M42 Junction 6 Improvement
Scheme Number TR010027
Volume 6
6.3 Environmental Statement
Appendix 9.5 Bat Report

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

January 2019

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M42 Junction 6 Improvement

Development Consent Order 202[ ]

6.3 Environmental Statement
Appendix 9.5 Bat Report

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1 Introduction

1.1 Study site

1.1.1 The Scheme is predominantly located in the south-western quadrant of Junction 6, formed by the intersection of the M42 and the A45, to the east of Birmingham. The Scheme also includes improvements to the junction itself and both the existing M42 and A45.

1.1.2 A variety of semi-natural and man-made habitats surround the land within the proposed scheme boundary, but these are similar to those in it, being dominated by arable and pasture farmland with the villages of Bickenhill and Hampton in Arden on either side of the M42. The Scheme is also close to the National Exhibition Centre (NEC), Birmingham International Railway Station and Birmingham Airport to the north.

1.1.3 The Scheme itself comprises the M42 and A45 carriageways, associated road verges, blocks of both mature broadleaved and mixed woodland, some of which are ancient, hedgerows, watercourses (brooks and wet ditches), waterbodies (ponds), areas of neutral grassland ranging from unimproved to improved, a mixture of arable and grazing pasture, areas of amenity grassland, urban areas and roads.

1.2 Purpose of appendix

1.2.1 The purpose of this appendix is to provide further detail to that contained in Chapter 9 Biodiversity of the Environmental Statement [**TR010027/APP/6.1**] on the baseline survey results recorded during the 2017-2018 bat surveys. This appendix is an interim report as the results of some of the bat surveys undertaken during August to October 2018 are outstanding; namely roost surveys of trees that *did not* record a confirmed roost; bat activity transects and static monitoring from the months August, September and October. It is intended that the information in this report and subsequent updates will be used to identify and assess the potential implications of the Scheme and inform mitigation and compensation for the species.

1.2.2 Potential roost feature surveys (PRFs) were conducted with the following objectives:

a. to assess the potential of trees and built structures within the study area to support bat roosts; and

b. to identify the species and categorise any roosts found in trees and built structures within the study area.

1.2.3 Bat activity surveys were conducted with the following objectives:

a. to record bat activity levels and make observations on bat behaviour along four walked transects passing through a range of habitats within the study area;

b. to record and identify levels of bat activity using static bat detectors at eight locations spaced within the study area; and

c. to identify the species present and their relative abundance in terms of activity levels at these locations.

1.3 Legislation

1.3.1 All species of bat and their roosts (whether bats are present or not) are protected under the Conservation of Habitats and Species Regulations 2017 [REF 1] and under the Wildlife and Countryside Act 1981 (as amended) [REF 2]. 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.

1.3.2 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.

1.3.3 Given the above legislation the potential presence of bats at a site represents a material consideration in the planning process. Even where planning permission is not required there is still a legal responsibility placed on the developer to ensure that a Natural England licence is obtained to cover any works that have the potential to result in an offence under the above legislation.

1.3.4 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 a licence can only be issued where the following three tests are satisfied:

a. 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;

b. there is no satisfactory alternative; and

c. 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.

1.3.5 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.

1.3.6 Seven of the 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, with a species action plan prepared: namely, the barbastelle bat (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule bat (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat, greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*).

1.4 National planning policy

1.4.1 The National Planning Policy Framework (NPPF) [REF 3] sets out the Government's planning policies for England and how these are expected to be applied.

1.4.2 Promoting a strong theme of sustainable development, the Framework aims to strengthen local decision making and reinforce the importance of up-to-date plans. Core aims of the NPPF include:

a. the Presumption in favour of Sustainable Development;

b. Delivering Sustainable Development – Building a strong competitive economy and ensuring the vitality of town centres;

c. promoting sustainable transport;

d. meeting the challenge of climate change, flooding and coastal change;

e. conserving and enhancing the natural environment; and

f. conserving and enhancing the historic environment.

1.4.3 The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

1.4.4 Section 15, paragraphs 170-177 of the NPPF includes provision for measurable net gain and creating/maintaining coherent ecological networks.

