robur</i>	Low	-	Scoped out	No
61	<i>Quercus robur</i>	High	High	2018	Yes
62	<i>Quercus robur</i>	Low	-	Scoped out	No
63	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
64	<i>Quercus robur</i>	Moderate	High	2018	Yes
65	<i>Quercus robur</i>	Low	-	Scoped out	No
66	<i>Quercus robur</i>	Low	-	Scoped out	No

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
67	<i>Quercus robur</i>	Moderate	Moderate	2018	No
68	<i>Fraxinus excelsior</i>	Moderate	Low	2018	No
69	<i>Quercus robur</i>	Moderate	Moderate	2018	Yes
70	<i>Quercus robur</i>	Moderate	High	2018	Yes
71	<i>Fraxinus excelsior</i>	Moderate	High	2018	Yes
72	<i>Quercus robur</i>	Moderate	Moderate	2018	No
73	<i>Fraxinus excelsior</i>	Moderate	High	2018	Yes
74	<i>Populus alba</i>	Moderate	Low	2018	No
75	<i>Quercus robur</i>	Low	-	2018	No
76	<i>Quercus robur</i>	Low	-	2018	No
77	<i>Quercus robur</i>	Low	-	2018	No
78.1	<i>Quercus robur</i>	Low	-	Scoped out	No
78.2	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
79	<i>Fraxinus excelsior</i>	Moderate	High	2018	Yes
80	<i>Fraxinus excelsior</i>	Moderate	Moderate	2018	No
81.1	<i>Quercus robur</i>	Low	-	Scoped out	No
81.2	<i>Quercus robur</i>	Low	-	Scoped out	No
81.3	<i>Quercus robur</i>	Low	-	Scoped out	No
82	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
83	<i>Quercus robur</i>	Moderate	High	2018	Yes
84.1	<i>Quercus robur</i>	Low	-	Scoped out	No
84.2	<i>Quercus robur</i>	Low	-	Scoped out	No
85.1	<i>Quercus robur</i>	Moderate	Low	Scoped out	Yes
85.2	<i>Fraxinus excelsior</i>	High	High	2018	Yes
86.1	<i>Fraxinus excelsior</i>	Moderate	Moderate	2018	No
86.2	<i>Quercus robur</i>	Moderate	Moderate	2018	No
86.3	<i>Quercus robur</i>	Moderate	High	2018	Yes
86.4	<i>Quercus robur</i>	Moderate	Moderate	2018	No
86.5	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
87	<i>Quercus robur</i>	Low	-	Scoped out	No
88	<i>Quercus robur</i>	High	Moderate	Scoped out	No

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
89	<i>Fraxinus excelsior</i>	Moderate	Low	Scoped out	No
90	<i>Fraxinus excelsior</i>	Moderate	High	2019	Yes
91	<i>Quercus robur</i>	Low	-	Scoped out	No
92 (tree group)	<i>Quercus robur</i> & <i>Alnus glutinosa</i>	Low	-	Scoped out	No
104	<i>Quercus robur</i>	Moderate	Moderate	2018	No
105	<i>Quercus robur</i>	Moderate	High	2018	Yes
106	<i>Quercus robur</i>	Moderate	Moderate	2018	No
107	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
108	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
109	<i>Quercus robur</i>	Low	Low	Scoped out	No
110	<i>Quercus robur</i>	Moderate	Moderate	2018	No
111	<i>Quercus robur</i>	High	High	2018	Yes
112	<i>Quercus robur</i>	Moderate	Moderate	2018	No
113	<i>Quercus robur</i>	Low	Low	Scoped out	No
114	<i>Populus alba</i>	Low	-	Scoped out	No
115	<i>Populus alba</i>	Low	-	Scoped out	No
116	<i>Quercus robur</i>	Moderate	Low	Scoped out	-
117	<i>Quercus robur</i>	Moderate	Moderate	2019	-
118	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
119	<i>Quercus robur</i>	High	High	2019	No
120	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
121	<i>Quercus robur</i>	High	Negligible	Scoped out	No
122	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
124	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
125	<i>Salix fragilis</i>	Low	-	Scoped out	No
126	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
127	<i>Quercus robur</i>	Moderate	-f	-f	-f
128	<i>Quercus robur</i>	High	-f	-f	-f
129	<i>Quercus robur</i>	Moderate	-f	-f	-f
130	<i>Quercus robur</i>	Moderate	-f	-f	-f

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
131	<i>Quercus robur</i>	Moderate	-f	-f	-f
132	<i>Quercus robur</i>	Moderate	-f	-f	-f
133	<i>Quercus robur</i>	Moderate	-f	-f	-f
134	<i>Quercus robur</i>	Moderate	-f	-f	-f
135	<i>Quercus robur</i>	Moderate	-f	-f	-f
136	<i>Quercus robur</i>	Moderate	-f	-f	-f
137	<i>Quercus robur</i>	Moderate	-f	-f	-f
138	<i>Quercus robur</i>	High	-f	-f	-f
144	<i>Quercus robur</i>	Moderate	-f	-f	-f
167	<i>Alnus glutinosa</i>	Low	-f	Scoped out	No
168	<i>Alnus glutinosa</i>	High	-f	-f	-f
169	<i>Alnus glutinosa</i>	High	-f	-f	-f
170	<i>Alnus glutinosa</i>	High	-f	-f	-f
171	<i>Alnus glutinosa</i>	Moderate	-f	-f	-f
172	<i>Alnus glutinosa</i>	Moderate	-f	-f	-f
173	<i>Alnus glutinosa</i>	Moderate	-f	-f	-f
177	<i>Quercus robur</i>	Moderate	-f	-f	-f
178	<i>Quercus robur</i>	Low	-	Scoped out	No
179	<i>Quercus robur</i>	Moderate	-f	-f	-f
180	<i>Quercus robur</i>	Moderate	-f	-f	-f
181	<i>Quercus robur</i>	Moderate	-f	-f	-f
183	<i>Quercus robur</i>	Moderate	-f	-f	-f
184	<i>Quercus robur</i>	Moderate	-f	-f	-f
185	<i>Fraxinus excelsior</i>	Moderate	-f	-f	-f
186	<i>Quercus robur</i>	Low	-	Scoped out	No
187	<i>Quercus robur</i>	Low	-	Scoped out	No
188	<i>Quercus robur</i>	Low	-	Scoped out	No
189	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
190	<i>Quercus robur</i>	Low	-	Scoped out	No
191	<i>Alnus glutinosa</i>	High	-f	-f	-f
192	<i>Alnus glutinosa</i>	Moderate	-f	-f	-f

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
193	unknown	Low	- ^f	Scoped out	No
194	<i>Alnus glutinosa</i>	Low	- ^f	Scoped out	No
195	<i>Alnus glutinosa</i>	Moderate	- ^f	- ^f	- ^f
196	<i>Alnus glutinosa</i>	Moderate	- ^f	- ^f	- ^f
197	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
198	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
199	<i>Quercus robur</i>	High	- ^f	- ^f	- ^f
200	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
201	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
202	<i>Quercus robur</i>	Moderate	- ^f	- ^f	- ^f
203	<i>Quercus robur</i>	Moderate	- ^f	- ^f	- ^f
204	<i>Quercus robur</i>	Moderate	- ^f	- ^f	- ^f
205	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
206	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
207	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
208	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
209	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
210	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
211	<i>Quercus robur</i>	Low	- ^f	Scoped out	No
212	<i>Fraxinus excelsior</i>	High	- ^f	- ^f	- ^f
213	<i>Fraxinus excelsior</i>	Low	- ^f	Scoped out	No
214	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
219	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
220	<i>Crataegus monogyna</i>	Moderate	Low	Scoped out	No
221	<i>Quercus robur</i>	Moderate	Moderate	2019	No
222	<i>Fraxinus excelsior</i>	Moderate	Moderate	2019	No
223	<i>Alnus glutinosa</i>	Low	-	Scoped out	No
224	<i>Quercus robur</i>	Low	-	Scoped out	No
225	<i>Fraxinus excelsior</i>	Moderate	Moderate	2019	Yes
239	<i>Quercus robur</i>	High (Confirmed)	- ^e	2018	Yes
240	<i>Quercus robur</i>	Moderate	- ^e	2018	Yes

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
241	<i>Quercus robur</i>	Moderate	- ^e	2018	No
242	<i>Populus alba</i>	High	- ^e	2018, 2019	No
243	<i>Populus alba</i>	Moderate	- ^e	2018	No
244	<i>Populus alba</i>	Moderate	- ^e	2018	No
245	<i>Fraxinus excelsior</i>	Moderate	Low	Scoped out	No
252	<i>Quercus robur</i>	Low	-	Scoped out	No
253	<i>Acer campestre</i>	Low	-	Scoped out	No
254	<i>Populus alba</i>	Low	-	Scoped out	No
255	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
258	<i>Populus alba</i>	Low	-	Scoped out	No
259	<i>Populus alba</i>	Low	-	Scoped out	No
260	<i>Populus alba</i>	Low	-	Scoped out	No
261	<i>Quercus robur</i>	High	High	2019	No
262	<i>Quercus robur</i>	Moderate	Low	2019	No
263	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
264	<i>Quercus robur</i>	Low	-	Scoped out	No
265	<i>Quercus robur</i>	Low	-	Scoped out	No
266	<i>Acer campestre</i>	Low	-	Scoped out	No
267	<i>Quercus robur</i>	Moderate	- ^e	2019	Yes
269	<i>Quercus robur</i>	Moderate	High	2019	Yes
273	<i>Populus alba</i>	Low	-	Scoped out	No
TG 1	<i>Populus alba</i>	Low	-	Scoped out	No
274	<i>Quercus robur</i>	High	High	2019	Yes
276	<i>Quercus robur</i>	Moderate	Moderate	2019	No
277	<i>Crataegus monogyna</i>	High	Negligible	Scoped out	No
279	<i>Prunus spinosa</i>	Low	-	Scoped out	Yes
280	<i>Sambucus nigra</i>	Moderate	Low	Scoped out	No
284	<i>Quercus robur</i>	High	High	2019	Yes
285	<i>Quercus robur</i>	Low	-	Scoped out	No
286	<i>Leylandii</i>	Low	-	Scoped out	No
289	<i>Quercus robur</i>	Moderate	Moderate	2019	Yes

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
293	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
294	<i>Acer pseudoplatanus</i>	Low	-	Scoped out	No
295	<i>Fraxinus excelsior</i>	Moderate	High	2019	No
296	<i>Fraxinus excelsior</i>	Low	-	Scoped out	No
301	<i>Acer pseudoplatanus</i>	Low	-	Scoped out	No
302	<i>Ulmus minor</i>	Low	-	Scoped out	No
304	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
305	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
306	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
307	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
308	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
309	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
310	<i>Quercus robur</i>	Low	-	Scoped out	No
311	<i>Quercus robur</i>	Moderate	High	2019	Yes
312	<i>Populus alba</i>	Low	-	Scoped out	No
313	<i>Malus domestica</i>	Low	-	Scoped out	No
314	<i>Quercus robur</i>	Low	-	Scoped out	No
315	<i>Crataegus monogyna</i>	Low	-	Scoped out	No
401	<i>Quercus robur</i>	Low	-	Scoped out	No
402	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
403	<i>Quercus robur</i>	Moderate	Moderate	2019	No
404	<i>Fraxinus excelsior</i>	Moderate	Moderate	2019	No
406	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
407	<i>unknown</i>	Low	-	Scoped out	No
408	<i>Corylus avellane</i>	Moderate	Moderate	2019	No
409	<i>Quercus robur</i>	Moderate	Moderate	2019	No
410	<i>Quercus robur</i>	Moderate	Moderate	2019	No
411	<i>Quercus robur</i>	Low	-	Scoped out	No
412	<i>Quercus robur</i>	Low	-	Scoped out	No
413	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
414	<i>Quercus robur</i>	Moderate	Moderate	2019	No

Tree no.	Species	GLTA rating	Bat Roosting Suitability ^a		
			Rating after climbing ^b	Roost surveys ^b	Hibernation potential ^d
415	<i>Quercus robur</i>	Low	-	Scoped out	No
416	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
417	<i>Quercus robur</i>	Moderate	Low	Scoped out	No
418	<i>Quercus robur</i>	Moderate	High	2019	Yes
419	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
420	<i>Quercus robur</i>	Moderate	Negligible	Scoped out	No
421	<i>Quercus robur</i>	High	Moderate	2019	No
422	<i>Quercus robur</i>	Low	-	Scoped out	No
423	<i>Acer campestre</i>	Low	-	Scoped out	No
424	<i>Salix fragilis</i>	Moderate	Moderate	2019	Yes
431	<i>Quercus robur</i>	Low	-	Scoped out	No
432	<i>Acer campestre</i>	Moderate	- ^e	2019	Yes
433	<i>Salix fragilis</i>	Moderate	- ^e	2019	Yes
434	<i>Quercus robur</i>	Low	-	Scoped out	No

a. Refer to Table 3-1 to for definitions of High, Moderate and Low bat potential.

b. Further climbing assessments undertaken on all trees rated as Moderate of High suitability, unless otherwise stated.

c. Roost surveys undertaken of all trees rated as Moderate of High suitability in either 2018 or 2019, or both, unless otherwise stated.

d. Hibernation assessment based on GLTA and climbed surveys.

e. No tree climbing of these trees as this step was skipped and activity surveys undertaken either for reasons of health & safety (T267 only) or for practical reasons based on the timing of land access.

f. SSSI - no further surveys

Annex F: Tree roost survey results: summary

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T17.1	Moderate	20/06/2019 (Dusk)	Noctule, common pipistrelle and Soprano pipistrelle foraging and commuting activity Constantly throughout the survey. No emergence recorded.	04/07/2019 (Dawn)	A maximum of seven common pipistrelle bats recorded both foraging and commuting throughout the survey. No re-entries recorded	18/07/2019 (Dawn)	Common pipistrelle foraging and commuting activity Constantly throughout the survey. No re-entries recorded.	N
T17.2	Moderate	20/06/2019 (Dusk)	Noctule, common pipistrelle and soprano pipistrelle foraging and commuting activity Constantly throughout the survey. No emergence recorded.	04/07/2019 (Dawn)	A maximum of seven common pipistrelle bats recorded both foraging and commuting throughout the survey. No re-entries recorded	18/07/2019 (Dawn)	Common pipistrelle foraging and commuting activity Constantly throughout the survey. No re-entries recorded.	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T21	Moderate	20/06/2019 (Dusk)	Common pipistrelle foraging and commuting activity recorded constantly throughout the survey. One soprano pipistrelle bat recorded commuting. <i>Nyctalus</i> species recorded twice throughout survey. Three <i>Myotis</i> species recorded throughout the survey. No emergence recorded.	04/07/2019 (Dawn)	Four common pipistrelle recorded during the survey. No re-entries recorded	18/07/2019 (Dawn)	One Brown long eared bat and six common pipistrelle recorded during the survey. No re-entries recorded	N
T24.3	Moderate	01/07/2019 (Dusk)	One noctule, thirteen common pipistrelle and three soprano pipistrelle recorded throughout the night. No emergence recorded.	18/07/2019 (Dawn)	Five common pipistrelle bats recorded commuting throughout the survey. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T25.2	Moderate	01/07/2019 (Dusk)	Four common pipistrelle and two <i>Myotis</i> species bats recorded throughout the survey. No emergence recorded.	01/08/2019 (Dawn)	Three common pipistrelle, two soprano pipistrelle and three noctules recorded throughout survey. No re-entries recorded.	n/a	n/a	N
T25.3	Moderate	01/07/2019 (Dusk)	Constant common pipistrelle activity including foraging, commuting and social calls recorded throughout the survey. No emergence recorded.	01/08/2019 (Dawn)	Three common pipistrelle and two noctule recorded throughout survey. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T25.5	High	01/07/2019 (Dusk)	<i>Myotis</i> species, common and soprano pipistrelle activity Constant throughout the survey. A total of five <i>Nyctalus</i> species passes recorded throughout the survey. No emergence recorded.	16/07/2019 (Dawn)	Two <i>Myotis</i> species passes, one soprano pipistrelle pass and two common pipistrelle passes record throughout the survey. No re-entries recorded.	01/08/2019 (Dawn)	Common and soprano pipistrelle activity frequent between 03:42 and 05:19. Five noctule, one brown long eared bat also recorded. No re-entries recorded.	N
T25.6	Moderate	01/07/2019 (Dusk)	Continuous common pipistrelle activity from 22:10 with high levels of both soprano pipistrelle and <i>Myotis</i> species and five noctule passes. No emergence recorded	16/07/2019 (Dawn)	Two common pipistrelle recorded during survey. No re-entries recorded.	01/08/2019	Constant activity between 03:44 and 04:55. common and soprano pipistrelle frequently recorded with two <i>Myotis</i> species and one noctule also recorded during the survey. Possible re-entry from a soprano pipistrelle at 04:35 and from a common pipistrelle at 04:58	Y

