

M42 Junction 6 Development Consent Order

Scheme Number TR010027

8.75 Bat Survey Report 2019 Addendum

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The Infrastructure Planning (Examination Procedure) Rules 2010

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Bat Survey Report 2019 Addendum

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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 data to the 2019 Bat Survey Report [REF 1], and therefore to detail 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 additional 2019 bat surveys update the survey information that was gathered over 2017 to 2019 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 2];
 - Deadline 3 Submission - 8.38 Bat Survey Report 2018 [**REP3-014**] [REF 3];
 - Appendix 9.18 (Draft Bat Licence) of Volume 3 of the Environmental Statement [**APP-146/Volume 6.3**] [REF 4]; and
 - the 2019 Bat Survey Report [REF 1].
- 1.1.4 This report makes no change to the status and distribution of bat roosts and potential commuting habitat that has the potential to be impacted by Scheme as reported in the 2019 bat surveys report [REF 1].

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 5] and under the Wildlife and Countryside Act 1981 (as amended) [REF 6]. 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 5] 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 5; REF 6].
- 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 7], 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 8], 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 9] 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 9] 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 9] supersedes the 2002 Highways Agency (now Highways England) Biodiversity Action Plan (BAP) [REF 10], this still holds some relevance as it lists specific species of conservation concern. Bats are listed in the 2002 Highways Agency BAP [REF 10] 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 11] 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 Roost presence/absence and characterisation surveys – buildings and structures

- 3.1.1 Where the preliminary potential roost feature (PRF) assessment as reported in the 2019 bat survey report [REF1] concluded that a structure within the Order Limits had low, moderate or high suitability, further surveys were undertaken.
- 3.1.2 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 13].
- 3.1.3 This report provides additional details for a second or two surveys at building B13, assessed as providing Moderate suitability for roosting bats. In line with published guidance [REF 12] building B13 was subject to one evening emergence survey and one dawn re-entry survey. This report provides survey data from a fourth surveyor at the dawn re-entry survey; data from three other surveyors was provided in the 2019 bat surveys report [REF 1].
- 3.1.4 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 14] was present during each survey visit.
- 3.1.5 During the dawn survey the surveyor observed potential access/egress points. The surveyor carried a bat echolocation detector (Wildlife Acoustics EM Touch) to detect bats and assist in species identification.
- 3.1.6 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 AnalookW software, where possible down to species level following the call parameters outlined in Russ (2012) [REF 15].

3.2 Presence/absence and roost characterisation surveys - trees

- 3.2.1 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].

3.2.2 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 16]).

3.2.3 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.

3.3 Presence/absence and roost classification survey of trees

3.3.1 The following details the approach taken for further surveys which were based upon the results of the ground level tree assessments (GLTAs) and, where applicable, a subsequent aerial PRF survey as detailed in the 2019 bat surveys report [REF 1].

3.3.2 The scope of survey work detailed in this report comprised:

- Data from a single surveyor position during the nocturnal surveys of trees T25.4, T43, T54, T90, T261 & T311 which had not previously [REF 1] been fully assured due to unforeseen corrupted digital data files. Uncorrupted and assured data from a second surveyor position was however included within the 2019 bat survey report [REF 1];
- Additional data for tree T25.4 not included in the 2019 bat survey report [REF 1]; and
- A third survey of tree T295 undertaken on 18 September 2019. This data is presented here as the survey was completed after the scope of work reported in 2019 bat survey report [REF 1].

3.3.3 The trees and dates of roost surveys for of eight trees not previously reported are detailed in **Table 3-1**.

Table 3.1: Trees and dates of survey

Tree	Date of Survey
T25.4	16/07/2019 (Dawn)
T25.4	01/08/2019 (Dawn)
T43	07/08/2019 (Dawn)
T54	08/08/2019 (Dawn)
T90	07/08/2019 (Dusk)
T261	31/07/2019 (Dusk)
T295	18/09/2019 (Dawn)
T311	01/08/2019 (Dusk)

- 3.3.4 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).
- 3.3.5 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.
- 3.3.6 Surveys were undertaken in good weather conditions, within the range of conditions required by published guidance. An experienced bat ecologist [REF 14] was present during each survey visit.
- 3.3.7 During the dusk and dawn survey periods the surveyors observed potential access/egress points. Surveyors carried echolocation detectors (Elekon Batlogger M, Wildlife Acoustics EM Touch) to detect bats and assist in species identification.
- 3.3.8 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. 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 15].
- 3.3.9 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.

3.4 Limitations and assumptions

General

- 3.4.1 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.

- 3.4.2 The identification of individual *Myotis* species are difficult to separate based on echolocation calls alone (Russ 2012) [REF 15]. 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.
- 3.4.3 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 17].

4 Results

4.1 Buildings

Roost surveys - buildings

- 4.1.1 The location of buildings with bat roosting potential are shown in **Figure 1-1**.
- 4.1.2 The additional survey results of the fourth of four surveyors at the dawn re-entry survey at building B13 on 6 August 2019 did not alter the result that no bats were observed entering or emerging from the building. Therefore, the conclusion that bats are absent from the building is considered to remain valid.
- 4.1.3 In addition to results of the three surveyors reported in the 2019 bat surveys report [REF 1] of pipistrelle bat activity recorded throughout the night (common and soprano pipistrelle) and two noctule bats; the fourth surveyor additionally recorded one Leisler's bat commuting past the B13. A summary of the results of this survey is provided in **Annex A**.

4.2 Trees

- 4.2.1 The trees and dates of roost surveys of eight trees not previously reported in the Bat Survey Report 2019 (REF 1) are detailed in **Table 3-1**. The location of trees with bat roosting potential are shown in **Figure 1-2**.

Roost surveys – trees

- 4.2.2 The survey at tree T261 on 31 July 2019 recorded a single common pipistrelle emergence. Although data was not assured in the 2019 bat survey report [REF 1], the presence of a roost was still reported. The data presented herein represents the full assurance of the previous data and confirms the record of an individual roosting bat on one occasion.
- 4.2.3 No bat roosts were recorded during the additional survey of any of the other trees presented in this report, i.e. trees T25.4, T43, T54, T90, T295 or T311.
- 4.2.4 Summary results of the additional tree roost surveys is provided in **Annex B**, with raw data for the additional surveys at confirmed roosts in **Annex C**.
- 4.2.5 During these reported additional roost surveys of trees, no species of bats were recorded in addition to those previously listed as being recorded during 2019 surveys [REF 1].