1.5 Biodiversity Action Plans

1.5.1 Highways England, through the national Road Investment Strategy (RIS) [REF 4], has set an aspiration that the operation, maintenance, and enhancement of the Strategic Road Network (SRN) should move to a position that reduces no net loss of biodiversity; and, in the long term, Highways England should deliver a net gain in biodiversity across its broader range of works. Highways England published a Biodiversity Plan in 2015 [REF 5] to show 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 the 2015 Biodiversity Plan, to secure an ongoing annual reduction in the loss of net biodiversity due to its activities. The 2015 Biodiversity Plan provides a general plan to protect and increase biodiversity. The 2015 Biodiversity Plan supersedes the preceding 2002 Highways Agency (now Highways England) Biodiversity Action Plan (BAP), which still however carries some relevance as it lists specific species of conservation concern. Bats are listed in the 2002 Highways Agency BAP as priority species. The objectives of this 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.

1.5.2 The Warwickshire, Coventry & Solihull Local Biodiversity Action Plan [REF 6] 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 1** below.

Table 1: Status of bats within the Vice-county of Warwickshire (Warwickshire, Coventry & Solihull)

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

2 Methodology

2.1 Preliminary appraisal

2.1.1 A preliminary appraisal of trees, buildings and other man-made structures, together with an assessment of the value of habitats to commuting and foraging bats was undertaken between August 2017 and September 2018 as access to land parcels for the various scheme options was obtained, based on the Scheme design within the Preferred Route Announcement (PRA) (see Chapter 3 The project of the Environmental Statement [**TR010027/APP/6.1**]).

2.1.2 For the purpose of defining the survey area in accordance with IAN 116/0813 [REF 7], both mature trees and structures within 100m would normally be considered as potential bat roosts. As such these would be assessed for indirect impacts as a result of disturbance and/or change to environmental conditions, which could potentially make commuting, roosting or foraging unsuitable.

2.1.3 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 in the early design stages given the number of buildings, structures and mature trees located in proximity to the Scheme, only those buildings and structures within the current Order Limits were assessed. For trees, only those within the current Order Limits were subject to initial assessment and subsequent climb and inspect surveys, for trees rated as high or moderate potential for bats. Trees with high potential for roosting bats within the Order Limits and trees with Moderate potential for roosting bats within 50m of the Order Limits were subject to further roost surveys.

2.1.4 The preliminary appraisal included initial daytime assessments of Potential Roosting Features (PRFs), commuting and foraging habitat, to aid the design of the various types of bat surveys necessary to inform specific bat-related impacts and mitigation measures. This information was assessed against **Table 2** below.

2.1.5 This appraisal was also aided by:

a. a review of previous bat survey work [REF 8; REF 9]; and

b. a review of published bat surveys in support of a planning application for the proposed M42 Junction 6 Improvement: Motorway Service Area (MSA) and New Junction between Junctions 5 & 6 of the M42 [REF 10; REF 11].

Table 2: 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).

Suitability	Description: roosting habitats	Description: commuting and foraging habitats
Confirmed Roost	Known roost where bats or evidence of bats has been recorded.	-
High Roosting Potential	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.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
Moderate Roosting Potential	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).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low Roosting Potential	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.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.

Suitability	Description: roosting habitats	Description: commuting and foraging habitats
Negligible Roosting Potential	Negligible features likely to be used by bats for roosting.	Negligible habitat features on site likely to be used by commuting or foraging bats.

2.2 Daytime inspection of built structures

2.2.1 Daytime roost inspections of built structures (bridges and buildings) were undertaken between December 2017 and June 2018. These assessments were undertaken by experienced and licensed bat ecologists (Class License WML CL18; Level 2).

2.2.2 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].

2.2.3 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. The structures were examined externally for features that could support roosting bats and features that could lead to internal potential 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.

2.2.4 The suitability of the wider landscape for bats was also assessed, including the connectivity of habitats immediately adjoining the Order Limits.

2.2.5 The presence of roosting bats can be spotted through signs such as accumulations of moth or butterfly wings or 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 2** above.