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T25.7	High	01/07/2019 (Dusk)	Near Constant common pipistrelle activity throughout the survey. No emergence recorded	16/07/2019 (Dawn)	Three common pipistrelle bats recorded throughout the survey. No re-entries recorded.	01/08/2019 (Dawn)	Frequent common and soprano pipistrelle activity throughout survey. Three noctule, one Leisler's, one <i>Myotis</i> species and one social call. No re-entries recorded.	N
T43	High	03/07/2019 (Dusk)	Three common pipistrelle and two noctule recorded throughout the survey. No emergence recorded.	11/07/2019 (Dusk)	Continuous common pipistrelle and noctule activity from 22:02 to 23:26. Three soprano pipistrelle bats recorded throughout survey. Noctule bat emergence recorded at 21:54	17/07/2019 (Dawn)	Continuous common pipistrelle activity between 03:05 and 04:14. No re-entries recorded	Y

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T46	Moderate	31/07/2019 (Dusk)	Common soprano pipistrelle recorded frequently throughout the survey. One noctule pass recorded. No emergence recorded	13/08/19 (Dusk)	Common pipistrelle activity recorded throughout the survey. One soprano pipistrelle and four noctule recorded during the survey. No emergence recorded.	n/a	n/a	N
T49	Moderate	24/07/2019 (Dusk)	Three noctule passes recorded between 21:33 and 21:46. Nine common pipistrelle passes recorded between 22:04 and 23:02. No emergence recorded.	22/08/19 (Dawn)	One Common pipistrelle pass at 04:57. No re-entries or other activity recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T50	Moderate	24/07/2019 (Dusk)	Common pipistrelle activity frequent throughout the survey. Twelve noctule bats, two Pipistrelle species, two soprano pipistrelle and one brown long eared bat recorded. No emergence recorded	08/08/2019 (Dawn)	No bats recorded	n/a	n/a	N
T54	Moderate	24/07/2019 (Dusk)	Two noctule, eleven common pipistrelle, four Soprano pipistrelle and one <i>Myotis</i> species recorded throughout the survey. No emergence recorded.	08/08/2019 (Dawn)	Three common pipistrelle and one brown long eared bat recorded throughout the survey. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T88	Moderate	24/06/2019 (Dusk)	Nine noctule recordings and one <i>Nyctalus</i> species pass. Three foraging common pipistrelle recorded with one soprano pipistrelle and common/ Nathusius pipistrelle recorded during the survey. Suspected emergence from one common pipistrelle .	04/07/2019 (Dusk)	Constant common pipistrelle foraging activity throughout the survey with frequent noctule foraging activity. No Emergence recorded.	18/07/2018 (Dawn)	Constant common pipistrelle foraging activity between 03:05 and 04:20. Three noctule commuting passes, one brief <i>Nyctalus</i> species pass and one brown long eared bat pass recorded through the survey. No re-entries recorded.	Y

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T90	Moderate	24/06/2019 (Dusk)	Constant common pipistrelle foraging activity between 22:00 and 23:02 with 10 Common / Nathusius pipistrelle foraging passes and seven soprano pipistrelle. Constant noctule foraging between 21:47 and 22:29. One <i>Myotis</i> species recorded during the survey. Brown long-eared bat emergence at 21:56.	10/07/2019 (Dawn)	Nine foraging common pipistrelle bats recorded foraging, three soprano pipistrelle and two noctule bats recorded. No re-entries recorded	07/08/2019 (Dusk)	Continuous common pipistrelle foraging throughout the survey with three noctule commuting passes. No emergences recorded.	Y
T117	Moderate	11/07/2019 (Dusk)	Almost constant common pipistrelle foraging passes along hedgerows. Soprano pipistrelle also occasionally using hedgerow to commute. Noctule foraging from 21:59 to 22:20. No emergences recorded	21/08/2019 (Dusk)	Frequent Common pipistrelle passes with periods of constant foraging. Occasional Soprano pipistrelle passes and two <i>Myotis</i> species passes (likely to be whiskered bats). No emergences recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T119	High	03/072019 (Dusk)	Five soprano and three common pipistrelle foraging passes. <i>Myotis</i> species recorded three times throughout the survey. No emergences recorded.	17/07/2019 (Dawn)	Constant common pipistrelle foraging activity between 02:42 and 4:23. No re-entries recorded.	05/08/2019 (Dusk)	Constant foraging common pipistrelle activity with the occasional soprano pipistrelle foraging pass between 21:22 and 22:01. No emergences recorded.	N
T221	Moderate	01/08/2019 (Dusk)	Fourteen common pipistrelle passes, eleven soprano pipistrelle passes and six noctule passes record throughout the survey. No emergences recorded.	22/08/2019 (Dawn)	Four Leisler's bat passes, three common and one soprano pipistrelle pass recorded throughout survey. No re-entries recorded.	n/a	n/a	N
T222	Moderate	01/08/2019 (Dusk)	One foraging noctule, five foraging common pipistrelle and two foraging soprano pipistrelle recorded during the survey. No emergences recorded.	22/08/2019 (Dawn)	Three common pipistrelle, two Leisler's and one soprano pipistrelle recorded. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T225	Moderate	01/08/2019 (Dusk)	Foraging common and soprano pipistrelle activity frequently throughout survey. Four noctule commuting passes recorded. No emergences recorded.	28/08/2019 (Dawn)	Two commuting common pipistrelle recorded throughout the survey. No re-entries recorded.	n/a	n/a	N
T242	High	26/06/2019 (Dusk)	Frequent foraging common pipistrelle activity between 21:36 and 22:15. No emergences recorded.	04/07/2019 (Dusk)	Constant common pipistrelle foraging between 21:29 and 23:29 with one soprano pipistrelle foraging pass. No emergences recorded.	18/07/2019 (Dawn)	Constant common pipistrelle foraging activity throughout survey with two noctule passes. No re-entries recorded	Y
T261	High	02/07/2019 (Dusk)	Constant foraging common pipistrelle activity from 21:45 to 22:51. No emergence recorded.	17/07/2019 (Dawn)	Frequent common pipistrelle foraging activity throughout survey. One noctule pass record. No re-entries recorded.	31/07/2019 (Dusk)	Frequent common pipistrelle activity throughout survey. No emergence recorded.	Y

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T267	Moderate	10/07/2019 (Dusk)	Four common pipistrelle recorded foraging. One Nathusius pipistrelle commuting pass. No emergence recorded	07/08/2019 (Dawn)	One Soprano pipistrelle, three noctule and five Common pipistrelle recorded during the survey. No re-entries recorded	21/08/2019 (Dawn)	One <i>Myotis</i> species recorded during the survey. No re-entries recorded.	N
T269	Moderate	04/07/2019 (Dusk)	Five common pipistrelle, one soprano pipistrelle and one Noctule species recorded during the survey. Constant foraging from 22:50 until survey end. No emergence recorded.	07/08/2019 (Dawn)	One very distant noctule, common pipistrelle and <i>Myotis</i> species recorded throughout the survey. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T274	High	03/07/2019 (Dusk)	Common and soprano pipistrelle recorded frequently throughout the night. Two possible brown long eared bat recorded towards the end of the survey. Emergence from a common pipistrelle recorded at 21:49.	17/07/2019 (Dawn)	Common and soprano pipistrelle frequently recorded commuting throughout the survey. No re-entries recorded.	06/08/2019 (Dawn)	Common and soprano pipistrelle frequently recorded commuting throughout the survey. One <i>Myotis</i> species and Brown long eared bat recorded. No re-entries recorded.	Y
T276	Moderate	03/07/2019 (Dusk)	Frequent common and soprano pipistrelle activity record throughout survey. One <i>Myotis</i> species and two noctule also recorded. No emergence recorded.	17/07/2019 (Dawn)	Frequent common and soprano pipistrelle activity throughout survey. No re-entries recorded.	27/08/2019 (Dawn)	Frequent common and soprano pipistrelle activity throughout survey. Two serotine bat passes recorded. Occasional commuting noctule passes. No re-entries recorded	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T280	Low ²	27/06/2019 (Dusk)	Two common pipistrelle and one noctule recorded throughout the survey. No emergences recorded.	n/a	n/a	n/a	n/a	N
T284	High	02/07/2019 (Dusk)	Constant common and soprano pipistrelle commuting and foraging activity throughout survey. No emergence recorded.	19/07/2019 (Dawn)	Frequent common pipistrelle activity, occasional soprano pipistrelle passes, two noctule pass, one <i>Myotis</i> species pass and two brown long eared bat passes. No re-entries recorded.	02/08/2019 (Dusk)	Frequent foraging common pipistrelle recorded throughout the survey. No emergence recorded.	N
T289	Moderate	02/07/2019 (Dusk)	Continuous Common pipistrelle and Soprano pipistrelle foraging throughout survey. No emergences recorded.	17/07/2019 (Dawn)	Continuous Common pipistrelle activity throughout survey. No re-entries recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T295	Moderate	09/07/2019 (Dusk)	Continuous common pipistrelle activity throughout survey. One serotine pass recorded. One brown long-eared bat emergence.	07/08/2019 (Dawn)	Frequent foraging common pipistrelle activity throughout survey. No re-entries recorded.	TBC ³	TBC ³	Y
T311	Moderate	10/07/2019 (Dusk)	Constant common pipistrelle foraging throughout survey with frequent noctule passes and one Soprano pipistrelle pass.	01/08/2019 (Dusk)	Constant common pipistrelle activity throughout survey including an emergence at 21:43. One <i>Myotis</i> species pass recorded.	23/08/2019 (Dawn)	Three common pipistrelle recorded throughout survey. No re-entries recorded.	Y
T402	Negligible ²	09/07/2019 (Dawn)	Seven common pipistrelle passes and three noctule passes recorded throughout survey. No re-entries recorded.	n/a	n/a	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T403	Moderate	09/07/2019 (Dawn)	Seven common pipistrelle passes, three noctule passes, three soprano pipistrelle passes and one <i>Myotis</i> species pass throughout the survey. No re-entries recorded.	20/08/2019 (Dusk)	Six noctule passes and five common pipistrelle passes throughout survey. No emergences recorded.	n/a	n/a	N
T404	Moderate	10/07/2019 (Dawn)	Twelve common pipistrelle passes, two noctule passes and three soprano pipistrelle passes record throughout the survey. No re-entries recorded.	07/08/2019 (Dusk)	Frequent faint common pipistrelle passes and one soprano pipistrelle pass during the survey. No emergence recorded.	20/08/2019 (Dusk)	One noctule and two common pipistrelle passes throughout survey. No emergence recorded.	N
T406	Low ²	10/07/2019 (Dawn)	Six common pipistrelle foraging passes, three Pipistrelle species foraging passes and six noctule commuting passes. No re-entries recorded.	n/a	n/a	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T408	Moderate	25/07/2019 (Dawn)	Eleven distant common pipistrelle passes and three faint noctule passes. No re-entries recorded.	08/08/2019 (Dusk)	Constant Pipistrelle species activity throughout the survey. No emergence recorded	n/a	n/a	N
T409	Moderate	25/07/2019 (Dawn)	Nine Pipistrelle species passes and two noctule passes recorded during the survey. No re-entries recorded	08/08/2019 (Dusk)	Frequent common pipistrelle activity throughout survey. One Leisler's, soprano pipistrelle and pipistrelle social call also recorded. No emergence recorded.	n/a	n/a	N
T410	Moderate	25/07/2019 (Dawn)	Frequent Pipistrelle species foraging recorded throughout the survey. No re-entries recorded	08/08/2019 (Dusk)	Twelve common pipistrelle foraging passes, one noctule and one soprano pipistrelle pass recorded. No emergence recorded	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T414	Moderate	26/07/2019 (Dawn)	One commuting Common pipistrelle and Soprano pipistrelle recorded throughout the survey. No re-entries recorded	12/08/2019 (Dusk)	Two distant Common pipistrelle passes, One Noctule and one Soprano pipistrelle pass and one possible emergence from an unknown bat species.	28/08/2019 (Dawn)	One Common pipistrelle and one Soprano pipistrelle recorded during the survey. No re-entries recorded.	Y
T418	High	18/07/2019 (Dawn)	Ten common pipistrelle commuting passes recorded during the survey.	08/08/2019 (Dusk)	Constant foraging common pipistrelle activity throughout the survey. Two <i>Myotis</i> species and one noctule pass also recorded. No emergence recorded.	22/08/19	Single noctule pass recorded. No Emergence.	N
T421	Moderate	09/07/2019 (Dawn)	Two noctule, two soprano pipistrelle and thirteen common pipistrelle passes recorded during the survey. No re-entries recorded.	15/08/2019 (Dusk)	Frequent foraging common pipistrelle activity recorded. No emergence recorded.	n/a	n/a	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T424	Moderate	26/07/2019 (Dawn)	Two common pipistrelle and two noctule recorded during the survey. No re-entries recorded.	13/08/2019 (Dusk)	Five foraging common pipistrelle recorded throughout the survey. No emergence recorded.	n/a	n/a	N
T432	Moderate	23/07/2019 (Dawn)	Four common pipistrelle recorded during the survey. No re-entries recorded.	13/08/2019 (Dusk)	No bats recorded	n/a	n/a	N
T433	Moderate	01/08/2019 (Dusk)	Constant Pipistrelle species activity throughout the night. One social call at the end of the survey. No emergence recorded.	16/08/2019 (Dawn)	One common and one soprano pipistrelle recorded during the survey. No emergence recorded.	n/a	n/a	N

1. Tree T22 rated as Low included for roost surveys due to be listed in the draft EPSML.
2. Tree downgraded during climbed surveys.
3. Third survey of confirmed roost outstanding

Annex G: Roost survey results: raw data for confirmed roosts.