5 Summary of Findings

5.1 Buildings

- 5.1.1 The additional surveys identified that no bats were observed entering or emerging from building B13. This supports the findings of the 2019 survey as presented within the Bat Survey Report 2019 (REF 1) which also identified that no bats were seen entering or emerging from building B13. As such, bat roosts are considered absent from this building and it is of Negligible importance for bats.

5.2 Trees

Roost surveys - trees

- 5.2.1 No new or additional bat roosts have been recorded for the eight trees surveyed. Thus there is therefore no change in either the number of roosts recorded, or the species and roost status of those bat roosts detailed in the 2019 Bat Survey Report [REF 1].

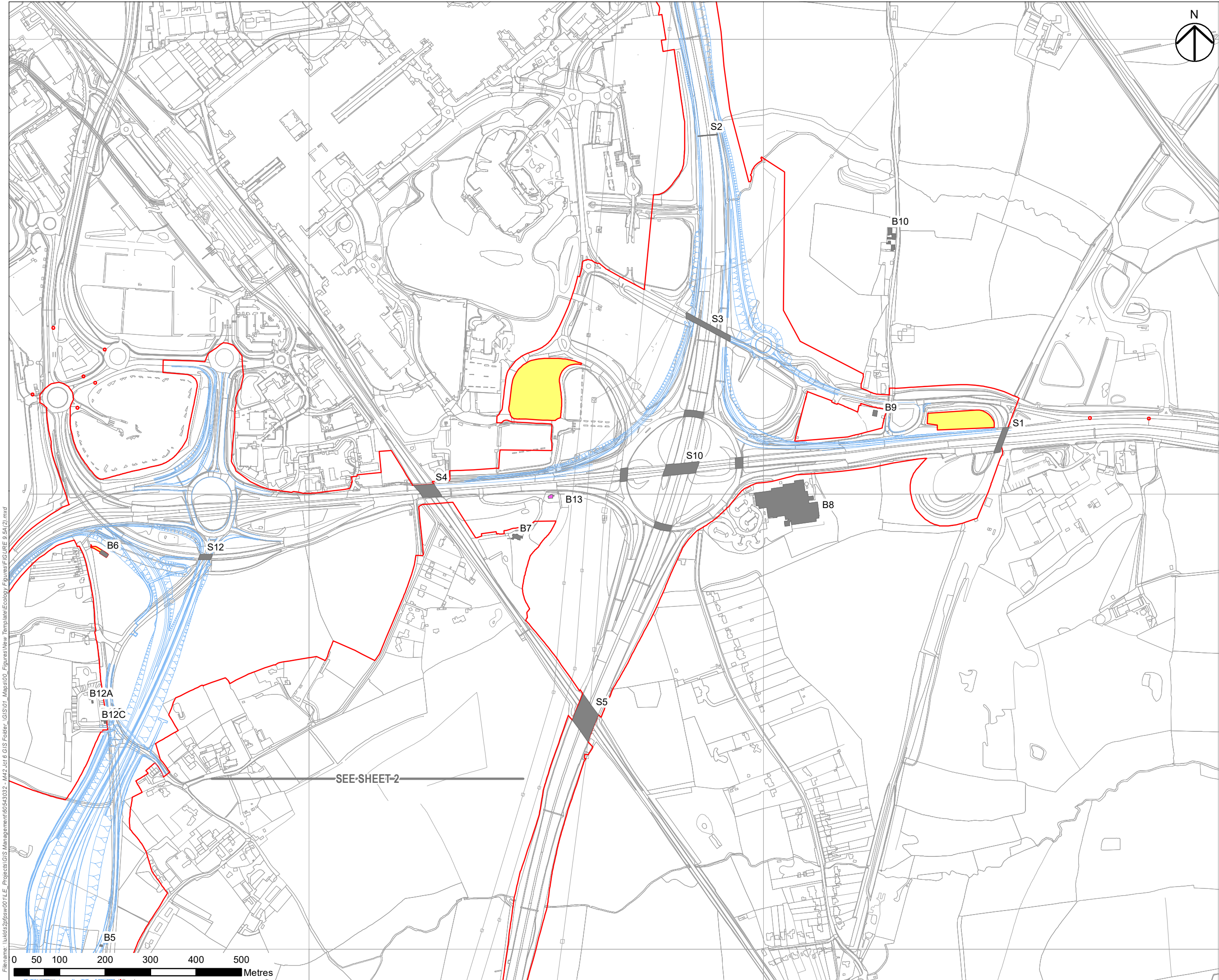
6 Conclusion

6.1 Re-evaluation & assessment of bat roosts

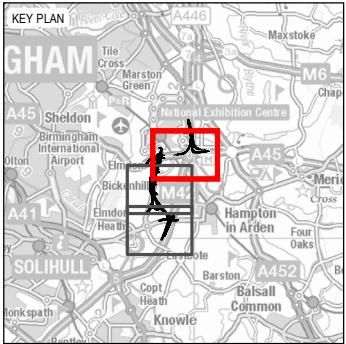
- 6.1.1 The additional data as presented within this addendum does not change the findings or conclusions of bat roosts, species or roost status as presented within the Bat Survey Report 2019 (REF 1) or those presented within Chapter 9 Biodiversity of Volume 1 of the Environmental Statement [**APP-054/Volume 1**] [REF 2].

7 References

Reference number	Source
REF1	TR010027 8.62 Bat Survey Report 2019 (AECOM)
REF2	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]
REF3	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]
REF4	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]
REF5	The Conservation of Habitats and Species Regulations 2017
REF6	The Wildlife and Countryside Act 1981 (as amended)
REF7	Natural Environment and Rural Communities (NERC) Act 2006
REF8	Department for Transport (2015) Road Investment Strategy for the 2015/16 to 2019/20 Road Period
REF9	Highways England (2015) Highways England Biodiversity Action Plan
REF10	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]
REF11	Warwickshire Wildlife Trust (2015 to 2017) Warwickshire Coventry and Solihull Local Biodiversity Action Plan
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. and McLeish, A.P. (eds) (2004) Bat Workers' Manual (3rd edn). JNCC, Peterborough
REF14	CIEEM (2013) Technical Guidance Series Competencies for Species Surveys – Bats; and CIEEM (undated) Competency Framework Competence Levels
REF15	Russ, J.M. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.
REF16	Forestry Commission England (2005) Woodland Management for Bats. Forestry Commission Publications, Wetherby
REF17	Barlow, K.E. and Briggs, P.A. (2012) Grey long-eared bat surveillance 2012. JNCC Report No 478