2.3 Ground level tree assessment

2.3.1 Ground Level Tree Assessments (GLTA) were undertaken between July 2017 and July 2018 to identify Potential Roosting Features (PRFs). These were undertaken by a licensed bat ecologist (Class License WML CL18; Level 2), aided by a torch and endoscope.

2.3.2 During the GLTA, features considered to provide suitable roost sites for bats such as the following were sought (also see **Table 2** for details on roost categorisation):

a. trunk cavity – Large hole in trunk caused by rot or injury;

b. branch cavity - Large hole in branch caused by rot or injury;

c. trunk split – Large split/fissure in trunk caused by rot or injury;

d. branch spilt – Large split/ fissure in branch caused by rot or injury;

e. branch socket cavity – Where a branch has fallen from the tree and resulted in formation of an access point in to a cavity;

f. woodpecker hole – Hole created by nesting birds suitable for use by roosting bats;

g. lifted bark – Areas of bark which has rotted/lifted to form suitable access point/roost site for bats;

h. hollow trunk – Decay in heartwood leading to internal cavity in trunk;

i. hazard beam failure- Where a section of the tree stem/branch has failed causing collapse and leading to longitudinal fractures/splits/cracks along; and

j. ivy cover – Dense/mature ivy cover where the woody stems could create small cavities/crevices.

2.3.3 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 potential to ensure further detailed inspections were undertaken.

2.4 Roost (emergence/re-entry) surveys of built structures

2.4.1 Where the preliminary PRF assessment concluded that the structure or tree had low (structures only) moderate or high potential, further surveys were undertaken; emergence and re-entry surveys were required to assess current usage by bats, species, number and breeding status. These surveys entail observers noting whether bats emerge from/enter roosting sites; foraging/commuting activity and their behaviour using bat detectors to assess species present. These surveys were undertaken, following best practice outlined in Collins (2016) [REF 12], as well as the Bat Workers Manual [REF 14].

2.4.2 Access restrictions have limited the extent of building surveys to date to one building, a confirmed roost site at B1 Heath End House. In line with published guidance, this building is subject to three survey visits; one evening emergence survey and two dawn re-entry surveys have been undertaken between May and September 2018.

2.4.3 Two other built structures, S1 a bridge under the A45, and S2 a culvert under the M42, were assessed as providing Low potential for roosting bats and in line with published guidance subject to one emergence survey.

2.4.4 Emergence surveys commenced approximately 15 minutes before sunset, finishing 1.5 to 2 hours after sunset. Dawn/re-entry surveys commenced 1.5 to 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. A licenced ecologist (Class License WML CL18; Level 2) was present during each survey visit.

2.4.5 During the dusk and dawn survey periods the surveyors observed potential access/egress points. Surveyors carried full spectrum bat echolocation detectors (Elekon Batlogger M, Wildlife Acoustics Echometer Touch Pro, Wildlife Acoustics SM2, Batbox Duet) to assist in detecting bats and species identification.

2.4.6 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. All sound files have been analysed using AnalookW software, where possible down to species level following the call parameters outlined in Russ (2012) [REF 19].

2.5 Follow-up tree surveys (aerial surveys and emergence/re-entry)

2.5.1 A large number of trees containing PRFs are present within the Order Limits.

2.5.2 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 number of mature trees located in proximity to the Scheme, it was necessary to differentiate between roost types in line with standard guidance (Collins 2016) [REF 12].

2.5.3 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 15].

2.5.4 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.

2.5.5 Due to the extensive survey area, it was considered sufficient to include on plans and results tables those trees assessed to provide low, moderate or high potential to support roosting bats, in addition to confirmed roosts, see **Figure 9.5B**.

2.6 Aerial tree inspections

2.6.1 Where safe to do so an at-height PRF inspection (tree climbing survey) was undertaken of all trees with moderate and high roosting suitability within the Order Limits.

2.6.2 The aim of this survey was to identify and locate signs of bats or bat roosts within trees. In addition the 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 to low suitability were not subject to further survey effort.

2.6.3 These surveys were undertaken by staff certified to climb trees and perform aerial rescue and who held Natural England bat survey licences (Class License 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 16].