KEY:

PIPI (Common pipistrelle); PIPY (Soprano pipistrelle); PISP (call between common pipistrelle and soprano pipistrelle); PINA (Nathusius pipistrelle) PIPPINA (call between Nathusius pipistrelle and common pipistrelle); NYNO (Noctule bat); NYLE (Leisler bat); EPSE (Serotine bat); NYSP (either Leisler or Noctule bat); MYSP (Myotis species); PLAU (brown long-eared bat); EPSE (Serotine bat); Social (social calls).

Heath End House – Dusk – 1st July 2019

JULY				
Project Name	M42 Junction 6	Surveyor		MR
Survey Location	B1 – Heath End house	Rain (0-5)		0
Date	01/07/2019	Wind (0-7)		3
Start	21:10	Cloud Cover (0-5)		2
Sunset	21:33	Temperature		18°C
Finish	23:33	Weather description		Humid and no recent rain.
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:59	PIPI	1	Y	Heard not seen (HNS) commuting. Possible emergence call.
22:00	PIPI	1	Y	Emergence from inside Chimney, flew north.
22:18	PIPI	1	Y	HNS seen foraging
22:20	PIPI	1	Y	Commuting past close to western aspect of the building.
22:32	PIPI	1	Y	Foraging HNS.
22:36	PIPI	3	Y	Commuting HSN (22:39, 22:40).
22:39 - 22:40	PIPI	2	Y	HNS foraging
22:51	PIPI	1	Y	HNS commuting.
23:00	PIPI	1	Y	HNS social and commuting calls.
23:17	PIPI	1	Y	HNS foraging
Project Name	M42 Junction 6	Surveyor		EF
Survey Location	B1 – Heath End house	Rain (0-5)		0
Date	01/07/2019	Wind (0-7)		3
Start	21:10	Cloud Cover (0-5)		2
Sunrise	21:33	Temperature		18°C
Finish	23:33	Weather description		Humid no recent rain.

Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:02	PIPI	1	Y	Heard not seen (HNS) commuting
22:12	PIPI	2	Y	Flying S/W from building. Possible emergence.
22:13	PIPI	1	Y	HNS foraging
22:20	PIPI	1	Y	HNS commuting.
22:23	PIPI	1	Y	HNS foraging.
22:30	PLAU	1	Y	HNS commuting.
22:31	PIPI	2	Y	HNS foraging.
22:38	PIPI	1	Y	HNS foraging
22:43	PIPI	1	Y	HNS Commuting
22:49	PIPI	1	Y	HNS foraging
22:50	PIPI	1	Y	Foraging around nearby tree
22:53	NYNO	1	Y	HNS foraging and commuting
22:53 - 22:55	PIPI	3	Y	HNS foraging
22:57	PIPI	1	Y	HNS foraging
22:59 – 23:01	PIP1	!	Y	HNS foraging
23:08 – 23:18	PIPI	8	Y	HNS foraging
23:09	PLAU	1	Y	HNS foraging
23:11	PIPI	1	Y	HNS foraging and commuting
23:17	PIPI	1	Y	HNS foraging and commuting
Project Name	M42 Junction 6	Surveyor	RL	
Survey Location	B1 – Heath End house	Rain (0-5)	0	
Date	01/07/2019	Wind (0-7)	3	
Start	21:10	Cloud Cover (0-5)	2	
Sunrise	21:33	Temperature	18°C	
Finish	23:33	Weather description	Humid no recent rain.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:07	PIPI	3	Y	Heard not seen (HNS) foraging.
22:08	PIPI	2	Y	Foraging front left-hand side of house.
22:10 – 22:35	PIPI	Multiple	Y	Constant foraging nearby. Some foraging seen on the left hand side of the house.
22:35	Social	1	Y	HNS. Social call.
22:35 - 22:43	PIPY	Multiple	Y	Constant foraging.
22:38 - 22:42	PIPI	Multiple	Y	Constant foraging. Seen flying around driveway and toward house at times.

22:39	Social	1	Y	HNS. Social call.
22:39 – 22:40	PLAU	2	Y	HNS foraging
22:44 – 22:53	PIPI	1	Y	HNS constant foraging
22:44 – 22:45	MYSP	6	Y	HNS. foraging
22:45 – 22:50	PIPY	1	Y	HNS foraging
22:45 – 22:47	Social	4	Y	HNS. Social call
22:46	MYSP	1	Y	HNS foraging
22:46 – 22:47	PLAU	2	Y	HNS foraging
22:48 – 22:57	MYSP	1	Y	HNS. Brief pass.
22:51	PLAU	1	Y	HNS. Brief pass.
22:55 – 23:40	PIPI	Multiple	Y	HNS. Foraging and commuting throughout.
22:56	PIPY	1	Y	HNS foraging
23:12	MYSP	1	Y	HNS. foraging

Heath End House – Dawn – 16th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	DH	
Survey Location	B1	Rain (0-5)	0	
Date	16/07/2019	Wind (0-7)	0	
Start	03:04	Cloud Cover (0-5)	0	
Sunrise	05:04	Temperature	14°C	
Finish	05:05	Weather description	Cool, still, clear morning	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:14	NYNO	1	Y	Heard not seen (HNS) Brief.
03:59	PLAU	1	Y	Bat seen flying around chimney. Possible re-entre near previously noted access point. Recorded on IR camera.
03:59	PIPI	2	Y	HNS. foraging
04:01	PLAU	1	Y	Possible re-entry on chimney.
04:12	PIPI	1	Y	HNS foraging
04:35	PIPI	Multiple	Y	Re-entry. Bat circled chimney several time before re-entering in a gap in the mortar (above the roof line)
04:35	Social	1	Y	HNS social call
04:36	PIPI	7	Y	HNS foraging
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Project Name	M42 Junction 6	Surveyors	AS	
Survey Location	B1	Rain (0-5)	0	
Date	16/07/2019	Wind (0-7)	0	
Start	03:04	Cloud Cover (0-5)	0	
Sunrise	05:04	Temperature	14°C	
Finish	05:04	Weather description	Cool, still, clear morning.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:25	Unknown	1	N	Seen but not heard (not echolating). Flying east of house.
03:27	Unknown	1	N	Seen but not heard (not echolating). Flying south east of chimney head.
03:27	PIPI	2	Y	HNS Commuting.
03:35	PIPI	1	Y	HNS Faint commuting call.
03:58	PIPI	1	Y	Foraging along house east to west.
04:10	PIPI	1	Y	Commuting south to north.
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Project Name	M42 Junction 6	Surveyors	KC	
Survey Location	B1	Rain (0-5)	0	
Date	16/07/2018	Wind (0-7)	0	
Start	03:04	Cloud Cover (0-5)	0	
Sunrise	05:04	Temperature	14°C	
Finish	05:04	Weather description	Cool, still, clear morning	

Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:02	PIPI	1	Y	Heard not seen (HNS) commuting
03:02	Social	1	Y	Social call
03:04	PIPI	1	Y	HNS commuting
03:12	PIPI	1	Y	HNS
03:24	PIPI	1	Y	HNS foraging
03:28	PIPI	1	Y	HNS
03:58	PIPI	1	Y	HNS
04:11	PIPI	1	Y	HNS
04:18	PIPI	1	Y	HNS
04:24 - 04:27	PIPI	6	Y	Circled around car park not near to building. Foraging
04:28 – 04:29	PIPI	5	Y	HNS foraging
04:34	PIPI	1	Y	Didn't see entry but flew straight towards building on north side and disappeared.

Heath End House – Dawn – 30th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	EW	
Survey Location	B1	Rain (0-5)	0	
Date	30/07/2019	Wind (0-7)	0	
Start	03:24	Cloud Cover (0-5)	2	
Sunrise	05:24	Temperature	17°C	
Finish	05:39	Weather description	Warm, damp air, still, light cloud cover. Previous light shower.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:56	Social	1	Y	Heard not seen (HNS) Social call
03:56	PIPI	1	Y	HNS foraging
03:57	PIPI	1	Y	HNS foraging.
04:04	PIPI	6	Y	HNS foraging.
04:07	PIPI	1	Y	HNS foraging
04:08	PIPI	1	Y	HNS foraging
04:17	PIPI	1	Y	HNS foraging
04:22	PIPI	1	Y	HNS foraging
04:37	PIPI	1	Y	Foraging down south side of house.
04:55	PIPI	1	Y	HNS foraging
04:55	Social call	1	Y	HNS social call
04:56	PIPI	1	Y	Re- entry on chimney. South side of chimney. 10 cm above broken mortar.
Project Name	M42 Junction 6	Surveyors	KC	
Survey Location	B1	Rain (0-5)	0	
Date	30/07/2019	Wind (0-7)	0	
Start	03:24	Cloud Cover (0-5)	2	
Sunrise	05:24	Temperature	17°C	
Finish	05:39	Weather description	Warm, damp air, still, light cloud cover. Previous light shower.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:42	PIPI	1	Y	Heard not seen (HNS). Commuting
04:05	NYNO	1	Y	HNS. Commuting; Didn't sound like a noctule.
04:17	PIPI	2	Y	HNS Commuting.
04:23	PIPI	1	Y	HNS Commuting, very brief.
04:31	PIPI	1	Y	HNS foraging
04:32	PIPI	1	Y	HNS Commuting, very brief.
04:36	PIPI	1	Y	HNS Foraging.
04:37	PIPI	1	Y	HNS Commuting, very brief.

Project Name	M42 Junction 6	Surveyors	LS	
Survey Location	B1	Rain (0-5)	0	
Date	30/07/2019	Wind (0-7)	0	
Start	03:24	Cloud Cover (0-5)	2	
Sunrise	05:24	Temperature	17°C	
Finish	05:39	Weather description	Warm, damp air, still, light cloud cover. Previous light shower.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:55	PIPI	2	Y	Heard not seen (HNS) foraging nearby
03:59	NYNO	1	Y	HNS very brief and distant
04:06	NYNO	1	Y	HNS distant foraging
04:06	PIPI	1	Y	HNS foraging nearby
04:29	PIPI	1	Y	HNS foraging nearby
04:53	PIPI	1	Y	HNS foraging
04:54	PIPI	3	Y	Re-entry. Commuting west to south and then re-entering in chimney according to another surveyor.

Tree 90 – Dusk – 24th June 2019

JUNE				
Project Name	M42 Junction 6	Surveyors		DH
Survey Location	T90	Rain (0-5)	0	
Date	24/06/2019	Wind (0-7)	0	
Start	21:18	Cloud Cover (0-5)	4	
Sunrise	21:33	Temperature	22°C	
Finish	23:05	Weather description	Warm, calm and humid evening.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:42	NYNO	1	Y	Heard not seen (HNS) brief pass
21:48	NYNO	4	Y	Seen circling overhead. Very high up. 1-2 mins.
21:49	PIPI	1	Y	Very brief pass. HNS
21:50	PIPI	1	Y	Flying west to east along hedgerow north of T90.
21:53	NYNO	1	Y	HNS commuting
21:57	NYNO	1	Y	Two loops, circling overhead.
21:57	PIPI	3	Y	Brief pass along hedgerow. West to east.
21:58	PIPI	1	Y	HNS foraging
21:59	PIPI	2	Y	Circling along hedge. West to east.
22:01	PIPI	1	Y	HNS. Brief pass.
22:02	NYNO	1	Y	HNS. Brief pass.
22:03	NYNO	3	Y	Brief passes. High up back and forward along hedge.
22:05	PIPI/ NYNO	1	Y	Brief pass. West to east. High up along hedge.
22:06	PIPI	1	Y	Flying west to east along hedgerow.
22:08 – 22:09	PIPI	5	Y	Flying east to west along hedgerow.
22:09	PIPY			
22:13	2 x PIPI	3	Y	Flying east to west along hedgerow.
22:16 – 22:19	PIPI	2	Y	HNS nearby
22:20	PIPI	1	Y	Flying west to east along hedgerow.
22:19 -22:20	NYNO	3	Y	Flying high up along hedgerow. Foraging.
22:26	PIPI	1	Y	Flying west to east along hedgerow.
22:27	NYNO	1	Y	HNS foraging
22:29	PIPI	1	Y	HNS foraging
22:30	PIPI	1	Y	HNS brief pass
22:31	NYNO	1	Y	HNS brief pass
22:32 - 22:34	PIPI	5	Y	HNS constant foraging throughout.
22:35 - 22:28	PIPI	Multiple	Y	Foraging along hedgerow.
22:39 - 22:41	2 x PIPI	1	Y	HNS foraging
22:42 - 22:47	2 x PIPI	Multiple	Y	HNS constant foraging
22:49 - 23:08	PIPI	Several	Y	HNS foraging until survey end
22:49 - 22:50	PIPPINA	4	Y	HNS foraging
22:50 - 22:51	NYNO	3	Y	HNS commuting
22:53 – 22:57	PIPPINA	5	Y	HNS foraging

Project Name	M42 Junction 6	Surveyors	TJ	
Survey Location	T90	Rain (0-5)	0	
Date	24/06/2019	Wind (0-7)	0	
Start	21:18	Cloud Cover (0-5)	4	
Sunrise	21:33	Temperature	22°C	
Finish	23:05	Weather description	Warm, calm and humid evening	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:47	NYNO	1	N	Flew North/east to South/west then west. Commuting.
21:48	NYNO	2	Y	Foraging high up above tree.
21:55	NYNO	1	Y	HNS foraging
21:57 - 22:58	NYNO	2	Y	HNS foraging
22:00 - 22:03	PIPI	Multiple	Y	HNS foraging
22:01 - 22:03	NYNO	4	Y	HNS foraging
22:06 - 22:07	PIPI	8	Y	HNS foraging
22:07	PIPY	1	Y	HNS commuting
22:09	MYMY	1	Y	HNS foraging
22:09	NYNO	1	Y	HNS commuting
22:11 – 22:13	PIPI	Multiple	Y	Foraging along treeline back and forward.
22:18	PIPI	2	Y	Foraging along treeline back and forward.
22:19	NYNO	3	Y	Flying above treeline foraging.
22:21	PIPI	1	Y	Foraging along treeline back and forward
22:23	PIPI	1	Y	HNS foraging
22:23 – 22:24	NYNO	4	Y	Foraging along treeline.
22:24	2 x PIPI	2	Y	Foraging along treeline east to west.
22:26	NYNO	1	Y	HNS foraging
22:27 - 22:28	PIPI	3	Y	HNS foraging
22:29	NYNO	1	Y	HNS. foraging
22:31 22:33	PIPY	5	Y	HNS. Foraging
22:33	MYSP	1	Y	HNS. Commuting
22:33 - 22:35	PIPI	Several	Y	Foraging along hedgerow.
22:38 - 22:43	2 x PIPI	Multiple	Y	HNS constant foraging
22:40 - 22:41	PIPPINA	5	Y	HNS foraging
22:46 - 22:49	PIPI	5	Y	HNS foraging
22:46 - 22:47	PIPPINA	2	Y	HNS foraging
22:51	PIPI	1	Y	HNS commuting
22:54 – 22:58	PIPI	Multiple	Y	HNS foraging
22:00 -23:02	PIPI	6	Y	HNS foraging