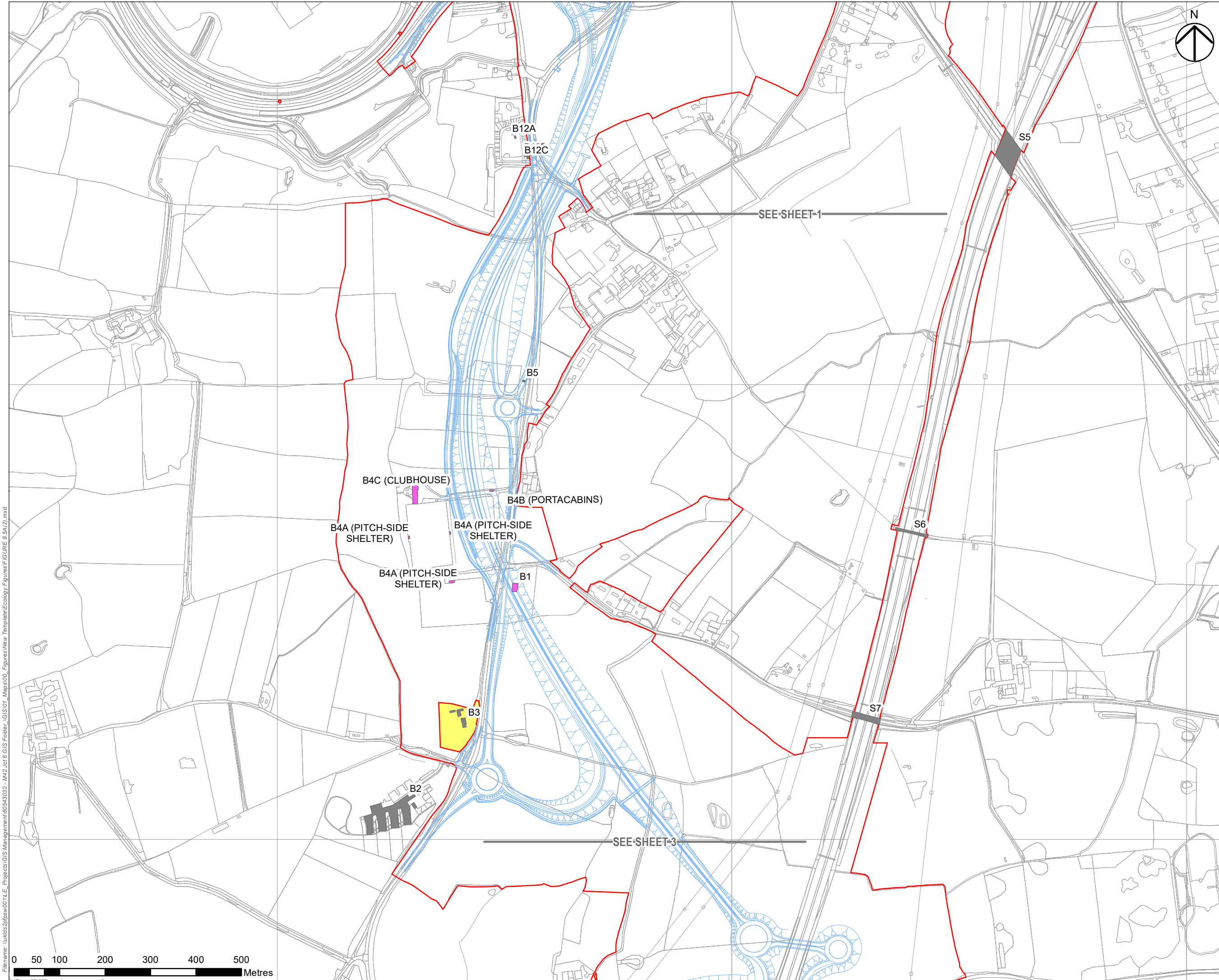
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 - LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - S1 STRUCTURE REFERENCE
 - B1 BUILDING REFERENCE
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS
- 2018
 - 2019



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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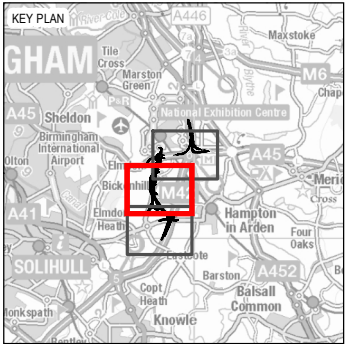