2.6.4 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 outlined in the Bat Tree Habitat Key [REF 17]; [REF 18].

Roost (emergence/re-entry) surveys of trees

2.6.5 The following details the approach taken for further surveys (based on the results of the GLTAs and where applicable a subsequent climb and further detailed inspection).

2.6.6 Trees with moderate suitability PRFs following the initial and subsequent climbed PRF assessment *and* within 50m of the Order Limits were subject to two surveys (emergence and re-entry).

2.6.7 Trees with high suitability PRFs following the initial and subsequent climbing PRF assessment within scheme boundary were subject to three survey visits (emergence and re-entry surveys).

2.6.8 Where it was considered that sufficient, recent data collected by third parties (e.g. as part of Planning or EPS Mitigation Licence applications undertaken to inform unrelated developments) was available for a tree assessed as offering Moderate or High potential or a confirmed roost one updated survey was undertaken. This was relevant to trees within a section of the scheme boundary subject to recent surveys in 2018 [REF 11].

2.6.9 Emergence surveys commenced approximately 15 minutes before sunset, finishing 1.5 to 2 hours after sunset. Dawn/re-entry surveys commenced 1.5 to 2 hours before sunrise, finishing approximately 15 minutes after sunrise.

2.6.10 Surveys were undertaken in good weather conditions, within the range of conditions required by published guidance. A licenced ecologist (Class License WML CL18; Level 2) was present during each survey visit.

2.6.11 During the dusk and dawn survey periods the surveyors observed potential access/egress points. Surveyors carried echolocation detectors (Elekon Batlogger M, Batbox Duet) to detect bats and assist in species identification.

2.6.12 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 Batscan 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 19].

2.6.13 A FLIR T1010 thermal imaging camera was used on tree roost surveys of confirmed roosts to supplement identification and counts of bats roosting at the trees.

2.6.14 The spatial extent of the tree roost surveys was considered proportionate to the roost suitability and therefore the likely ecological importance and impacts.

Bat hibernation scoping surveys

2.6.15 No underground sites or features suitable to support large numbers of hibernating bats have been identified within the Order Limits to date. No specific hibernation surveys were undertaken on building B1during the winter of 2017/2018; it was assessed to have potential to support no more than individual overwintering bats.

Swarming surveys

2.6.16 No underground sites or features suitable to support large numbers of hibernating bats have been identified within the Order Limits to date. No specific swarming surveys were undertaken as no suitable locations have been identified.

2.7 Bat activity surveys

2.7.1 The number of bat activity surveys required to achieve a reasonable survey effort was assessed in relation to habitat suitability following the Bat Conservation Trust Bat Surveys for professional Ecologists (Collins, 2016) [REF 12].

2.7.2 The habitat suitability for foraging and commuting bats was assessed by WSP in April 2017 [REF 8] to be of Moderate value given the connective habitats present. This was confirmed in spring 2018 in advance of activity surveys on the refined survey area for the preferred route.

2.7.3 One survey visit per month (April to October) was proposed, in appropriate weather conditions with one dusk/dawn survey conducted within the same 24 hour period, in line with survey guidelines shown in **Table 3.**

Table 3: Guidelines on the number of bat activity surveys recommended to achieve a reasonable survey effort in relation to habitat suitability (Collins 2016).

Survey type	Low suitability habitat for bats	Moderate suitability habitat for bats	High suitability habitat for bats
Transect/spot count/timed search surveys	One survey visit per season (spring – April/May, summer – June/July/August, autumn – September/October) in appropriate weather conditions for bats Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat alone	One survey visit per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.	Up to two survey visits per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.
AND			

Survey type	Low suitability habitat for bats	Moderate suitability habitat for bats	High suitability habitat for bats
Automated/static bat detector surveys	One location per transect, data to be collected on five consecutive nights per season (spring – April/May, summer – June/July/August, autumn – September/October) in appropriate weather conditions for bats	Two locations per transect, data to be collected on five consecutive nights per month (April to October) in appropriate weather conditions for bats	Three locations per transect, data to be collected on five consecutive nights per month (April to October) in appropriate weather conditions for bats

Walked transects

2.7.4 In line with habitats of Moderate value one survey visit per month (April to October) was undertaken (see **Table 3**).