Tree 90 – Dawn – 10th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors		DH
Survey Location	T90	Rain (0-5)	0	
Date	10/07/2019	Wind (0-7)	0	
Start	02:56	Cloud Cover (0-5)	4	
Sunrise	04:56	Temperature	19°C	
Finish	04:56	Weather description	Humid, very mild and still.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:02	PIPI	1	Y	Heard not seen (HNS) foraging close by.
03:13	PIPI and PIPY	1	Y	H&S. 2 bats brief commuting pass.
03:20	PIPY	2	Y	HNS Brief commuting pass.
03:27	PIPI	1	Y	HNS. Brief foraging pass nearby.
03:57	PIPI	1	Y	HNS. Brief pass. Possible Pip.
03:58	PIPI	1	Y	HNS Brief commuting pass.
04:01	PIPI	1	Y	HNS. Brief commuting pass.
04:05	PIPI	1	Y	Seen foraging along hedgerow east to south west.
04:07	PIPI	1	Y	Seen foraging along hedgerow east to south west.
04:09	PIPY	1	Y	Seen foraging along hedgerow east to south west.
04:10	PIPY	1	Y	Seen foraging along hedgerow east to south west.
04:18	PIPI	2	Y	HNS. Brief commuting pass.
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Project Name	M42 Junction 6	Surveyors		PH
Survey Location	T90	Rain (0-5)	0	
Date	10/07/2019	Wind (0-7)	0	
Start	02:56	Cloud Cover (0-5)	4	
Sunrise	04:56	Temperature	19°C	
Finish	04:56	Weather description	Humid, very mild and still	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:03	PIPI	1	Y	Heard not seen (HNS)
03:22	PIPY	1	Y	HNS
03:35	PIPI	1	Y	HNS
03:46	NYNO	1	Y	HNS
03:49	PIPI	2	Y	HNS
03:49	PIPY	1	Y	HNS
03:56	PIPI	1	Y	HNS
03:57	PIPI	1	Y	HNS
03:59	PIPI	3	Y	HNS
04:01	PIPI	7	Y	HNS
04:02	PIPI	1	Y	HNS
04:04	PIPI	3	Y	HNS

04:10	PIPI	1	Y	Approximately 10ft flight height, flying fast.
04:12	PIPI	1	Y	Approximately 10ft flight height, flying fast.
04:17	PIPI	1	Y	HNS
04:25	PIPI	3	Y	HNS
04:34	NYNO	1	Y	HNS

Tree 90 – Dusk – 7th August 2019

AUGUST				
Project Name	M42 Junction 6	Surveyors		ST
Survey Location	T90	Rain (0-5)	0	
Date	07/08/19	Wind (0-7)	2	
Start	20:34	Cloud Cover (0-5)	4	
Sunset	20:49	Temperature	18 degrees	
Finish	22:19	Weather description	Dry throughout survey	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:11	PIPI	1	Y	HNS. Brief pass.
21:16 - 21:17	PIPI	6	Y	Foraging from the west along hedgerow/treeline and grass land south of T90.
21:20	NYNO	1	Y	HNS brief pass.
21:22 - 21:27	PIPI	Multiple	Y	Foraging along the treeline/ hedgerow and in the field south of T90.
21:31 -21:32	PIPI	4	Y	Foraging along the treeline/ hedgerow and in the field south of T90.
21:34	NYSP	1	Y	HNS brief pass
21:34 - 21:35	PIPI	5	Y	Foraging along the treeline/ hedgerow and in the field south of T90.
21:38 – 21:42	PIPI	6	Y	HNS foraging.
21:43	PIPI	1	Y	Commuting along hedgerow
21:46	PIPI			
21:52	PIPI	1	Y	HNS brief pass
21:54	PIPI	1	Y	Foraging along the treeline/ hedgerow and in the field south of T90.
21:56	PIPI	2	Y	HNS foraging
22:02	NYNO	1	Y	HNS brief pass
22:05 – 22:07	PIPI	7	Y	HNS brief distant passes
22:14 – 22:15	PIPI	2	Y	HNS brief pass
22:16 – 22:18	PIPI	4	Y	Foraging along hedgerow. From east to west.

Tree 25.6 – Dusk – 1st July 2019

JULY				
Project Name	M42 Junction 6	Surveyors		TH
Survey Location	T25.6	Rain (0-5)	0	
Date	01/07/2019	Wind (0-7)	1	
Start	21:25	Cloud Cover (0-5)	1	
Sunrise	21:32	Temperature	18°C	
Finish	23:30	Weather description	Clear, sunny and hot	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:06	PIPI	11	Y	Foraging from the north along the hedgerow and then flew south
22:09 – 22:34	PIPI	Multiple	Y	Flew from the south and continued to forage in the area until 22:34. 2 bats seen at 22:20
22:34 – 22:48	PIPY	44	Y	Heard not seen (HNS). Continuous foraging throughout time period.
22:34 – 22:55	MYSP	33	Y	HNS Foraging continuously
22:38	NYSP	1	Y	HNS. Brief foraging pass nearby.
22:44 – 22:47	NYSP	4	Y	HNS. Foraging.
23:02	PIPY	1	Y	HNS. Brief foraging pass.
23:10	PIPY	1	Y	HNS Brief commuting pass.

Tree 25.6 – Dawn – 16th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors		DH
Survey Location	T25.6	Rain (0-5)	0	
Date	16/07/2019	Wind (0-7)	0	
Start	03:00	Cloud Cover (0-5)	3	
Sunrise	05:03	Temperature	14°C	
Finish	05:15	Weather description	Dry, warm and still.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:08	PIPI	1	Y	Heard not seen (HNS) foraging close by.
04:04	PIPI	1	Y	H&S Brief commuting pass.

Tree 25.6 – Dawn – 1st August 2019

AUGUST				
Project Name	M42 Junction 6	Surveyors		SP
Survey Location	T25.6	Rain (0-5)		0
Date	01/08/2019	Wind (0-7)		2
Start	03:24	Cloud Cover (0-5)		5
Sunrise	05:24	Temperature		15°C
Finish	05:39	Weather description		Overcast, cool, breeze. Rained the night before.
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:44	PIPY	2	Y	Commuting past T25.6 from south to north
03:45	PIPI	1	Y	Heard not seen (HNS) Foraging
03:45 – 03:59	PIPY	Multiple	Y	HNS foraging
03:50	PIPI	1	Y	HNS foraging
03:51	MYSP	1	Y	HNS commuting
03:52 – 03:56	PIPI	5	Y	HNS foraging
03:53	PIPY	4	Y	HNS continuous foraging nearby
03:54	NYNO	1	Y	HNS commuting
03:55	PIPY	1	Y	HNS foraging
03:57	PIPY	1	Y	HNS foraging
04:00	PIPI	1	Y	HNS faint pass
04:01 – 04:10	PIPI	Multiple	Y	Seen foraging around T25.6
04:12 – 04:15	PIPI	Multiple	Y	Seen foraging along tree line north to south and returning to T25.6
04:12 – 04:15	PIPY	7	Y	HNS foraging
04:13	MYSP	1	Y	HNS commuting
04:14	Social	1	Y	HNS social call PIPI
04:16	NYSP	1	Y	2 bats foraging west to east along treeline and around T25.6
04:16 – 04:17	PIPI	2	Y	HNS foraging
04:16 – 04:17	PIPY	3	Y	HNS foraging
04:17	MYSP	1	Y	HNS commuting
04:18	PIPY	1	Y	HNS foraging nearby T25.6
04:20 – 04:23	PIPI	14	Y	Seen commuting along tree line north to south and heard foraging.
04:22	PIPY	1	Y	HNS commuting
04:28	PIPY	1	Y	Seen foraging along treeline south to north
04:33 – 04:35	PIPI	5	Y	HNS commuting
04:35	PIPY	1	Y	Possible re-entry. Flew north to south into tree
04:37 – 04:40	PIPI	11	Y	Foraging along tree line and linear fields.
04:40 – 04:42	PIPY	9	Y	Foraging along tree line and linear fields.
04:44 – 04:45	PIPY	6	Y	Foraging along tree line and linear fields.
04:49 -04:50	PIPY	3	Y	HNS foraging
04:54 -04:55	PIPY	3	Y	HNS foraging

04:52 – 04:58	PIPI	several	Y	Possible re-entry. Foraging to the east of T25.6 throughout time specified. Faint recording despite proximity.
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Tree 43 – Dusk – 3rd July 2019

JULY				
Project Name	M42 Junction 6	Surveyors		TH
Survey Location	T43	Rain (0-5)	0	
Date	03/07/2019	Wind (0-7)	4	
Start	21:15	Cloud Cover (0-5)	0	
Sunrise	21:30	Temperature	17 degrees	
Finish	23:30	Weather description	Calm, still with a gentle breeze	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:58	PIPI	1	Y	Commuting south along hedgerow
22:02	PIPI	4	Y	Heard not seen (HNS) foraging
22:03 – 22:45	PIPI	Continuous	Y	Foraging opposite T43
22:21	NYNO	1	Y	HNS foraging
22:46	NYNO	1	Y	HNS commuting
22:23	PIPY	2		
22:55	MYSP	1		

Tree 43 – Dusk – 11th July 2019

JULY					
Project Name	M42 Junction 6	Surveyors		PH	
Survey Location	T43	Rain (0-5)	0	Date	11/07/2019
Start	21:27	Wind (0-7)	0	Finish	23:27
Sunrise	21:27	Cloud Cover (0-5)	4	Temperature	19 degrees
Finish	23:27	Weather description	Cloudy	Description of behaviour	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour	
21:54	NYNO	1	Y	Emergence from T43.	
22:00	NYNO	6	Y	Heard not seen (HNS) continuous foraging for 1 minute	
22:02	PIPI	1	Y	HNS foraging	
22:03	NYNO	2	Y	HNS commuting	
22:04	NYNO	3	Y	HNS commuting	
22:05	PIPI	1	Y	HNS commuting	
22:07	NYNO	3	Y	HNS foraging	
22:08	NYNO	2	Y	HNS foraging	
22:10	PIPI	1	Y	HNS commuting	
22:12	NYNO	2	Y	HNS commuting	
22:13	NYNO	5	Y	HNS foraging	
22:14	NYNO	7	Y	HNS foraging	
22:17	PIPY	1	Y	HNS commuting	
22:21	NYNO	1	Y	HNS foraging	
22:23	PIPY + PIPI	1	Y	HNS commuting	
22:24	NYNO	1	Y	HNS commuting	
22:25	PIPI	2	Y	HNS foraging	
22:27	NYNO	3	Y	HNS foraging	
22:29	PIPI	1	Y	HNS foraging	
22:29	PIPI	3	Y	HNS foraging	
22:29	NYNO	1	Y	HNS continuous foraging	
22:30	PIPI	4	Y	HNS foraging	
22:31	PIPI	2	Y	HNS foraging	
22:31	PINA	1	Y	HNS foraging	
22:32	PIPI	5	Y	HNS foraging	
22:34	PIPI	3	Y	HNS foraging	
22:37	PIPI	3	Y	HNS foraging	
22:39	PIPI	2	Y	HNS foraging	
22:40	PINA	1	Y	HNS foraging	
22:42	PIPI	3	Y	HNS foraging	
22:42	NYNO	1	Y	HNS foraging	
22:44	PIPI	1	Y	HNS foraging	
22:46	PIPI	2	Y	HNS foraging	
22:47	PIPI	1	Y	HNS foraging	
22:54	PIPI	6	Y	HNS foraging	
22:57	PIPI	3	Y	HNS foraging	
22:59	PIPI	2	Y	HNS foraging	
23:01	PIPI	5	Y	HNS foraging	
23:08	PIPI	2	Y	HNS foraging	
23:11	PINA	1	Y	HNS foraging	

23:13	PIPI	3	Y	HNS foraging
23:19	PIPI	1	Y	HNS foraging
23:20	PIPY	1	Y	HNS foraging
23:24	PIPI	2	Y	HNS foraging
23:26	PIPI	1	Y	HNS foraging
23:26	PLAU	1	Y	HNS foraging

Tree 43 – Dawn – 17th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors		DH
Survey Location	T43	Rain (0-5)	0	
Date	17/07/2019	Wind (0-7)	0	
Start	03:05	Cloud Cover (0-5)	0	
Sunrise	05:05	Temperature	15 degrees	
Finish	05:05	Weather description	Mild, dry and still morning	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:01	PIPI	2	Y	
03:12	PIPI	1	Y	Heard not seen (HNS) brief foraging pass
03:18	PIPI	3	Y	HNS brief commuting passes
03:21 – 03:22	PIPI	2	Y	Commuting north along hedgerow
03:27	MYSP	1	Y	HNS commuting
03:31	PIPI	1	Y	HNS commuting
03:35	PIPI	3	Y	Commuting south along hedgerow
03:38	PIPI	1	Y	HNS brief commuting
03:41	PIPI	1	Y	HNS brief commuting
03:46 – 03:47	PIPI	6	Y	Commuting along hedge and foraging at times
03:54	PIPI	3	Y	HNS foraging
04:00	PIPI	3	Y	HNS foraging
04:02 – 04:10	PIPI	10	Y	Foraging along hedgerow continuously
04:14	PIPI	2	Y	HNS brief commuting pass

Tree 88 – Dusk – 24th June 2019

JUNE				
Project Name	M42 Junction 6	Surveyors	BN	
Survey Location	T88	Rain (0-5)	0	
Date	24/06/2019	Wind (0-7)	1	
Start	21:19	Cloud Cover (0-5)	5	
Sunrise	21:34	Temperature	22 degrees	
Finish	23:04	Weather description	Warm, overcast and very humid.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:27	NYSP	1	Y	Heard not seen (HNS) commuting
21:37	NYNO	1	Y	HNS commuting
21:47	NYNO	1	Y	HNS foraging
21:52	PIPI	1	N	Emergence from T88 then flew south down the road. No echolocation at this point.
22:00	PIPI	1	Y	Commuting north to south along hedgerow.
22:05	PIPI	4	Y	HNS foraging.
22:09 – 22:11	NYNO	Multiple	Y	HNS foraging.
22:11 – 23:00	PIPI	Multiple	Y	Foraging up and down hedgerow.
22:14 – 22:36	NYNO	Multiple	Y	HNS constant foraging.
22:38 – 22:39	NYNO	3	Y	HNS foraging.
22:48	NYNO	1	Y	HNS foraging
22:50	NYNO	1	Y	HNS commuting
22:52	PIPI/PINA	1	Y	HNS commuting
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Project Name	M42 Junction 6	Surveyors	AS	
Survey Location	T88	Rain (0-5)	1	
Date	24/06/2019	Wind (0-7)	1	
Start	21:19	Cloud Cover (0-5)	5	
Sunset	21:34	Temperature	22 degrees	
Finish	23:04	Weather description	Warm, overcast and very humid.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:38	NYNO	1	Y	Heard not seen (HNS) faint call commuting.
21:40	NYNO	1	Y	HNS faint call commuting.
21:48	NYNO	1	Y	HNS faint call commuting.
21:53	NYNO	1	Y	HNS faint call commuting.
21:57 – 23:04	PIPI	Multiple	Y	Multiple foraging passes including a possible emergence HNS at 21:57.
22:10	NYNP	1	Y	HNS commuting.
22:14	NYNO	1	Y	HNS foraging.
22:19	NYSP	1	Y	HNS foraging.
22:22	NYSP	1	Y	HNS commuting.
22:36	NYNO	1	Y	HNS foraging.
22:48	NYNO	1	Y	HNS foraging.
22:58	NYNO	1	Y	HNS foraging