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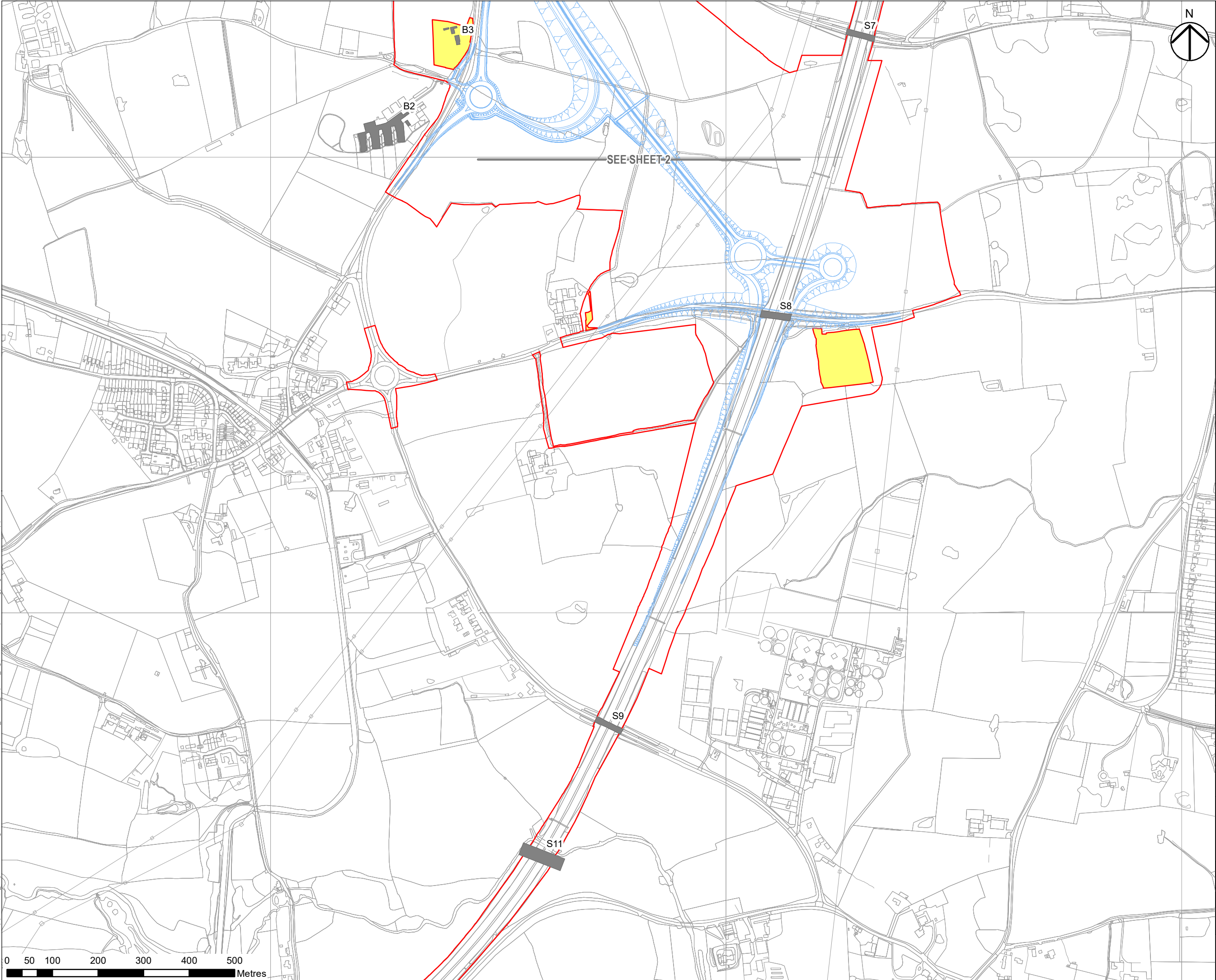
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- S1 STRUCTURE REFERENCE
- B1 BUILDING REFERENCE
- BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS
- 2018
- 2019



FIRST ISSUE		GB JG		21/08/19	C01
Revision Details		By	Check	Date	Suffix
Purpose of Issue					
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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 2 OF 3					
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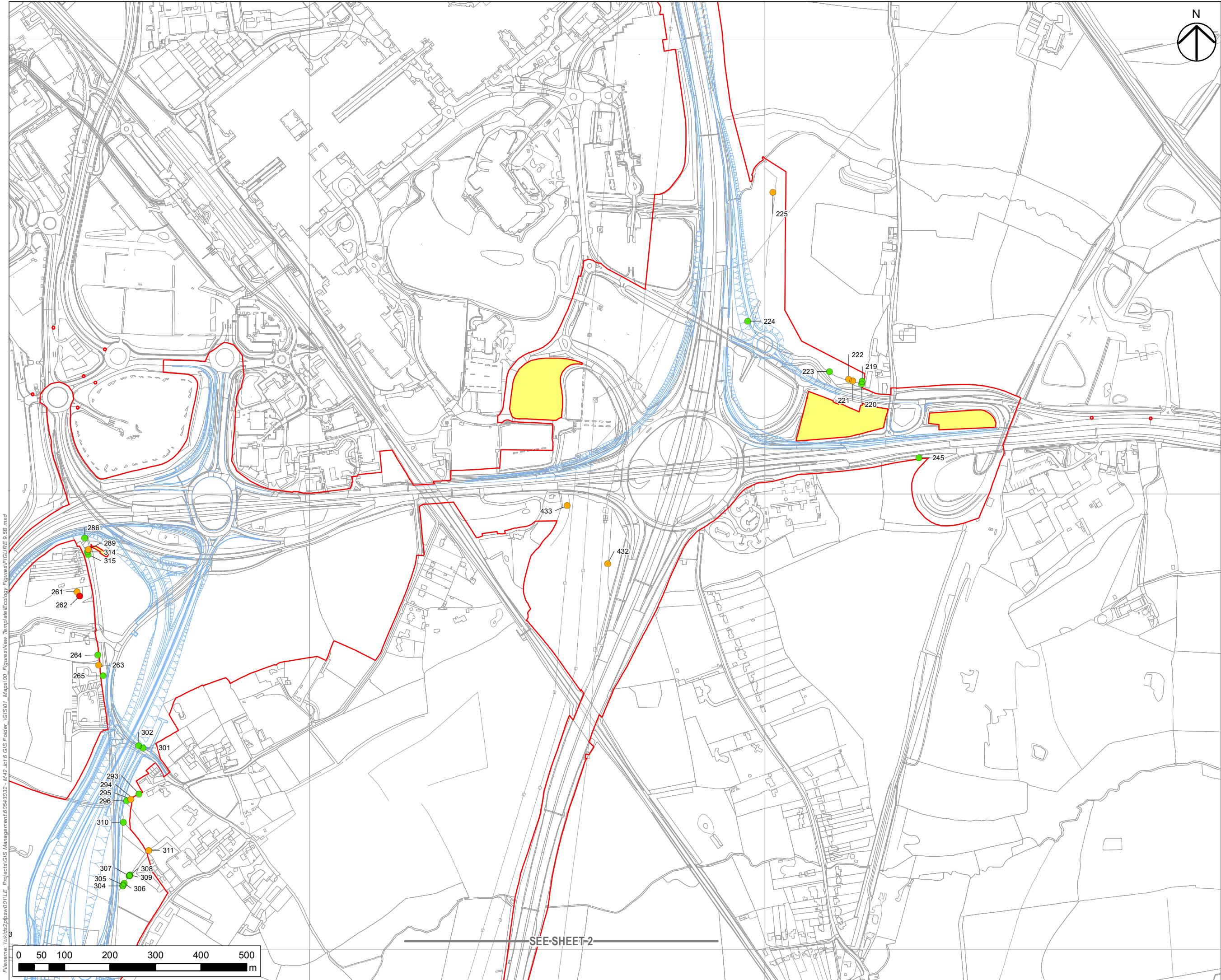
B1 BUILDING REFERENCE

BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS

- 2018
- 2019

KEY PLAN

FIRST ISSUE	GB	JG	21/08/19	C01
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Purpose of Issue				
DCO SUBMISSION				
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FIGURE 9.5A				
STRUCTURES AND BUILDINGS				
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FOR ROOSTING BATS				
SHEET 3 OF 3				
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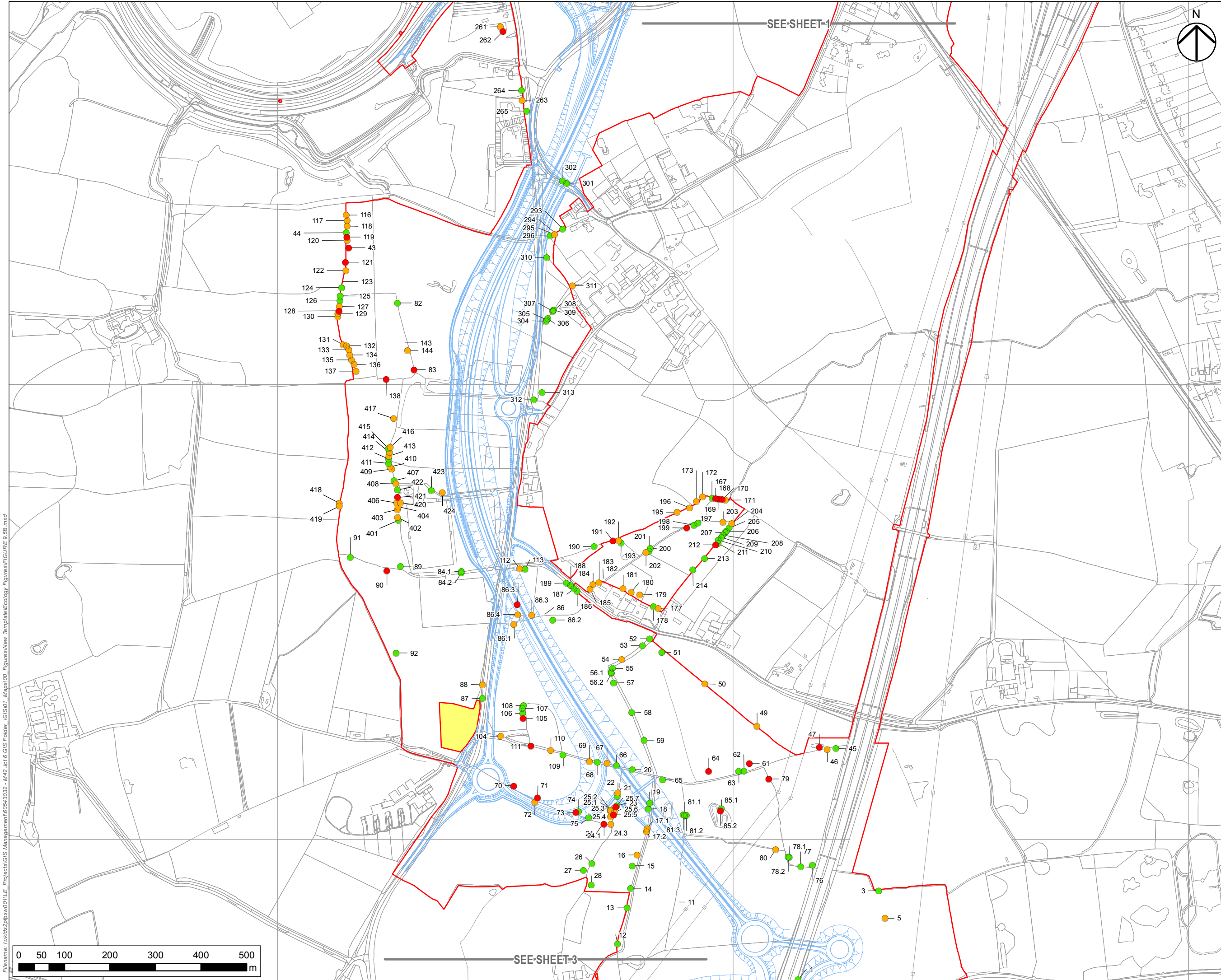
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- High
- Moderate
- Low

KEY PLAN

FIRST ISSUE	BO	JG	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 1-2 PRF ASSESSMENT OF TREES SHEET 1 OF 3				
Designed JT	Drawn BO	Checked MWH	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 Highways England Pin HE551485 -ACM		Originator -EGN-		Volume C01
Location M42 SW ZZ ZZ		Type Role Number -DR-DC-0043		Rev

Filename: \\ukds2pfpw001\LE_Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder - \GIS01 Maps\100_Figures\New Template Ecology Figures\FIGURE 9.5B.mxd



NOTES

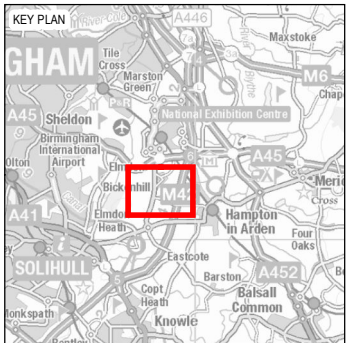
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LEGEND

- THE SCHEME
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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