2.7.5 Previously six transect routes had been followed for the period July to October 2017 [REF 9] when the Scheme was considering three option routes. With the scheme refined to a preferred route in August 2017, two of the previous transect routes have been discontinued and one modified to take in a small area covered by one of the two discontinued transects. Four transect routes were assessed in 2018.

2.7.6 Each transect survey involved two surveyors walking a pre-determined route which included a series of 'spot counts' selected to represent the different habitats in the survey area. At each 'spot count', the surveyors remain stationary for short, set periods of time (3-5 minutes) and, using bat echolocation detectors, bat activity is noted as well as bat flight direction. Any additional activity encountered whilst walking between spot counts was also recorded. The survey route was designed to include potential flight paths or foraging areas within the Order Limits, and also the mature trees, which offer potential roost sites. The starting point and direction of the transect was varied during each survey visit in order to ensure different areas of the transect were walked close to dusk. The transect routes are shown on **Figure 9.5C [TR010027/APP/6.2].** Transect surveys were undertaken in appropriate weather conditions with, during the series of surveys, one dusk/dawn survey conducted within the same 24 hour period.

2.7.7 Surveyors carried echolocation detectors (Elekon Batlogger M) to help determine the species present. In accordance with the survey guidelines (Collins 2016) [REF 12], dusk surveys were carried out from sunset to at least two hours after dusk, and dawn surveys commenced two hours before sunrise. All surveys were undertaken during favourable weather. 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 were analysed using Analook W software, where possible down to species level following the call parameters outlined in Russ (2012) [REF 19].

Automated detector surveys

2.7.8 Static monitoring with automated bat detectors was not undertaken as part of the 2017 surveys but in line with the guidelines in **Table 3**, in 2018 eight static monitoring locations (two per transect) were established. At each monitoring point static detectors were deployed for a minimum of five consecutive nights in appropriate weather conditions for bats each month from April to July 2018. Monitoring will be continued August to October 2018 and results presented in an updated report.

2.7.9 SM2BAT+/SM4BAT Full Spectrum automated bat detectors were placed at the eight monitoring locations as shown in **Figure 9.5C.** The locations of the automated detectors were determined in order to cover a variety of habitat types and locations across the Order Limits, based upon suitable bat foraging and commuting features. The detectors were placed in the same location during each survey period to allow for quantitative analysis to be undertaken.

2.7.10 The static detector data collected were analysed to determine the total number of bat passes for each species or species group (depending on the level of identification possible from the recordings made) and then used to derive a metric; the Bat Activity Index (BAI) for the relative bat activity per hour at each survey location. This analysis provides an indication of:

a. seasonal variation in species activity and composition at each survey location;

b. relative levels of bat activity across the Site; and

c. potential roosting sites, important foraging areas and commuting routes.

2.7.11 BAI values for the site are calculated by averaging the number of bat passes per hour. Full automated detector results for each month were used to calculate the BAI for each location and gives an indication of bat abundance and activity at a particular location per month. Full analysis to follow in an updated report upon completion of analysis of all monitoring to October 2018.

2.7.12 The term ‘pass’ is defined as a single file made up of bat pulses of a single species i.e. this may be one bat or many bats in a single file. No guidance is available on what constitutes low, moderate or high bat activity based on number of passes. As such a relative scale called a ‘bat activity value’ is used in this report where:

a. very low activity is less than two passes per hour (mean/hr over the five nights at each survey location);

b. low activity is 2 to 25 passes per hour;

c. moderate activity is 26 to 99 passes per hour; and

d. high activity is over 100 passes per hour.

2.8 Evaluation of commuting and foraging habitats for bats

2.8.1 The relative ecology and nature conservation value of any bat populations associated with the Scheme will be assessed in line with the principles described in Valuing Bats in Ecological Assessment (Wray et al. 2010) [REF 20].

2.9 Limitations and assumptions

2.9.1 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. 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.