Tree 88 - Dusk - 4th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	FM	
Survey Location	T88	Rain (0-5)	0	
Date	04/07/2019	Wind (0-7)	1	
Start	21:22	Cloud Cover (0-5)	4	
Sunrise	21:31	Temperature	18 degrees	
Finish	23:30	Weather description	Warm, dry with cloud and slight breeze.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:05	NYNO	5	Y	Seen foraging west of tree 88 in field.
22:09	PIPI	1	Y	Heard not seen (HNS) Commuting
22:11	NYNO	1	Y	HNS foraging
22:14	PIPI	4	Y	Flew from east to west. Possibly emerged from tree.
22:15	NYNO	2	Y	HNS foraging.
22:17	NYNO	1	Y	HNS Commuting
22:17 - 22:19	PIPI	4	Y	Seen foraging around tree the suddenly went silent. Possible re-entry
22:00 - 22:22	NYNO	3	Y	Seen commuting overhead.
22:20 – 22:23	PIPI	9	Y	HNS foraging
22:28	PIPI	Multiple	Y	HNS constant foraging.
22:30 – 22:31	PIPI	9	Y	HNS foraging
22:34 – 22:36	PIPI	6	Y	HNS foraging
22:42	PIPI	3	Y	HNS foraging
22:45 – 22:50	PIPI	19	Y	HNS foraging and social calls.
22:52 – 22:59	PIPI	Multiple	Y	HNS foraging and social calls.
23:00	2x PIPI	Multiple	Y	HNS foraging
23:05 -22:07	PIPI	3	Y	HNS faint commuting and foraging.
23:06	2x PIPI	2	Y	Two individuals foraging above
23:10	PIPI	2	Y	Seen foraging north
23:13	PIPI	1	Y	HNS foraging
23:19 – 23:22	2x PIPI	6	Y	HNS foraging
23:22	NYNO	1	Y	HNS commuting
23:22	PIPI	5	Y	HNS foraging
23:24	PIPI	2	Y	HNS foraging
23:26 – 23:30	PIPI	9	Y	HNS foraging
Project Name	M42 Junction 6	Surveyors	MR	
Survey Location	T88	Rain (0-5)	0	
Date	04/07/2019	Wind (0-7)	1	
Start	21:22	Cloud Cover (0-5)	4	
Sunrise	21:31	Temperature	18 degrees	
Finish	23:30	Weather description	Warm, dry with cloud and slight breeze	

Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:55	PIPI	1	Y	Heard not seen (HNS) commuting
22:05	NYNO	3	Y	Commuting east flying high
22:10	PIPI	1	Y	HNS commuting
22:14 – 22:15	PIPI	2	Y	HNS commuting
22:15	NYNO	1	Y	HNS commuting
22:18 – 22:23	PIPI	11	Y	Foraging along tree line. Some social calls and commuting calls heard throughout this time.
22:18	NYNO	1	Y	HNS commuting
22:20 – 22:21	NYNO	3	Y	HNS foraging
22:31 – 22:33	PIPI	4	Y	HNS commuting
22:34 -22:35	PIPI	4	Y	HNS social call
22:37	PIPI	1	Y	HNS commuting
22:47 – 22:50	PIPI	11	Y	HNS commuting and social calls
22:53 – 22:57	PIPI	6	Y	HNS foraging
22:59 – 23:00	PIPI	8	Y	HNS commuting and foraging
23:05	PIPI	1	Y	HNS commuting
23:07 – 23:15	PIPI	Multiple	Y	HNS foraging
23:17	PIPI	1	Y	HNS commuting
23:20 – 23:23	PIPI	1	Y	HNS foraging
23:22	NYNO	1	Y	HNS foraging
23:25	PIPI	1	Y	HNS commuting
23:29 – 23:30	PIPI	3	Y	HNS foraging

Tree 88 - Dawn - 18th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	CM	
Survey Location	T88	Rain (0-5)	0	
Date	04/07/2019	Wind (0-7)	2	
Start	03:06	Cloud Cover (0-5)	1	
Sunrise	05:06	Temperature	17 degrees	
Finish	05:06	Weather description	Fairly clear, mild and slight breeze.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:00 – 03:02	PIPI	5	Y	Heard not seen (HNS) foraging
03:02	PLAU	1	Y	HNS commuting
03:04	PIPI	3	Y	HNS foraging
03:06 – 03:08	PIPI	8	Y	HNS foraging
03:10 – 03:12	PIPI	4	Y	HNS foraging
03:14 – 03:17	PIPI	6	Y	HNS brief foraging passes
03:17	NYSP	1	Y	HNS commuting
03:19	PIPI	2	Y	HNS foraging
03:22 – 03:27	PIPI	16	Y	HNS Foraging
03:29 -03:30	PIPI	3	Y	HNS very brief foraging pass
03:47	PIPI	1	Y	HNS commuting
03:55	PIPI	6	Y	HNS foraging
04:08 – 04:12	PIPI	11	Y	HNS foraging
04:14	PIPI	3	Y	Seen flying north to south along hedgerow
04:16	PIPI	1	Y	HNS commuting
04:16	NYNO	1	Y	HNS commuting
04:20	PIPI	1	Y	HNS commuting
04:27	NYNO	1	Y	HNS foraging
04:50	NYSP	1	Y	HNS commuting
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Project Name	M42 Junction 6	Surveyors	CM	
Survey Location	T88	Rain (0-5)	0	
Date	04/07/2019	Wind (0-7)	2	
Start	03:06	Cloud Cover (0-5)	1	
Sunrise	05:06	Temperature	17 degrees	
Finish	05:06	Weather description	Fairly clear, mild and slight breeze.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:00 – 03:02	PIPI	5	Y	Heard not seen (HNS) foraging
03:02	PLAU	1	Y	HNS commuting
03:04	PIPI	3	Y	HNS foraging
03:06 – 03:08	PIPI	8	Y	HNS foraging
03:10 – 03:12	PIPI	4	Y	HNS foraging
03:14 – 03:17	PIPI	6	Y	HNS brief foraging passes
03:17	NYSP	1	Y	HNS commuting
03:19	PIPI	2	Y	HNS foraging
03:22 – 03:27	PIPI	16	Y	HNS Foraging

03:29 -03:30	PIPI	3	Y	HNS very brief foraging pass
03:47	PIPI	1	Y	HNS commuting
03:55	PIPI	6	Y	HNS foraging
04:08 – 04:12	PIPI	11	Y	HNS foraging
04:14	PIPI	3	Y	Seen flying north to south along hedgerow
04:16	PIPI	1	Y	HNS commuting
04:16	NYNO	1	Y	HNS commuting
04:20	PIPI	1	Y	HNS commuting
04:27	NYNO	1	Y	HNS foraging
04:50	NYSP	1	Y	HNS commuting

Tree 261 – Dusk – 2nd July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	AH	
Survey Location	T261	Rain (0-5)	0	
Date	02/07/2019	Wind (0-7)	1	
Start	21:15	Cloud Cover (0-5)	0	
Sunrise	21:30	Temperature	15	
Finish	23:30	Weather description	Clear, mild, dry.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:45	PIPI	1	Y	Commuting overhead from north to south
21:51	PIPI	3	Y	Foraging from north to south
21:55 - 21:58	3x PIPI	12	Y	Foraging above hedgerow
21:59	2x PIPI	2	Y	Foraging above hedgerow then flew south
22:00 – 22:01	PIPI	Multiple	Y	Foraging north to south
22:02	PIPI	2	Y	Foraging north to south
22:03	PIPI	1	Y	Foraging north to south
22:04	PIPI	1	Y	Foraging north to south
22:05	PIPI	1	Y	Foraging north to south
22:06	PIPI	1	Y	Foraging north to south
22:07	PIPI	1	Y	Foraging north to south
22:08 – 22:25	2x PIPI	Multiple	Y	Foraging above hedgerow
22:13	PIPY	1	Y	Heard not seen (HNS) commuting
22:20	PIPY	1	Y	HNS commuting
22:26 – 22:27	PIPI	6	Y	Foraging around tree then foraging over hedgerow.
22:32	PIPI	1	Y	Foraging from north over hedgerow then left north.
22:36 – 22:38	PIPI	1	Y	Foraging from the north over hedgerow.
22:40 – 22:43	2x PIPI	1	Y	Foraging in field and around tree
22:46 - 22:51	PIPI	Multiple	Y	Foraging in field and around tree
22:53 – 23:59	PIPI	Continuous	Y	Foraging loops in and around tree and field
23:01 – 23:02	PIPI	9	Y	HNS foraging
23:04	PIPI	1	Y	HNS foraging
23:07	PIPI	5	Y	HNS foraging
Summary				
Project Name	M42 Junction 6	Surveyors	TH	
Survey Location	T261	Rain (0-5)	0	
Date	02/07/2019	Wind (0-7)	1	
Start	21:15	Cloud Cover (0-5)	0	
Sunrise	21:30	Temperature	15	
Finish	23:30	Weather description	Clear, mild, dry.	

Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:45	PIPI	1	Y	Commuting overhead from north to south
21:51	PIPI	3	Y	Foraging from north to south
21:55 - 21:58	3x PIPI	12	Y	Foraging above hedgerow
21:59	2x PIPI	2	Y	Foraging above hedgerow then flew south
22:00 – 22:01	PIPI	Multiple	Y	Foraging north to south
22:02	PIPI	2	Y	Foraging north to south
22:03	PIPI	1	Y	Foraging north to south
22:04	PIPI	1	Y	Foraging north to south
22:05	PIPI	1	Y	Foraging north to south
22:06	PIPI	1	Y	Foraging north to south
22:07	PIPI	1	Y	Foraging north to south
22:08 – 22:25	2x PIPI	Multiple	Y	Foraging above hedgerow
22:13	PIPY	1	Y	Heard not seen (HNS) commuting
22:20	PIPY	1	Y	HNS commuting
22:26 – 22:27	PIPI	6	Y	Foraging around tree then foraging over hedgerow.
22:32	PIPI	1	Y	Foraging from north over hedgerow then left north.
22:36 – 22:38	PIPI	1	Y	Foraging from the north over hedgerow.
22:40 – 22:43	2x PIPI	1	Y	Foraging in field and around tree
22:46 - 22:51	PIPI	Multiple	Y	Foraging in field and around tree
22:53 – 23:59	PIPI	Continuous	Y	Foraging loops in and around tree and field
23:01 – 23:02	PIPI	9	Y	HNS foraging
23:04	PIPI	1	Y	HNS foraging
23:07	PIPI	5	Y	HNS foraging

Tree 261 – Dawn – 17th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	MR	
Survey Location	T261	Rain (0-5)	0	
Date	17/07/2019	Wind (0-7)	1	
Start	03:00	Cloud Cover (0-5)	4	
Sunrise	05:04	Temperature	16 degrees	
Finish	05:19	Weather description	Hot and dry day. Full moon.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:02	PIPI	2	Y	Foraging in the canopy.
03:06	PIPI	12	Y	Heard not seen (HNS) foraging
03:10 – 03:12	PIPI	8	Y	HNS foraging
03:14 – 03:18	PIPI	20	Y	HNS foraging
03:21	PIPY	1	Y	HNS commuting
03:21 – 03:22	PIPI	8	Y	HNS foraging
03:24 – 03:31	PIPI	Multiple	Y	Foraging in canopy, possibly tree perching.
03:29	NYNO	1	Y	HNS commuting
03:34 – 03:39	PIPI	Multiple	Y	HNS foraging
03:39	MYSP	1	Y	HNS foraging
03:42 – 03:53	2x PIPI	Multiple	Y	Foraging in the canopy, possible tree perching.
03:47 – 03:48	PIPY	3	Y	HNS foraging
03:49	MYSP	1	Y	HNS commuting
03:50 – 03:53	PIPI	Multiple	Y	Foraging in the canopy, possible tree perching.
03:55 - 04:31	2x PIPI	Multiple	Y	Foraging in the canopy, possible tree perching. As well as near constant foraging nearby.
04:35	PIPI	1	Y	Heard not seen (HNS). Commuting.
04:40	PIPI	1	Y	HNS commuting.
Project Name	M42 Junction 6	Surveyors	AS	
Survey Location	T261	Rain (0-5)	0	
Date	17/08/19	Wind (0-7)	1	
Start	03:00	Cloud Cover (0-5)	4	
Sunset	05:04	Temperature	16 degrees	
Finish	05:19	Weather description	Hot and dry day. Full moon.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:04 – 03:07	PIPI	Multiple	Y	Foraging around tree.
03:10 – 03:11	PIPI	Multiple	Y	Heard not seen (HNS) foraging.
03:11	PIPY	3	Y	HNS foraging.
03:12 – 03:20	PIPI	Multiple	Y	HNS foraging
03:22 – 03:33	PIPI	Multiple	Y	HNS foraging
03:29	NYNO	1	Y	HNS commuting
03:34 – 03:40	PIPI	Multiple	Y	HNS foraging

03:40	MYSP	1	Y	HNS foraging
03:42 – 03:53	2x PIPI	Multiple	Y	HNS foraging nearby
03:43	NYNO	1	Y	HNS short call.
03:55 – 04:04	PIPI	Multiple	Y	HNS consistent foraging
03:56	2x PIPI	Multiple	Y	HNS foraging
04:05 – 04:31	PIPI	Multiple	Y	HNS continuous foraging
04:30	PIPI	Multiple	Y	Re-entry. Bat flew up into the tree. Re-entry feature not witnessed.
04:35	PIPI	1	Y	HNS brief commuting pass.
04:40	PIPI	1	Y	HNS brief commuting call.
05:04	PIPI	1	Y	HNS commuting

Tree 261 – Dusk – 31st July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	SP	
Survey Location	T261	Rain (0-5)	0	
Date	31/07/2019	Wind (0-7)	2	
Start	20:30	Cloud Cover (0-5)	5	
Sunrise	20:51	Temperature	17 degrees	
Finish	22:51	Weather description	Overcast, cool and light breeze	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:19	PIPI	1	Y	Seen commuting north to south.
21:36	PIPI	1	Y	Flew from tree line north of T261 towards fields foraging around T261 in the process.
21:39	PIPI	1	Y	Foraging around T261
21:40	PIPI	1	Y	Foraging west to east
21:50	PIPI	1	Y	Possible Emergence. Appeared to emerge from T261 canopy section then flew to tree line.
21:52	PIPI	2	Y	Foraging along tree line.
21:54	PIPI	3	Y	HNS very faint.
21:56	PIPI	2	Y	HNS foraging
22:02	PIPI	1	Y	Flew along tree line east to north foraging
22:04	PIPI	3	Y	HNS foraging
22:07	PIPI	1	Y	HNS foraging
22:12	PIPI	1	Y	HNS foraging
22:19	PIPI	1	Y	Potentially flew into T261
22:23	PIPI	1	Y	HNS foraging
22:28	PIPI	2	Y	HNS foraging
22:29	PIPI	1	Y	HNS foraging
22:30	PIPI	1	Y	HNS foraging
22:31	PIPI	1	Y	HNS foraging
22:34	PIPI	1	Y	HNS foraging