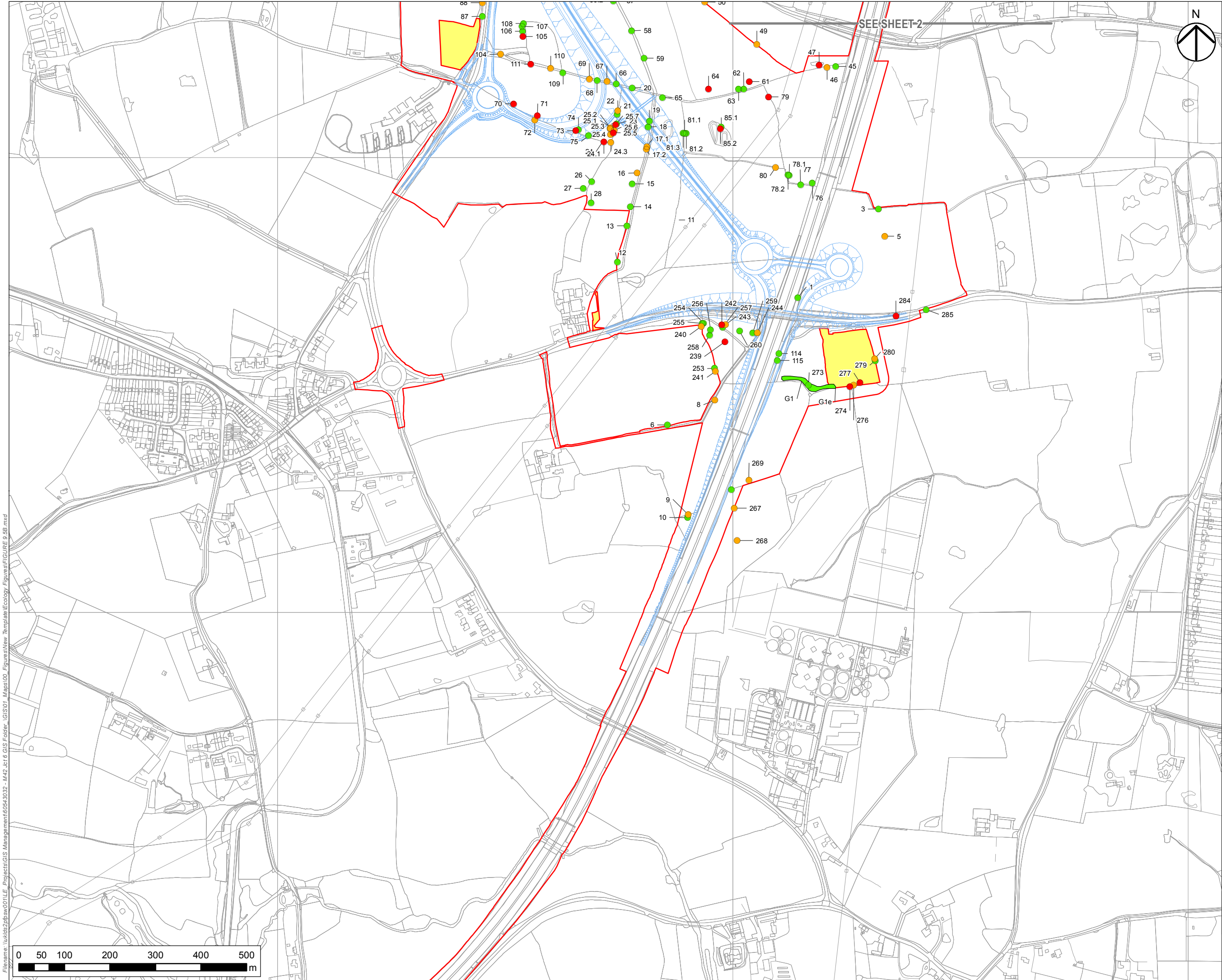
- High
- Moderate
- Low



FIRST ISSUE		BO	JG	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 1-2 PRF ASSESSMENT OF TREES SHEET 2 OF 3					
Designed	Drawn	Checked	Approved	Date	
JT	BO	MWH	JG	19/09/19	
Internal Project No	60543032		Suitability	D7	
Scale @ A3	1:7,500		Zone	M42	
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HE551485	-ACM	-EGN-		C01	
M42_SW_ZZ_ZZ	-DR-DC-0044				
Location	Type	Role	Number		

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NOTES

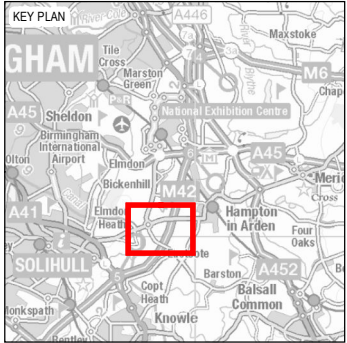
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- LAND NOT INCLUDED WITHIN THE ORDER LIMITS

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



FIRST ISSUE		BO	JG	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 1-2 PRF ASSESSMENT OF TREES SHEET 3 OF 3					
Designed	Drawn	Checked	Approved	Date	
JT	BO	MWH	JG	19/09/19	
Internal Project No	Sustainability		Zone		
60543032	D7		M42		
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HE551485	-ACM	-EGN-		C01	
M42_SW_ZZ_ZZ	-DR-DC-0045				
Location	Type	Role	Number		

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Annex A: Buildings and structures additional roost survey results 2019

Building /Structure number	PRF suitability	Date of survey	Results*	Roost present (Y/N)
B13	Moderate	06.08.19	Pipistrelle species activity recorded throughout the night. A maximum of two noctule and one Leisler's bat recorded. No emergences recorded.	N

* Additional information not reported in the 2019 Bat Survey Report [REF 1] is highlighted in bold.

Annex B: Tree roost survey additional results: summary

Tree number*	PRF suitability*	Date of survey*	Results*	Date of survey*	Results*	Roost present (Y/N) ¹
T25.4 ²	Moderate	16/07/2019 (Dawn)	Passes of brown long-eared, Myotis species, common and soprano pipistrelle recorded. No returns to roost.	01/08/2019 (Dawn)	Common pipistrelle passes recorded throughout survey. One pass of each serotine and brown long-eared bats. No re-entries recorded.	N
T43	High	07/08/2019 (Dawn) ³	Multiple common pipistrelle passes throughout the survey and one Myotis species pass. No returns to roost.			N
T54	Moderate	08/08/2019 (Dawn)	Seven Three common pipistrelle and one brown long eared bat recorded throughout the survey. No re-entries recorded.			N
T90	Moderate	07/08/2019 (Dusk)	Continuous common pipistrelle foraging throughout the survey with occasional three noctule and Leisler's bat commuting passes. No emergences recorded.			Y

Tree number*	PRF suitability*	Date of survey*	Results*	Date of survey*	Results*	Roost present (Y/N) ¹
T261	High	31/07/2019 (Dusk)	Frequent common pipistrelle activity throughout survey. One pass each of Leisler's, Nyctalus species and serotine recorded. No emergence recorded. One common pipistrelle emerged at 21:50⁴.			Y
T295	Moderate	18/09/2019 (Dawn)	Common pipistrelle and one of each noctule and soprano pipistrelle bats recorded. No emergence from the tree.			Y
T311	Moderate	01/08/2019 (Dusk)	Constant common pipistrelle activity throughout survey including an emergence at 21:43. One Occasional Myotis species, one brown long-eared and one common pipistrelle or Nathusius pipistrelle passes recorded.			Y

* Additional information not reported in the 2019 Bat Survey Report [REF 1] is highlighted in bold.