2.9.2 Constraints to the survey area were presented by difficulties in obtaining access agreements with **Figure 9.5D** showing the extent of the accessible site. Some areas of the survey area remained inaccessible throughout the survey period and some other areas had periodic reduced access. A reasonable effort was made at all times to gain access to the survey areas within the Order Limits.

2.9.3 Access was only available to one of eleven buildings within the Order Limits, although it is noted that refinement of the scheme boundary has removed several of these buildings from within the Order Limits. Access was available to the only building B1 Heath End House, to be directly impacted by the Scheme.

2.9.4 Some of the eleven structures (bridges and culverts) were inaccessible or only partly accessible due to access restrictions to rail lines and the M42 carriageway (full details within section 3.1).

2.9.5 Inaccessible areas within the Order Limits also included trees that were inaccessible for inspection and assessment, as detailed in **Figure 9.5D**, and areas where surveys were reduced due to revoked access.

2.9.6 Trees rated as providing moderate potential for bat roosts within the Order Limits but beyond 50m from the boundary of the proposed works were scoped out of further roost surveys. It is considered that being located over 50m form the proposed works boundary these trees were beyond the scope of both direct and indirect impacts from the road construction. Three trees rated as providing Moderate potential for bats located between 20-50m from the proposed works boundary have not been subject to roost surveys due to changes to the extent of this boundary bringing these trees within the 50m limit after the core bat survey season of May to August. Following any further refinement of the scheme these trees may need further consideration.

2.9.7 Tree T90 rated as providing High potential for bats was subject to one roost survey rather than three due to access to this location being revoked during the course of surveys.

2.9.8 Tree T144 rated as Moderate potential for roosting bats was not subject to a climbed inspection due to shifting proposed scheme boundaries bringing the tree within the Order Limits after surveys had been undertaken. As this tree is located between 20-50m from the proposed works no impacts are anticipated at this tree and furthermore a series of three roost surveys undertaken on a neighbouring tree did not record any significant activity associated with this tree.

2.9.9 At tree T17, which supports a confirmed roost of one common pipistrelle bat, two of the three roost surveys completed were undertaken in the sub-optimal month of September. The tree was initially appraised as having Moderate potential following tree climbing surveys, with bats confirmed only during the second survey visit in early-September. No bats were recorded during the final visit. Although the nocturnal surveys alone are sub-optimal, given the evidence from both tree climbing and nocturnal surveys it is considered that no significant roosts are present and that the data is are sufficient to evaluate the status of the roost that is present.

2.9.10 A roost survey was not undertaken at Tree T88 (moderate potential) for health and safety reasons as this tree was located on Catherine-de-Barnes Lane, with the adjoining field not accessible.

2.9.11 Roost surveys were not undertaken at Tree T1, rated as providing High potential for bats and subject to a climbed inspection in August 2017 confirming the rating as High. This tree is located adjacent to the M42 carriageway boundary and subject to extensive light and noise pollution from the motorway making a survey using bat detectors and thermal imaging or infra-red cameras ineffectual as the specialist survey equipment was not able to record activity over the background noise and light.

2.9.12 Walked transects and static monitoring was not undertaken in April 2018, due to issues with access arrangements. Due to land access restrictions this resulted in the June Transect 1 survey and the May Transect 4 being cancelled and both the July dusk and dawn Transect 4 surveys being slightly reduced. Access to Transect route 2 was unavailable for the September and October transects.

2.9.13 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. Notes have been undertaken on the hibernation potential of buildings, structures and trees as these have been assessed for roosting suitability. This is not considered to limit the results.

2.9.14 The echolocation calls of *Myotis* species are notoriously difficult to separate during sound analysis (Russ 2012) [REF 19]. Analysis of *Myotis* species calls determined to species level should therefore be treated with caution. Where it was not possible to differentiate calls to species level, the genus or likely bat species 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 during the surveys, where present.

2.9.15 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 22].

3 Results

3.1 Buildings /structures

3.1.1 Within the Order Limits eleven buildings and eleven other built structures were identified for assessment. Results of the assessment are summarised in **Table 4** below, locations of buildings and other structures are shown in **Figure 9.5A**. For structures (bridges and culverts) where no access was available to the carriageway of the M42 or to the rail network a provisional assessment based on aerial maps is provided. Full results of the survey assessments are shown in Annex A.