Tree 274 – Dusk – 3rd July 2019

July				
Project Name	M42 Junction 6	Surveyors		MR
Survey Location	T274	Rain (0-5)	0	
Date	03/07/2019	Wind (0-7)	1	
Start	21:17	Cloud Cover (0-5)	2	
Sunrise	21:32	Temperature	18 degrees	
Finish	23:32	Weather description	Hazy cloud, still hot dry and no recent rain	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:39	PIPI45	1	Y	Heard not seen (HNS) Commuting
21:49	PIPI45	1	Y	Emergence from T274
21:54	PIPI45	3	Y	HNS commuting
22:02	PIPY	1	Y	HNS brief call
22:04	PIPIY	1	Y	HNS commuting
22:08	PIPY	1	Y	Emergence from T274
22:09	PIPI45	2	Y	Commuting along treeline
22:10	PIPY	2	Y	HNS commuting
22:12	PIPI45	7	Y	Foraging bellow canopy
22:21 – 22:25	PIPY	2	Y	Foraging along woodland edge
22:23 – 22:27	PIPI45	4	Y	Commuting along woodland edge
22:26 – 22:34	PIPY	2	Y	Foraging in field south of tree
22:30 – 22:35	PIPI45	2	Y	HNS commuting
22:31	MYSP	1	Y	HNS foraging
22:37 – 22:40	NYLE	2	Y	HNS commuting
22:41 – 22:43	PIPI45	2	Y	HNS faint call
22:48 – 22:57	PIPI45	2	Y	HNS social call
22:56 – 23:01	PIPI45	3	Y	HNS distant commuting
22:56	MYSP	1	Y	HNS commuting
22:57	MYSO	1	Y	HNS commuting
23:03	PIPI45	2	Y	HNS commuting
23:08	PIPI45	2	Y	HNS faint commuting
23:11	PIPY55		Y	HNS distant call
23:13 – 23:16	PIPI45		Y	HNS commuting
23:16	MYSP	1	Y	HNS foraging
23:25	MYSP	5	Y	HNS distant call
23:30	MYSP	1	Y	HNS very brief

Tree 274 – Dawn – 17th July 2019

July				
Project Name	M42 Junction 6	Surveyors	AL	
Survey Location	T274	Rain (0-5)	0	
Date	17/07/2019	Wind (0-7)	2	
Start	03:04	Cloud Cover (0-5)	4	
Sunrise	05:04	Temperature	16 degrees	
Finish	05:19	Weather description	Mild evening, overcast with a little breeze.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:04	PIPI	1	Y	HNS foraging
03:04	PIPI	2	Y	HNS commuting
03:25	PIPI	1	Y	HNS commuting
03:28	PIPI	1	Y	HNS commuting
03:30	PIPY	7	Y	HNS foraging
03:32	PIPI, PIPY	1	Y	HNS commuting
03:35	MYSP	1	Y	HNS commuting
03:44	PIPI	2	Y	HNS foraging
03:50	PIPI	1	Y	HNS commuting
03:57	PIPY	1	T	HNS commuting
04:02	PIPI	4	Y	HNS foraging
04:07	PIPI	1	Y	HNS commuting
04:08 – 04:12	PIPY	3	Y	HNS foraging nearby
04:12	PIPI	1	Y	HNS commuting
04:15	PIPI	4	Y	HNS foraging
04:16	PIPY	1	T	HNS commuting
04:17	PISP	2	Y	HNS commuting
04:23	PIPY	1	Y	HNS commuting
04:24	PIPI	1	Y	Commuting north west
04:26	PIPI, PIPY	2	Y	HNS commuting
04:28	PIPI	1	Y	Commuting towards tree south east
04:34	PIPY	1	Y	HNS foraging
04:39	PIPI, PIPY	1	Y	Seen foraging north west towards tree
04:42	PIPI	1	Y	Seen foraging north west towards tree
04:43	PIPI	1	Y	Seen foraging north west towards tree
04:45	PIPY	1	Y	HNS
04:47	PIPI	1	Y	HNS
04:49	PIPY	1	Y	HNS

Tree 274 – Dawn – 6th August 2019

July				
Project Name	M42 Junction 6	Surveyors	BB	
Survey Location	T274	Rain (0-5)	0	
Date	06/08/2019	Wind (0-7)	1	
Start	03:34	Cloud Cover (0-5)	1	
Sunrise	05:34	Temperature	14 degrees	
Finish	05:49	Weather description	Clear night, gentle breeze and mild.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:39	PIPI	2	Y	HNS foraging
03:42	PIPI	1	Y	HNS commuting
03:46	PIPY	7	Y	HNS foraging
03:49	PIPI	1	Y	HNS commuting
03:50	PIPI	2	Y	HNS foraging
03:54	PIPI	1	Y	HNS commuting
03:56	PIPI	4	Y	HNS foraging
04:03	PIPY	3	Y	HNS foraging nearby
04:15	PIPI	1	Y	HNS commuting
04:27	PIPI	4	Y	HNS foraging
04:40	PIPI	1	Y	Commuting north west
04:46	PIPI	1	Y	Commuting towards tree south east
04:51	PIPI	1	Y	HNS foraging
04:51	PIPI	1	Y	Seen foraging north west towards tree
04:56	PIPY	1	Y	Seen foraging north west towards tree
04:58	PIPY	1	Y	Seen foraging north west towards tree
04:59	PIPY	2	Y	Flew east to west along woodland edge
05:01	PIPI	1	Y	HNS
05:02	PIPI	1	Y	HNS
05:05	PIPI	1	Y	HNS
05:12	PIPY	1	Y	HNS
July				
Project Name	M42 Junction 6	Surveyors	WJ	
Survey Location	T274	Rain (0-5)	0	
Date	06/08/2019	Wind (0-7)	1	
Start	03:34	Cloud Cover (0-5)	1	
Sunrise	05:34	Temperature	14 degrees	
Finish	05:49	Weather description	Clear night, gentle breeze and mild.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:38	PIPI	1	Y	HNS foraging
03:40	PIPI	1	Y	Commuting west along woodland edge

03:44	PIPI	1	Y	HNS commuting
03:47	MYSP	1	Y	HNS commuting
03:57	PIPY	1	Y	HNS
04:01	PIPI	1	Y	HNS
04:13	PIPY	1	Y	HNS commuting
04:26	PIPI	1	Y	HNS foraging
04:50	PIPI	1	Y	HNS foraging
04:54	PIPI	3	Y	HNS foraging
04:55	PIPI	2	Y	HNS commuting
04:57	PIPI	3	Y	HNS foraging
05:05	PIPI	1	Y	HNS commuting
05:10	PIPI	7	Y	2 bats circling around tree and woodland

Tree 295 – Dusk – 9th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	AS	
Survey Location	T295	Rain (0-5)	0	
Date	09/07/2019	Wind (0-7)	0	
Start	21:14	Cloud Cover (0-5)	5	
Sunrise	21:29	Temperature	20 degrees	
Finish	23:29	Weather description	Full cloud cover, no wind at start but picked up towards end.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:31	PIPI	1	Y	HNS
21:33	PIPY	1	Y	Bat appeared to east of tree brief call- suspect emergence
21:36	PIPI	1	Y	
21:39	PIPY	1	Y	Foraging
21:42	PIPY	Multiple	Y	Foraging
21:43	NYNO	1		Flying high above trees
21:43	PIPI	2	Y	Foraging
21:52	PIPI	Multiple	Y	Foraging
22:01	NYNO	1	Y	Foraging
22:01	PIPI	2	Y	Foraging
22:10	PIPI	3	Y	HNS
22:18	PIPI	2	Y	HNS
22:25	PLAU	1	Y	Possible emergence
22:51	PIPI	1	Y	HNS
22:51	EPSE	1	Y	Commuting
23:01	PIPI + PIPY	1	Y	HNS brief
23:09	PIPI	1	Y	HNS
23:15	PIPI	2	Y	HNS
23:16	PIPI	2	Y	HNS
23:27	PIPI	2	T	HNS
JULY				
Project Name	M42 Junction 6	Surveyors	LD	
Survey Location	T295	Rain (0-5)	0	
Date	09/07/2019	Wind (0-7)	0	
Start	21:14	Cloud Cover (0-5)	5	
Sunrise	21:29	Temperature	20 degrees	
Finish	23:29	Weather description	Full cloud cover, no wind at start but picked up towards end.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:31	PIPI	1	Y	HNS
21:37	PIPI	1	Y	Flying high
21:41	PIPI	2	Y	Foraging
21:43	NYNO	1	Y	Flying west to east
21:51	PIPI	3	Y	Foraging
22:01	PIPI	1	Y	Foraging
22:06	PIPY	1	Y	HNS
22:10	PIPY	4	Y	Foraging

22:26	BLE	1	Y	Emergence silent BLE
22:28	MYSP	1	Y	HNS
22:30	PIPI	1	Y	Foraging
22:34	PIPY	1	Y	Foraging
22:39	PIPY	1	Y	High flying north
22:42	PIPY	1	Y	High flying south
22:51	EPSE	1	Y	Commuting
22:58	PIPY	2	Y	HNS
22:59	PIPY	1	Y	HNS
23:01	PIPY	2	Y	Foraging
23:09	PIPY	1	Y	HNS
23:15	PIPI	1	Y	HNS
23:17	PIPI	2	Y	HNS
23:25	PIPI	1	Y	HNS
23:27	PIPI	2	Y	HNS

Tree 295 – Dawn – 7th August 2019

August				
Project Name	M42 Junction 6	Surveyors	JC	
Survey Location	T295	Rain (0-5)	0	
Date	7/08/2019	Wind (0-7)	5	
Start	03:30	Cloud Cover (0-5)	0	
Sunrise	05:30	Temperature	13 degrees	
Finish	05:30	Weather description	Rain previous evening, moderate breeze	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:46	PIPI	2		HNS
03:58	PIPI	1		Foraging
04:01	PIPI	3		HNS
04:03	PIPI	4		Foraging
04:07	PIPI	5		HNS
04:13	MYSP	3	Y	HNS
04:16	PIPI	5		HNS
04:22	PIPI	1		HNS
04:28	MYSP	1	Y	HNS
04:35	PIPI	1		HNS
04:44	PIPI	1		HNS
04:52	PIPI	1		HNS
05:02	PIPI	1		HNS
05:06	PIPI	2		HNS

August				
Project Name	M42 Junction 6	Surveyors	JH	
Survey Location	T295	Rain (0-5)	0	
Date	7/82019	Wind (0-7)	5	
Start	03:30	Cloud Cover (0-5)	1	
Sunrise	05:30	Temperature	13 degrees	
Finish	05:30	Weather description	Rain previous evening, moderate breeze	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:14	PIPI	1	Y	HNS
04:15	MYSP	1	Y	HNS
04:26	PIPI	2	Y	HNS
04:34	PIPI	3	Y	Circling treeline
04:38	PIPI	2	Y	HNS
04:44	PIPI	1	Y	2 seen circling tree
04:58	PIPI	4	Y	Circling treeline
05:03	PIPI	1	Y	HNS
05:06	PIPI	1	Y	HNS

Tree 311 – Dusk – 10th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	SJ	
Survey Location	T311	Rain (0-5)	0	
Date	10/07/2019	Wind (0-7)	0	
Start	20:57	Cloud Cover (0-5)	1	
Sunrise	21:27	Temperature	21 degrees	
Finish	23:27	Weather description	Clear, warm, still, dry with clouds forming.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:39	NYNO	4	Y	Heard not seen (HNS) Foraging
21:46	PIPI	1	Y	HNS Commuting
21:51	PIPI	1	Y	HNS Commuting
21:55	NYNO	1	Y	HNS foraging
21:59	PIPY	2	Y	Seen commuting south east to north west over building
22:00	NYNO	2	Y	HNS Foraging
22:07	PIPI	1	Y	HNS Faint pass
22:07 – 22:09	PIPI	Multiple	Y	Foraging in the south corner of the field
22:11	PIPI	2	Y	Foraging south to north
22:13	PIPI	2	Y	Foraging in south corner of field
22:14	PIPI	1	Y	Foraging in south corner of field
22:18	PIPI	2	Y	Very faint. Flying east towards tree towards split.
22:19 – 22:21	PIPI	Multiple	Y	Foraging in the south corner of the field.
22:22	PIPI	1	Y	Commuting south west to north west
22:24	PIPI	2	Y	Foraging in the south corner of field
22:25 – 22:26	PIPI	Multiple	Y	Foraging over head
22:27	PIPI	2	Y	Foraging in the south corner of the field then flying north.
22:32	PIPI	1	Y	HNS foraging
22:35	PIPI	1	Y	HNS very faint
22:36	PIPI	1	Y	HNS foraging
22:37	PIPI	2	Y	HNS foraging
22:38	NYNO	2	Y	HNS foraging
22:38	PIPI	3	Y	HNS foraging
22:39 – 22:42	PIPI	Multiple	Y	HNS foraging
22:49	PIPI	2	Y	HNS foraging
22:51	NYNO	2	Y	HNS foraging
22:51	PIPI	1	Y	HNS foraging
22:53 – 22:55	NYNO	Multiple	Y	HNS foraging
22:56	PIPI	1	Y	HNS foraging
22:58	NYNO	3	Y	HNS foraging
23:01	PIPI	1	Y	HNS foraging

23:01	MYSP	1	Y	HNS foraging
23:03	NYNO	2	Y	HNS foraging
23:03	PIPI	4	Y	HNS foraging
23:06	PIPI	2	Y	HNS foraging
23:07	NYNO	Multiple	Y	HNS foraging
23:08	PIPI	1	Y	HNS foraging
23:09	NYNO	Multiple	Y	HNS foraging
23:11	PIPI	1	Y	HNS commuting
23:16	NYNO	1	Y	HNS commuting
23:12 – 23:20	PIPI	multiple	Y	HNS constant foraging
23:22 – 23:24	2x PIPI	Multiple	Y	HNS constant foraging
Project Name	M42 Junction 6	Surveyors	MC	
Survey Location	T311	Rain (0-5)	0	
Date	10/07/2019	Wind (0-7)	0	
Start	20:57	Cloud Cover (0-5)	1	
Sunset	21:27	Temperature	21 degrees	
Finish	23:27	Weather description	Clear, warm, still, dry with clouds forming.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:41	NYNO	1	Y	HNS commuting
21:47	PIPI	1	Y	HNS commuting
21:52	PIPI	1	Y	HNS foraging
21:56	PIPY	1	Y	HNS foraging
22:01	NYNO	1	Y	HNS commuting
22:02	NYNO	1	Y	HNS foraging
22:09	PIPI	4	Y	HNS foraging
22:10	PIPI	3	Y	Seen circular foraging
22:13	PIPI	3	Y	HNS foraging
22:15	PIPI	1	Y	HNS foraging
22:20	PIPI	2	Y	HNS foraging nearby
22:22	PIPY	1	Y	Seen foraging over head
22:23	NYNO	2	Y	HNS Foraging
22:24	PIPI	1	Y	HNS foraging
22:26	3x PIPI	Multiple	Y	Foraging over head
22:28	PIPI	1	Y	HNS foraging
22:33	PIPI	1	Y	HNS foraging
22:37	PIPI	1	Y	Seen foraging over trees
22:38	NYNO	1	Y	HNS foraging
22:38	PIPI	1	Y	HNS foraging
22:40 – 22:43	PIPI	Multiple	Y	HNS foraging
22:50	PIPI	1	Y	HNS foraging
22:51 – 22:56	NYNO	11	Y	HNS Foraging
22:52	PIPI	2	Y	Commuting over trees
22:54	PIPI	1	Y	HNS foraging
22:55	PIPI	1	Y	HNS foraging
22:57	PIPI	Multiple	Y	Seen pair of bats foraging over surveyors' heads
22:59	NYNO	1	Y	HNS commuting
22:59 - 23:01	PIPI	4	Y	HNS foraging
23:02	MYSP	1	Y	HNS commuting