1. Roost present refers to the results of all 2019 surveys including those within the 2019 Bat Survey Report [REF 1] in addition to this addendum. No new roosts were recorded by these additional survey results detailed in this report.
2. The summary results for tree T25.4 were not shown in the 2019 Bat Survey Report [REF 1].
3. The second survey of tree T43 undertaken on 11 July 2019 (reported in the 2019 Bat Survey Report [REF 1]) was undertaken less than the minimum 2 week period after the first survey, but as a single noctule bat was recorded roosting the survey results were retained. Consequently, the results of this forth roost survey which was omitted from

the 2019 Bat Survey Report [REF 1] is detailed here to provide results of three evening-spaced roost surveys, in line with survey guidelines [REF 12].

4. A single common pipistrelle bat emergence from Tree T261 on 31 July 2019 was reported in the 2019 Bat Survey Report [REF 1] but omitted from the summary table as the surveyor's data was outstanding and had not been assured.

Annex C: Roost survey results: additional 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); NYSP (either Leisler or Noctule bat); MYSP (Myotis species); PLAU (brown long-eared bat); EPSE (Serotine bat); Social (social calls).

Tree 43 – Dawn – 7th August 2019

Project Name	M42 Junction 6	Surveyors		DS
Survey Location	T43	Rain (0-5)		0
Date	07/08/2019	Wind (0-7)		4
Start	04:00	Cloud Cover (0-5)		3
Sunrise	05:36	Temperature		14 degrees
Finish	05:51	Weather description		Mild cloudy
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:17	PIPI	3	Y	HNS commuting
04:18	PIPI	1	Y	HNS commuting
04:19	PIPI	2	Y	HNS commuting
04:20	PIPI	3	Y	HNS commuting
04:21	PIPI	2	Y	HNS commuting
04:23	PIPI	1	Y	HNS commuting
04:24	PIPI	1	Y	HNS commuting
04:29	PIPI	2	Y	HNS commuting
04:30	PIPI	1	Y	HNS commuting
04:31	PIPI	3	Y	HNS commuting
04:32	PIPI	2	Y	HNS commuting
04:33	PIPI	1	Y	HNS commuting
04:34	PIPI	3	Y	HNS commuting
04:35	PIPI	3	Y	HNS commuting
04:36	PIPI	2	Y	HNS commuting
04:37	PIPI	3	Y	HNS commuting
04:38	PIPI	2	Y	Foraging along hedgerow
04:39	PIPI	3	Y	HNS commuting
04:40	PIPI	2	Y	HNS
04:41	PIPI	3	Y	HNS
04:42	PIPI	2	Y	HNS
04:43	MYSP	1	Y	HNS
04:43	PIPI	1	Y	HNS
04:44	PIPI	2	Y	HNS
04:45	PIPI	2	Y	Commuting north alongside tree
04:47	PIPI	2	Y	HNS
04:48	PIPI	3	Y	Briefly foraging around tree
04:50	PIPI	1	Y	HNS
04:51	PIPI	1	Y	HNS
04:52	PIPI	1	Y	HNS

04:53	PIPI	1	Y	HNS
05:03	PIPI	1	Y	HNS
05:05	PIPI	2	Y	HNS
05:06	PIPI	1	Y	HNS

Project Name	M42 Junction 6	Surveyors		ST
Survey Location	T43	Rain (0-5)		0
Date	07/08/2019	Wind (0-7)		4
Start	04:00	Cloud Cover (0-5)		3
Sunrise	05:36	Temperature		14 degrees
Finish	05:51	Weather description		Mild cloudy
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:15	PIPI	1	Y	Intermittent foraging to the west of the tree
04:16	PIPI	2	Y	
04:17	PIPI	2	Y	
04:18	PIPI	3	Y	
04:19	PIPI	3	Y	
04:20	PIPI	3	Y	
04:21	PIPI	1	Y	
04:22	PIPI	1	Y	
04:24	PIPI	1	Y	HNS commuting
04:28	PIPI	1	Y	HNS commuting
04:29	PIPI	1	Y	HNS commuting
04:30	PIPI	2	Y	HNS commuting
04:31	PIPI	3	Y	HNS commuting
04:32	PIPI	2	Y	HNS commuting
04:33	PIPI	2	Y	HNS commuting
04:34	PIPI	2	Y	HNS commuting
04:35	PIPI	3	Y	Foraging along hedgerow
04:36	PIPI	3	Y	HNS commuting
04:37	PIPI	2	Y	HNS
04:38	PIPI	3	Y	HNS
04:39	PIPI	2	Y	HNS
04:40	PIPI	2	Y	Two bats foraging along the hedgerow
04:41	PIPI	1	Y	
04:41	PIPI	1	Y	
04:42	PIPI	2	Y	
04:43	PIPI	3	Y	
04:44	PIPI	3	Y	Third bat joins foraging to the west of the tree
04:45	PIPI	1	Y	HNS
04:47	PIPI	4	Y	HNS
04:48	PIPI	1	Y	HNS
04:50	PIPI	2	Y	One bat foraging intermittently
04:52	PIPI	2	Y	
05:02	PIPI	2	Y	
05:04	PIPI	1	Y	
05:05	PIPI	2	Y	

05:06	PIPI	1	Y	
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Tree 90 – Dusk – 7th August 2019

Project Name	M42 Junction 6	Surveyors		DS
Survey Location	T90	Rain (0-5)		0
Date	07/08/19	Wind (0-7)		0
Start	20:34	Cloud Cover (0-5)		4
Sunset	20:49	Temperature		17 degrees
Finish	22:49	Weather description		Dry throughout survey
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
21:04	NYLE	1	Y	HNS. Brief pass.
21:16	PIPI	3	Y	Commuting along hedgerow
21:18	PIPI	1	Y	HNS. Brief pass.
21:20	NYNO	1	Y	HNS. Close by.
21:22	PIPI	2	Y	HNS. Brief pass.
21:24	PIPI	2	Y	HNS. Brief pass.
21:26	PIPI	1	Y	HNS. Brief pass.
21:27	PIPI	1	Y	HNS. Brief pass.
21:32	PIPI	2	Y	Foraging along hedgerow
21:33	PIPI	1	Y	HNS. Brief pass.
21:34	NYSP	2	Y	HNS. Brief pass.
21:35	PIPI	1	Y	HNS. Brief pass.
21:38	PIPI	1	Y	HNS. Brief pass.
21:39	PIPI	1	Y	HNS. Brief pass.
21:40	PIPI	2	Y	HNS. Brief pass.
21:42	PIPI	1	Y	HNS. Brief pass.
21:44	PIPI	1	Y	HNS. Brief pass.
21:46	PIPI	1	Y	HNS. Brief pass.
22:05	PIPI	1	Y	HNS. Brief pass.
22:06	PIPI	2	Y	HNS. Brief pass.
22:07	PIPI	1	Y	HNS. Brief pass.