3.1.2 At B1 Heath End House small brown long-eared and *Pipistrelle* species bat roosts were confirmed through small numbers of bat droppings found inside roof voids in March and August 2018. Roost surveys undertaken in May and June recorded no bats confirmed as exiting or entering the building however on 30 May 2018 a single brown long-eared bat was recorded flying outside the building at a time that would correspond with emergence. During a dawn survey on 4 September 2018 four common pipistrelle bats were observed to re-enter the building at verge gaps on the south-western corner. Full results of the roost surveys of buildings and structures are shown in Annex B. Raw data for the confirmed roost is provided in Annex G.

3.1.3 B1 is confirmed as a small day roost for brown long-eared (maximum count one) and common pipistrelle (maximum count four) bats. These small day roosts are assessed to be of low conservation significance. The building could 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.

3.1.4 Single visit roost surveys were undertaken at two structures assessed as providing Low potential for bats; S1, East Way bridge under the A45, and S2, culvert for Hollywell Brook under M42. No bats were recorded roosting at either feature and bats are considered absent from these structures.

Table 4: Summary of buildings and structures assessed for bat potential

Reference building /structure	Brief description	Likely impacts	Status
B1	Heath End House. Detached bungalow.	Direct Loss	Small brown long-eared day roost. Small common pipistrelle day roost. Local significance only.
B2	Birmingham Dogs Home. Recently constructed dog kennels and associated buildings.	None anticipated. Outside red-line boundary. Inside General Area +50m.	Low Potential (presumed) (no access)
B3	Detached House on Catherine-de-Barnes Lane.	None anticipated. Outside red-line boundary. Inside General Area +50m.	Unknown (no access)
B4	Páirc na hÉireann (Warwickshire Gaelic Athletic Association). Clubhouse and associated buildings.	Unknown (TBC)	Unknown (no access)
B5	A series of three small wooden sheds off Catherine-de-Barnes Lane.	Presumed Direct Loss	Part accessed: Negligible Potential
B6	Sewage Pumping Station off Clock Lane.	Indirect /None	Negligible Potential (presumed) (no access)
B7	Detached House and outbuildings.	None anticipated. Outside red-line boundary. Outside General Area +50m.	Unknown (no access)
B8	National Motorcycle Museum / National Conference Centre.	None anticipated. Outside red-line boundary. Outside General Area +50m.	Low Potential (presumed) (no access. Scoped out of further surveys as beyond scheme boundary.

Reference building /structure	Brief description	Likely impacts	Status
B9	DHL, Middle Bickenhill Lane.	Indirect /None	Low Potential (presumed) (no access)
B10	Two houses and outbuildings at Middle Bickenhill Lane.	None anticipated. Outside red-line boundary. Outside General Area +50m.	Unknown (no access) Scoped out of further surveys as beyond scheme boundary.
B11	Two detached houses and associated outbuildings off Solihull Road B4102, east of M42.	None anticipated. Outside red-line boundary. Inside General Area +50m.	Unknown (no access) Scoped out of further surveys as beyond scheme boundary.
S1	Bridge under A45 at East Way.	None anticipated.	Low Potential. Roost surveys: None present
S2	Culvert for Hollywell Brook under M42.	Direct Impacts, culvert extension anticipated	Low Potential Roost surveys: None present
S3	Bridge East Way over M42.	None anticipated.	Part accessed: Low Potential
S4	A45 over Railway.	None anticipated.	Negligible (presumed). No access.
S5	M42 over Railway.	None anticipated.	Negligible (no access)/ scoped out (TBC)
S6	Field access bridge over M42.	None anticipated.	Part accessed: Negligible
S7	Bridge: Shadowbrook Lane over M42.	None anticipated.	Part accessed: Negligible
S8	Bridge: Solihull Road over M42.	Direct Loss	Part accessed: Negligible
S9	Bridge: Friday Lane over M42.	None anticipated.	Part accessed: Negligible
S10	Existing M42 Junction 6 bridges.	None anticipated.	Negligible. No access
S11	Bridge: M42 over River Blythe.	None anticipated.	Negligible. No access

3.2 Trees

3.2.1 Ninety-two trees or tree groups were assessed in April 2017 [REF 9]. Some of these trees were re-visited in July – September 2017 and April – August 2018 to separate out groups of trees and undertake Ground Level Tree Assessment (GLTA) of trees where access was not previously available. A GLTA of a further one hundred and fifty nine trees was undertaken between April and September 2018.