23:04 - 23:05	PIPI	3	Y	HNS foraging
23:07	PIPI	1	Y	HNS foraging
23:08	NYNO	1	Y	HNS foraging
23:09	PIPI	1	Y	HNS commuting
23:12	PIPI	3	Y	HNS foraging
23:14 – 23:26	2x PIPI	Multiple	Y	Seen circular foraging nearby
23:17	NYNO	1	Y	HNS foraging

Tree 311 – Dusk – 1st August 2019

JULY				
Project Name	M42 Junction 6	Surveyors	SP	
Survey Location	T311	Rain (0-5)	0	
Date	01/08/2019	Wind (0-7)	1	
Start	20:34	Cloud Cover (0-5)	1	
Sunrise	20:49	Temperature	18 degrees	
Finish	22:49	Weather description	Cloudy, cool, light breeze and rained in the afternoon.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:18	PIPI	1	Y	Seen bat fly past T311
21:24	PIPI	1	Y	HNS commuting
21:37	PIPI	1	Y	Heard not seen (HNS) commuting
21:41	2x PIPI	2	Y	Seen foraging in field nearby T311
21:43	PIP1	4	Y	Possible emergence. Appeared to emerge from T311
21:44	PIPI	5	Y	HNS foraging
21:45 – 21:48	PIPI	2	Y	Continuous foraging in field.
21:49 – 21:50	PIPI	1	Y	Foraging in field and along treeline.
21:53	PIPI	3	Y	HNS foraging
21:55	PIPI	3	Y	Possible emergence. Seen flying close from T311.
21:57	PIPI	2	Y	HNS foraging
21:58	PIPI	3	Y	HNS foraging
21:59	PIPI	2	Y	Seen foraging around T311 and in field.
22:03	PIPI	1	Y	HNS foraging
22:04	PIPI	2	Y	HNS foraging
22:06	PIPI	2	Y	HNS foraging
22:07	PIPI	4	Y	HNS foraging
22:08	PIPI	3	Y	Seen foraging around T311
22:10	PIPI	1	Y	HNS foraging
22:13	PIPI	5	Y	HNS social call and foraging
22:18	MYSP and PIPI	1	Y	HNS commuting
22:22	PIPI	2	Y	HNS foraging
22:25	PIPI	1	Y	HNS foraging
22:27	PIPI	1	Y	HNS foraging

Tree 311 – Dawn – 23rd August 2019

AUGUST				
Project Name	M42 Junction 6	Surveyors	LK	
Survey Location	T311	Rain (0-5)	0	
Date	23/08/2019	Wind (0-7)	1	
Start	04:02	Cloud Cover (0-5)	2	
Sunrise	06:02	Temperature	14 degrees	
Finish	06:17	Weather description	Cool, no rain	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:31	PIPI	1	Y	Heard not seen (HNS) Commuting
05:17	PIPI	1	Y	Commuting past tree
05:36	PIPI	1	Y	HNS foraging
Project Name	M42 Junction 6	Surveyors	CG	
Survey Location	T311	Rain (0-5)	0	
Date	23/08/2019	Wind (0-7)	1	
Start	04:02	Cloud Cover (0-5)	2	
Sunset	06:02	Temperature	14 degrees	
Finish	06:17	Weather description	Cool, no rain	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:12	PIPI	1	Y	HNS foraging
04:14	PIPI	1	Y	HNS foraging
04:16	PIPI	1	Y	HNS foraging
04:32	PIPI	1	Y	HNS commuting
04:43	PIPI	1	Y	HNS foraging
05:19	PIPI	1	Y	Seen commuting north east to south west approximately 3m high.
05:36	PIPI	1	Y	HNS commuting
06:16	NYSP	1	Y	HNS commuting

Tree 414 – Dawn – 26th July 2019

JULY				
Project Name	M42 Junction 6	Surveyors	NM	
Survey Location	T414	Rain (0-5)	0	
Date	26/07/2019	Wind (0-7)	1	
Start	03:17	Cloud Cover (0-5)	5	
Sunrise	05:17	Temperature	24 degrees	
Finish	05:17	Weather description	Hot and humid with thunder and lightning. Clouds coming over but no rain.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:20	PIPI	2	Y	Seen flying east towards T414. Possible re-entry
04:34	PIPY	2	Y	Heard not seen (HNS) Commuting
Project Name	M42 Junction 6	Surveyors	SJ	
Survey Location	T414	Rain (0-5)	0	
Date	26/07/2019	Wind (0-7)	1	
Start	03:17	Cloud Cover (0-5)	5	
Sunset	05:17	Temperature	23 degrees	
Finish	05:17	Weather description	Hot and humid with thunder and lightning. Clouds coming over but no rain.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
03:54	PIPI	1	Y	Commuting south along hedgerow

Tree 414 – Dusk – 12th August 2019

AUGUST				
Project Name	M42 Junction 6	Surveyors	DP	
Survey Location	T414	Rain (0-5)	0	
Date	12/08/2019	Wind (0-7)	0	
Start	20:37	Cloud Cover (0-5)	1	
Sunrise	20:39	Temperature	13 degrees	
Finish	22:41	Weather description	Showers during the day. Calm, warm, dry during the survey.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:20	PIPI	2	Y	Seen flying east towards T414. Possible re-entry
04:34	PIPY	2	Y	Heard not seen (HNS) Commuting
<hr/>				
Project Name	M42 Junction 6	Surveyors	KT	
Survey Location	T414	Rain (0-5)	0	
Date	12/08/2019	Wind (0-7)	0	
Start	20:37	Cloud Cover (0-5)	1	
Sunset	20:39	Temperature	13 degrees	
Finish	22:41	Weather description	Showers during the day. Calm, warm, dry during the survey.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:34	PIPI	1	Y	HNS Commuting
21:45	BLE	1	Y	Possible emergence, silent BLE
21:46	PIPI	1	Y	HNS distant
22:04	NYNO	1	Y	HNS short call distant
22:26	PIPY	1	Y	HNS possibly east of treeline

Tree 414 – Dawn – 28th August 2019

AUGUST				
Project Name	M42 Junction 6	Surveyors		SP
Survey Location	T414	Rain (0-5)		1
Date	28/08/2019	Wind (0-7)		1
Start	04:41	Cloud Cover (0-5)		4
Sunrise	06:11	Temperature		15 degrees
Finish	06:26	Weather description		Mild Night with some small showers.
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
05:31	PIPI	1	Y	Heard not seen (HNS) foraging
Project Name	M42 Junction 6	Surveyors		AH
Survey Location	T414	Rain (0-5)		1
Date	28/08/2019	Wind (0-7)		1
Start	04:41	Cloud Cover (0-5)		4
Sunset	06:11	Temperature		15 degrees
Finish	06:26	Weather description		Mild night with some small showers.
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
05:18	PIPI	1	Y	HNS foraging
05:34	PIPI	1	Y	HNS Foraging

Annex H. Crossing Point Surveys Results

KEY: PIP1 (Common pipistrelle); PIPY (Soprano pipistrelle); PISP (call between common pipistrelle and soprano pipistrelle); PINA (Nathusius pipistrelle) PIPPINA (call between Nathusius pipistrelle and common pipistrelle); NYNO (Noctule bat); NYLE (Leisler bat); NYSP (either Leisler or Noctule bat); MYSP (Myotis species); PLAU (brown long-eared bat); EPSE (Serotine bat); Social (social calls).

Crossing Point 1

10 September 2018				
Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP1	Rain (0-5)	0	
Date	10/08/2018	Wind (0-7)	3	
Start	19:19	Cloud Cover (0-5)	5	
Sunset	19:34	Temperature	18°C	
Finish	21:00	Weather description	Warm, dry & cloudy	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
No bats recorded				
10 September 2018				
Project Name	M42 Junction 6	Surveyor	GG	
Survey Location	CP1	Rain (0-5)	0	
Date	10/08/2018	Wind (0-7)	3	
Start	19:19	Cloud Cover (0-5)	5	
Sunrise	19:34	Temperature	18°C	
Finish	21:00	Weather description	Warm, dry & cloudy	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
No bats recorded				
10 September 2018				
Project Name	M42 Junction 6	Surveyor	RB	
Survey Location	CP1	Rain (0-5)	0	
Date	10/08/2018	Wind (0-7)	3	
Start	19:19	Cloud Cover (0-5)	5	
Sunrise	19:34	Temperature	18°C	
Finish	21:00	Weather description	Warm, dry & cloudy	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
No bats recorded				

26 June 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP1	Rain (0-5)	0	
Date	26/06/19	Wind (0-7)	3	
Start	21:16	Cloud Cover (0-5)	5	
Sunset	21:31	Temperature	15°C	
Finish	23:35	Weather description	Rained earlier but dry & cool	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:18	PIPI	2	Y	Heard, not seen
22:25	PIPI	1	Y	Commuting, heard not seen.
22:28	PIPI	2	Y	Commuting, heard not seen.
22:29	PIPI	2	Y	Commuting, heard not seen.
22:36	NYNO	1	Y	Commuting, heard not seen.
22:41	EPSE	1	Y	Commuting along hedgerow.
22:43	PIPI	3	Y	Flying parallel to the hedge 10m out and 15m up (high).
23:16	PIPI	1	Y	Commuting, heard not seen.
23:28	PIPI	1	Y	Commuting, heard not seen.

26 June 2019

Project Name	M42 Junction 6	Surveyor	JW	
Survey Location	CP1	Rain (0-5)	0	
Date	26/06/19	Wind (0-7)	3	
Start	21:16	Cloud Cover (0-5)	5	
Sunrise	21:31	Temperature	13°C	
Finish	23:35	Weather description	Breezy, overcast night	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:33	PIPI	1	Y	Heard, not seen.
22:37	NYNO	1	Y	Heard, not seen.
22:39	NYNO	1	Y	Heard, not seen.
22:41	EPSE	1	Y	Heard, not seen.
22:45	PIPI	2	Y	Heard, not seen.

19 August 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP1	Rain (0-5)	0	
Date	19/08/19	Wind (0-7)	1-2	
Start	21:16	Cloud Cover (0-5)	1	
Sunset	21:31	Temperature	15°C	
Finish	21:53	Weather description	Warm day but a bit of a breeze. Short shower delayed the start but remained light and didn't last long.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:26	NYNO	2	Y	Heard not seen.

19 August 2019

Project Name	M42 Junction 6	Surveyor	AB	
Survey Location	CP1	Rain (0-5)	1	
Date	19/08/19	Wind (0-7)	2	
Start	21:16	Cloud Cover (0-5)	3	
Sunrise	21:31	Temperature	16°C	
Finish	22:00	Weather description	Cool, cloudy, light rain intermittent	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:16	PIPI	1	Y	Flying west to east, commuting and caught on camera.
21:38	PIPI	1	Y	Heard not seen.
21:46	PIPI	2	Y	Heard not seen.
21:25	PIPI	1	Y	Heard not seen.

Crossing Point 2

24 September 2018

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP2	Rain (0-5)	0	
Date	24/09/2018	Wind (0-7)	0	
Start	18:43	Cloud Cover (0-5)	1	
Sunset	19:02	Temperature	12°C	
Finish		Weather description	Fine, dry, cool	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
20:01	PIPI	1	Y	Heard not seen.
20:05	NYNO	1	Y	Commuting and foraging. Heard only.
20:06	PIPI	1	Y	Heard only.
20:09	PIPI	3	Y	Commuting, heard not seen.
20:10	PIPI	1	Y	Heard only.
20:11	PIPI	3	Y	Heard only.
20:12	PIPY	2	Y	Heard only.
20:13	PIPI	2	Y	Heard only.
20:14	PIPY	1	Y	Heard only.
20:17	PIPI	1	Y	Heard only.
20:23	NYLE	1	Y	Heard only.
20:24	PIPY	1	Y	Heard only.
20:29	PIPI	1	Y	Heard only.
20:45	PIPI	1	Y	Heard only.
20:46	PIPI	1	Y	Heard only.

24 September 2018

Project Name	M42 Junction 6	Surveyor	RB	
Survey Location	CP2	Rain (0-5)	0	
Date	24/09/2019	Wind (0-7)	0	
Start	18:45	Cloud Cover (0-5)	2	
Sunrise	19:00	Temperature	12°C	
Finish	20:30	Weather description	Fine, dry, cool	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
20:01	PIPI	1	Y	Heard not seen.
20:05	NYNO	1	Y	Commuting and foraging. Heard only.
20:06	PIPI	1	Y	Heard only.
20:09	PIPI	3	Y	Commuting, heard not seen.
20:10	PIPI	1	Y	Heard only.
20:11	PIPI	3	Y	Heard only.

20:12	PIPY	2	Y	Heard only.
20:13	PIPI	2	Y	Heard only.
20:14	PIPY	1	Y	Heard only.
20:17	PIPI	1	Y	Heard only.
20:23	NYLE	1	Y	Heard only.
20:24	PIPY	1	Y	Foraging to west of crossing.
20:29	PIPI	1	Y	Heard only.
20:45	PIPI	1	Y	Heard only.
20:46	PIPI	1	Y	Heard only.