Tree 261 – Dusk – 31st July 2019

Project Name	M42 Junction 6	Surveyors		DS
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	N	Silent bat flew from hedge line across field and beneath the tree

21:20	PIPI	1	Y	Brief pass
21:31	PIPI	1	Y	Brief pass
21:36	PIPI	1	Y	Longer pass, close
21:38	PIPI	1	Y	Pass beneath tree
21:39	PIPI	1	Y	Heard not seen.
21:40	PIPI	2	Y	Heard not seen.
21:49	PIPI	1	Y	Heard not seen.
21:50	PIPI	2	Y	Heard not seen.
21:52	NYLE	1	Y	Heard not seen.
21:52	PIPI	2	Y	Heard not seen.
21:52	PIPI	4	Y	Heard not seen.
21:54	PIPI	2	Y	Near constant foraging activity along hedge line and adjacent lane up to two individual bats
21:55	PIPI	4	Y	
21:56	PIPI	4	Y	
21:57	PIPI	4	Y	
21:58	PIPI	3	Y	
21:59	PIPI	4	Y	
22:00	PIPI	5	Y	
22:01	PIPI	4	Y	
22:02	PIPI	2	Y	
22:04	PIPI	3	Y	
22:05	PIPI	4	Y	
22:07	PIPI	1	Y	
22:08	PIPI	4	Y	
22:09	PIPI	4	Y	
22:10	PIPI	5	Y	
22:12	NYSP	1	Y	
22:12	PIPI	2	Y	
22:13	PIPI	4	Y	
22:14	PIPI	4	Y	
22:15	PIPI	4	Y	
22:16	PIPI	4	Y	
22:17	PIPI	4	Y	
22:18	PIPI	4	Y	
22:19	PIPI	4	Y	
22:20	PIPI	4	Y	
22:21	PIPI	3	Y	
22:22	PIPI	3	Y	
22:23	PIPI	4	Y	
22:24	PIPI	1	Y	
22:28	PIPI	2	Y	Heard not seen.
22:29	PIPI	2	Y	Heard not seen.
22:30	PIPI	4	Y	Heard not seen.
22:31	EPSE	1	Y	Heard not seen.
22:31	PIPI	4	Y	Heard not seen.
22:32	PIPI	4	Y	Heard not seen.
22:33	PIPI	3	Y	Heard not seen.
22:34	PIPI	2	Y	Heard not seen.

Tree 295 – Dusk – 18th September 2019

Project Name	M42 Junction 6	Surveyors		AS
Survey Location	T295	Rain (0-5)		0
Date	18/9/2019	Wind (0-7)		4
Start	19:01	Cloud Cover (0-5)		5
Sunrise	19:16	Temperature		10 degrees
Finish	21:16	Weather description		Dry, breezy & cloudy
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
19:27	PIPI	1	N	Heard not seen
19:29	PIPI	1	N	Foraging
19:32	PIPI	1	Y	Commuting over adjacent footpath heading east
19:35	PIPI	1	N	Foraging
19:39	PIPI	1	Y	Hearn not seen
19:44	PIPI	1	Y	Commuting, not seen
19:50	PIPI	1	Y	Foraging, not seen
19:51	PIPI	1	Y	Foraging, not seen
20:20	NYSP	1	Y	Commuting, not seen
20:39	PIPY	1	Y	Heard not seen, commuting
20:41	PIPI	1	Y	Hear not seen

Project Name	M42 Junction 6	Surveyors		MC
Survey Location	T295	Rain (0-5)		0
Date	18/9/2019	Wind (0-7)		4
Start	19:01	Cloud Cover (0-5)		5
Sunrise	19:16	Temperature		10 degrees
Finish	21:16	Weather description		Dry, breezy & cloudy
Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
19:15	NYNO	1	N	Heard not seen
19:34	PIPI	1	N	Commuting over adjacent footpath
19:45	PIPI	1	Y	Heard not seen
19:52	PIPI	1	N	Circling tree, foraging
19:39	PIPI	1	Y	Heard not seen
20:40	PIPY	1	Y	Hear not seen

Tree 311 – Dusk – 1st August 2019

Project Name	M42 Junction 6	Surveyors		DS
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
21:19	PIPI	1	Y	HNS brief pass
21:24	PIPI	1	Y	HNS brief pass
21:31	PIPI	1	Y	HNS brief pass
21:37	PIPI	1	Y	HNS brief pass
21:41	PIPI	1	Y	Flew along hedgerow [past tree - commuting
21:43	PIPI	3	Y	Multiple circuits of the field foraging around the tree
21:44	PIPI	5	Y	Foraging around the field and tree
21:45	PIPI	4	Y	Foraging around the field and tree
21:46	PIPI	4	Y	Foraging around the field and tree
21:47	PIPI	4	Y	Foraging around the field and tree
21:48	PIPI	1	Y	Foraging around the field and tree
21:49	PIPI	3	Y	Foraging around the field and tree
21:50	PIPI	2	Y	Foraging around the field and tree
21:53	PIPI	2	Y	Foraging around the field and tree
21:55	PIPI	2	Y	Foraging around the field and tree
21:57	PIPI	1	Y	Foraging around the field and tree
21:58	PIPI	1	Y	Foraging around the field and tree
21:59	PIPI	1	Y	Foraging around the field and tree
22:03	PIPI	1	Y	Foraging around the field and tree
22:04	PIPI	2	Y	Foraging around the field and tree
22:06	PIPI	3	Y	Foraging around the field and tree
22:07	PIPI	4	Y	Foraging around the field and tree
22:10	PIPI	1	Y	Heard only
22:12	MYSP	1	Y	Heard only, brief pass
22:13	PIPI	1	Y	Heard only
22:13	PLAU	1	Y	Heard only
22:14	PIPI	2	Y	Brief pass
22:19	MYSP	1	Y	Heard only, brief pass
22:22	PIPY	1	Y	Heard only, brief pass
22:25	PIPIPINA1	1	Y	Heard only
22:25	PIPI	1	Y	Heard only
22:26	PIPI	1	Y	Heard only
22:27	PIPI	1	Y	Heard only