03 July 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP2	Rain (0-5)	0	
Date	03/07/19	Wind (0-7)	0-1	
Start	21:15	Cloud Cover (0-5)	0	
Sunset	21:31	Temperature	19°C	
Finish		Weather description	Warm, sunny, dry	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:49	PIPI	2	Y	One bat commuting along hedgerow from west and over road.
21:57	PIPI	1	Y	One bat commuting along hedgerow from west and over road.
22:00	PIPI	1	Y	One bat commuting past house, not crossing.
22:03	PIPI	1	Y	Heard, not seen.
22:05	PIPI	2	Y	One bat commuting past house, not crossing.
22:11	NYNO	5	Y	Foraging, heard, not seen.
22:16	PIPI	2	Y	Commuting across house, east to west.
22:19	PIPI	5	Y	Commuting across house, east to west.
22:25	PIPI	1	Y	Heard, not seen.
22:27	PIPI	1	Y	Commuting across house, east to west.
22:27	PIPI	3	Y	West to east and back
22:31	PIPI	1	Y	Foraging next to hedge/ditch – did not cross.
22:44	PIPI	1	Y	Heard, not seen.
22:51	PIPI	1	Y	Heard, not seen.
23:01	PIPI	1	Y	Heard, not seen.
23:05	PIPI	2	Y	Heard, not seen.
23:07	PIPI	2	Y	Heard, not seen.
03 July 2019				

Project Name	M42 Junction 6	Surveyor	JW	
Survey Location	CP2	Rain (0-5)	0	
Date	03/07/2019	Wind (0-7)	0	
Start	21:15	Cloud Cover (0-5)	0	
Sunset	21:32	Temperature	16°C	
Finish		Weather description	Clear skies, warm	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:58	PIPI	3	Y	Flew east along Shadowbrook Lane.
22:02	PIPI	1	Y	Flew west along Shadowbrook Lane.
22:05	PIPI	1	Y	Heard, not seen.
22:06	PIPI	1	Y	Flew east from the B road.
22:07	PIPI	1	Y	Heard, not seen.
22:08	PIPI	1	Y	Heard, not seen.
22:14	PIPI	1	Y	Heard, not seen.
22:16	PIPI	4	Y	North to South along the lane.
22:23	PIPI	1	Y	Heard, not seen.
22:25	PIPI	1	Y	Heard, not seen.
23:07	PIPI	1	Y	Heard, not seen.
23:10	PIPI	1	Y	Heard, not seen.

31 July 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP2	Rain (0-5)	0	
Date	31/07/19	Wind (0-7)	1-2	
Start	20:45	Cloud Cover (0-5)	5	
Sunset	21:00	Temperature	21°C	
Finish	23:00	Weather description	Unsettled, 2 showers earlier in the day but cleared up. Overcast.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:22	PIPI	1	Y	Heard not seen. Commuting nearby but not over the CP.
21:39	PIPI	2	Y	Flew over CP and round to the east, foraging occasionally.
21:44	PIPI	1	Y	Heard not seen.
21:46	PIPI	1	Y	Commuting east to west.
21:51	PIPI	1	Y	Commuting west to east.
21:53	PIPI	1	Y	Heard not seen.
21:54	PIPI	5	Y	Heard not seen.
21:55	PIPI	2	Y	Foraging around CP.

21:56	PIPI	4	Y	Foraging around the CP then headed west.
21:57	PIPI	2	Y	Heard not seen, not using CP.
22:05	PIPI	1	Y	Heard not seen.
22:07	PIPI	1	Y	Heard not seen.
22:12	PIPI	1	Y	Heard not seen.
22:21	PIPI	1	Y	Heard not seen.
22:22	PIPI	1	Y	Heard not seen.
22:33	PIPI	3	Y	Heard not seen.
22:36	PIPI	2	Y	Heard not seen, foraging nearby but not across the crossing point.
22:40	PIPI	1	Y	Commuting, heard not seen.
22:44	PIPI	1	Y	Commuting, heard not seen
22:45	PIPI	1	Y	Heard not seen.
22:55	PIPI	2	Y	Heard not seen.
31 July 2019				
Project Name	M42 Junction 6	Surveyor	AB	
Survey Location	CP2	Rain (0-5)	0	
Date	31/07/2019	Wind (0-7)	2	
Start	20:45	Cloud Cover (0-5)	5	
Sunset	21:01	Temperature	19°C	
Finish	23:01	Weather description	Cool, overcast, dry	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:21	PIPI	1	Y	Flying west, 10m up across point.
21:27	PIPI	2	Y	Heard, not seen.
21:31	PIPI	1	Y	Flew east across point.
21:32	PIPI	1	Y	Heard, not seen.
21:33	PIPI	1	Y	Foraging across point.
21:34	PIPI	4	Y	Foraging across point.
21:35	PIPI	2	Y	Foraging across point.
21:38	PIPI	1	Y	Foraging across point.
21:39	PIPI	4	Y	Foraging across point.
21:40	PIPI	5	Y	Foraging, heard not seen.
21:41	PIPI	5	Y	Foraging, heard not seen.
21:42	PIPI	5	Y	Foraging, heard not seen.
21:43	PIPI	3	Y	May have been 2 bats, one flew across point.
21:44	PIPI	6	Y	Foraging around crossing point.
21:45	NYSP	1	Y	Heard, not seen.
21:45	PIPI	7	Y	Foraging around crossing point.
21:46	PIPI	6	Y	Foraging around crossing point.
21:47	PIPI	6	Y	Foraging around crossing point.

21:58	PIPI	2	Y	Heard, not seen.
21:59	PIPI	1	Y	Heard, not seen.
22:01	PIPI	1	Y	Fleeing? Owl heard directly above prior to bat call.
22:02	PIPI	1	Y	Foraging, heard not seen.
22:06	PIPI	2	Y	Foraging, heard not seen.
22:21	PIPI	1	Y	Heard not seen.
22:22	PIPI	1	Y	Heard not seen.
22:35	PIPI	1	Y	Flew west across point.
22:38	PIPI	1	Y	Foraging around the point.
22:39	PIPI	2	Y	Heard not seen.
22:45	PIPI	1	Y	Flew east across point.
22:47	PIPI	2	Y	Foraged around point then flew west.
22:48	PIPI	2	Y	Foraging, heard not seen.
22:56	PIPI	1	Y	Heard not seen.
22:57	PIPI	1	Y	Heard not seen.
22:58	PIPI	1	Y	Heard not seen.

Crossing Point 3

12 September 2018

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP1	Rain (0-5)	0	
Date	12/08/2018	Wind (0-7)	1	
Start	19:14	Cloud Cover (0-5)	1	
Sunset	19:29	Temperature	15°C	
Finish	20:49	Weather description	Warm & dry	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
No bats recorded				

12 September 2018

Project Name	M42 Junction 6	Surveyor	RB	
Survey Location	CP3	Rain (0-5)	0	
Date	12/08/2018	Wind (0-7)	1	
Start	19:19	Cloud Cover (0-5)	1	
Sunrise	19:34	Temperature	15°C	
Finish	21:00	Weather description		
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
No bats recorded.				

27 June 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP3	Rain (0-5)	0	
Date	27/06/19	Wind (0-7)	1	
Start	21:20	Cloud Cover (0-5)	1	
Sunset	21:33	Temperature	15°C	
Finish		Weather description	Warm, clear, sunny but not hot.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:11	PIPI	3	Y	Flew south from hedge from the west, foraging 10m from hedge to the group of trees then circled back to the west.
22:23	PIPI	3	Y	Foraging around tree, came from east. Saw twice, but very quiet recording.
22:24	PIPI	5	Y	Foraging, very quiet.
22:25	PIPI	5	Y	Foraging, very quiet.
22:25	NYNO	1	Y	Heard not seen.

22:26	PIPI	7	Y	Foraging, very quiet. 2 bats.
22:27	PIPI	1	Y	Foraging, very quiet.
22:28	PIPI	1	Y	Foraging, very quiet. Bat is flying back and forth.
22:30	PIPI	2	Y	Flew in but again foraging.
22:31	PIPI	3	Y	Foraging by tree.
22:33	PIPI	3	Y	Foraging 20m south by hedgerow and into trees.
22:34	PIPI	6	Y	South to North, foraging over hedgerow.
22:36	PIPI	1	Y	Heard not seen.
22:39	PIPI	3	Y	Foraging south of hedgerow.
22:40	PIPI	2	Y	Foraging south of hedgerow.
22:41	PIPI	3	Y	Can still see the bat foraging by trees and occasionally towards hedgerow.
22:42	PIPI	4	Y	Circling around North to South.
22:43	PIPI	2	Y	Heard not seen.
22:45	PIPI	5	Y	Foraging by hedgerow.
22:46	PIPI	3	Y	Foraging by hedgerow.
22:46	NYNO	1	Y	Heard not seen.
22:47	PIPI	2	Y	Occasional foraging passes from west and back again.
27 June 2019				
Project Name	M42 Junction 6	Surveyor	JW	
Survey Location	CP3	Rain (0-5)	0	
Date	27/06/19	Wind (0-7)	1	
Start	21:16	Cloud Cover (0-5)	0	
Sunrise	21:34	Temperature	15°C	
Finish		Weather description	Clear sky with slight breeze	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
22:42	PIPI	1	Y	Crossed North to South.
22:43	NYLE	1	Y	Heard not seen.
22:44	PIPI	4	Y	Heard not seen.
22:45	PIPI	2	Y	Heard not seen.
22:47	PIPI	5	Y	Heard not seen.
22:48	PIPI	4	Y	Heard not seen.
22:51	PIPI	5	Y	Heard not seen.
22:55	PIPI	2	Y	Heard not seen.
22:56	PIPI	3	Y	Heard not seen.
22:57	PIPI	4	Y	Heard not seen.
22:58	PIPI	2	Y	Heard not seen.
22:59	PIPY	1	Y	Heard not seen.
23:03	PIPI	4	Y	Crossed hedge.

23:03	PIPY	1	Y	Heard not seen.
23:05	PIPI	2	Y	Heard not seen.
23:06	PIPI	6	Y	Heard not seen.
23:09	PIPI	10	Y	Heard not seen.

20 August 2019

Project Name	M42 Junction 6	Surveyor	JT	
Survey Location	CP3	Rain (0-5)	0	
Date	20/08/19	Wind (0-7)	1	
Start	20:07	Cloud Cover (0-5)	5	
Sunset	20:22	Temperature	20°C	
Finish	21:54	Weather description	Mild, overcast, dry.	
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
20:45	NYNO	1	Y	Heard not seen.
20:48	PIPI	2	Y	Commuting, heard not seen.
20:53	PIPI	1	Y	Commuting east along north side of hedgerow.
20:54	PIPI	1	Y	Commuting east along north side of hedgerow – second bat.
20:55	NYNO	1	Y	Heard not seen.
20:55	PIPI	1	Y	Heard not seen.
20:56	PIPI	1	Y	Heard not seen.
20:57	PIPI	2	Y	Foraging then commuting to the west.
20:58	PIPI	1	Y	Foraging to the west and back again.
21:01	PIPI	1	Y	Heard not seen.
21:05	PLAU	1	Y	Heard not seen.
21:05	PIPI	3	Y	Commuting, heard not seen.
21:07	PIPI	1	Y	Commuting, heard not seen.
21:08	PIPI	2	Y	Commuting, heard not seen.
21:09	PIPI	1	Y	Commuting, heard not seen.
21:10	PIPI	2	Y	Commuting, heard not seen.
21:11	PIPI	1	Y	Commuting, heard not seen.
21:12	PIPI	1	Y	Commuting, heard not seen.
21:14	PIPI	2	Y	Commuting, heard not seen.
21:15	PIPI	6	Y	Commuting along hedgerow and foraging.
21:16	PIPI	4	Y	Foraging, heard not seen.
21:17	PIPI	4	Y	Thermal Imaging camera stopped working. Foraging, heard not seen.
21:17	PIPY	2	Y	Foraging, heard not seen. Frequent activity behind to the west in a block of woodland.

21:18	PIPI	6	Y	Foraging to the west around woodland block, not crossing the crossing point.
21:19	PIPI	3	Y	Foraging to the west.
21:20	PIPI	3	Y	Bat activity around woodland block to the west
21:21	PIPI	2	Y	
21:22	PIPI	3	Y	
21:24	PIPI	1	Y	
21:25	PIPI	2	Y	
21:26	PIPI	1	Y	
21:27	PIPI	5	Y	
21:28	PIPI	2	Y	
21:29	PIPI	4	Y	
21:30	PIPI	2	Y	
21:31	PIPI	3	Y	
21:31	NYNO	1	N	This noctule bat was seen commuting far off to the North over the middle of a field and was not recorded by the detector.
21:32	PIPI	1	Y	Bat activity around woodland block to the west
21:32	PIPY	1	Y	
21:33	PIPI	2	Y	
21:33	PIPY	1	Y	
21:34	PIPI	1	Y	
21:35	PIPI	3	Y	
21:35	PIPY	1	Y	
21:36	PIPI	4	Y	
21:37	PIPI	5	Y	
21:38	PIPI	2	Y	
21:39	PIPI	6	Y	
21:40	PIPI	6	Y	
21:41	PIPI	6	Y	
21:42	PIPI	5	Y	
21:43	PIPI	8	Y	
21:44	PIPI	2	Y	
21:45	PIPI	3	Y	
21:46	PIPI	1	Y	
21:47	PIPI	3	Y	
21:48	PIPI	3	Y	
20 August 2019				
Project Name	M42 Junction 6	Surveyor	AB	
Survey Location	CP3	Rain (0-5)	0	
Date	20/08/19	Wind (0-7)	2	
Start	20:07	Cloud Cover (0-5)	5	
Sunrise	20:22	Temperature	17°C	

Finish	21:55	Weather description		Cool, overcast, dry
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
20:46	NYNO	1	Y	Heard not seen.
20:47	PIPI	2	Y	Foraging, heard not seen.
20:55	PIPI	1	Y	Heard not seen.
20:57	NYNO	1	Y	Commuting, heard not seen.
20:59	PIPI	3	Y	Foraging, heard not seen.
21:07	PIPI	2	Y	Commuting northwest to southeast. Faintly caught on camera.
21:10	PIPI	1	Y	Heard not seen.
21:14	PIPI	3	Y	Heard not seen.
21:16	PIPI	5	Y	Heard not seen.
21:17	PIPI	2	Y	Heard not seen.
21:18	PIPI	4	Y	Heard not seen.
21:19	PIPI	1	Y	Heard not seen.
21:20	PIPI	3	Y	Heard not seen.
21:22	PIPI	3	Y	Foraging to the west in small patch of woodland.
21:26	PIPI	1	Y	Foraging to the west in small patch of woodland.
21:28	PIPI	1	Y	Foraging to the west in small patch of woodland.
21:29	PIPI	3	Y	Foraging to the west in small patch of woodland.
21:30	PIPI	4	Y	Heard not seen.
21:31	PIPI	4	Y	Heard not seen.
21:32	PIPI	3	Y	Heard not seen.
21:33	PIPI	3	Y	Heard not seen.
21:33	PIPY	1	Y	Heard not seen.
21:34	PIPI	2	Y	Heard not seen.
21:36	PIPI	1	Y	Heard not seen.
21:37	PIPI	4	Y	Foraging to the west in small patch of woodland.
21:38	PIPI	6	Y	Heard not seen.
21:39	PIPI	5	Y	Faced bat detector towards the west, all following calls were frequent foraging and social calls from patch of woodland nearby.
21:40	PIPI	4	Y	Foraging, heard not seen.
21:41	PIPI	6	Y	Foraging, heard not seen.
21:42	PIPI	4	Y	Foraging, heard not seen.
21:42	Social	1	Y	Heard not seen.
21:43	PIPI	5	Y	Foraging, heard not seen.
21:44	PIPI	6	Y	Foraging, heard not seen.

21:44	Social	1	Y	Heard not seen.
21:45	PIPI	5	Y	Foraging, heard not seen.
21:46	PIPI	4	Y	Foraging, heard not seen.
21:46	Social	1	Y	Heard not seen.
21:47	PIPI	1	Y	Foraging, heard not seen.
21:48	PIPI	2	Y	Foraging, heard not seen.
21:49	PIPI	3	Y	Foraging, heard not seen.
21:50	PIPI	1	Y	Foraging, heard not seen.
21:55	PIPI	1	Y	Foraging, heard not seen.