3.2.2 Following the initial GLTA, thirty-five trees were assessed as offering high potential for bat roosts, one hundred and twenty-two trees rated as providing moderate potential and ninety-five trees rated as low potential to support bat roosts. Full results of the GLTA are presented in Annex C.

3.2.3 Trees rated as providing moderate or high potential for bats by the initial GLTA within the red-line boundary of the proposed scheme were subject to further direct inspection through a tree climbing survey. Nineteen trees were rated as offering high potential for bats, 34 trees rated as offering moderate potential for bats, thirty-one rated as offering low potential for bats and three downgraded to negligible potential for bats. Full results of the tree climbing assessment of trees are given in Annex D.

3.2.4 No evidence of confirmed bat roosts, from droppings or actual bats present, was found during any GLTA or climbed inspection of trees.

3.2.5 A summary of trees rated as providing high or moderate potential within the boundary of the proposed scheme, including initial GLTA assessment and any change following climbed surveys, is shown in Annex E. The location of trees and with bat roosting potential is shown in **Figure 9.5B**.

3.2.6 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.

3.2.7 Roost surveys of trees rated as offering high bat potential throughout the proposed works; and trees offering moderate roosting potential within 50m of the proposed works boundary were undertaken between June and September 2018. These included both dusk emergence and dawn re-entry. Fifty-three trees were taken forward for roost surveys as detailed in Annex E; four of these trees were subsequently dropped as these were removed from the Order Limits.

3.2.8 During roost surveys confirmed roosts of one or two individual common species were recorded at trees T17, T21, T80, T83, T85.2 and T242. A summary of roosting status at these trees is provided in **Table 5** below. Results of the results of tree roost surveys for these six confirmed tree roosts, together with all tree roost surveys up to 31 July 2018 is provided in Annex F. Raw data for the confirmed roosts is provided in Annex G.

Table 5. Summary of roosting status of confirmed tree roosts

Tree number	Tree species and bat roosting potential	Species and max. count	Status
T17	*Quercus robur* Low Potential	One common pipistrelle	Small day roost. Max count 1 Local significance only.
T21	*Quercus robur* Low Potential	One common pipistrelle (suspected roost)	Small day roost. Max count 1 Local significance only.

Tree number	Tree species and bat roosting potential	Species and max. count	Status
T80	*Fraxinus excelsior* Moderate Potential	Two soprano pipistrelle	Small day roost. Max count 2 Local significance only.
T83	*Quercus robur* High Potential	Two common pipistrelle	Small day roost. Max count 2 Local significance only.
T85.2	*Fraxinus excelsior* High Potential	Four soprano pipistrelle	Small day roost. Max count 4 Local significance only.
T242	*Populus alba* High Potential	One soprano pipistrelle	Small day roost. Max count 1 Local significance only.

3.2.9 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 bats and a couple of long-eared bat calls were also recorded foraging or commuting near to surveyed trees.

3.2.10 Further assessments of trees undertaken by a third party [REF 11] in conjunction with a nearby proposed development which included trees within the Order Limits. Results of 2014 surveys confirmed roosts at two trees within the Order Limits; (our reference numbers) T9 and T76. In 2018 a roost was confirmed within a further tree within the Order Limits, T239, but no evidence of roosting bats was recorded at the two previously recorded tree roosts and the roost feature at T9 was reported as no longer present [REF 11] (Annex J). A minimum one emergence or dawn survey was undertaken at these three trees by this study between May and September 2018, irrespective of roost potential status; no roosting bats were recorded. A summary of the roost status of these trees is provided in **Table 6** below.

Table 6: Roost status of other tree roosts within the Scheme boundary

Tree number	Tree species	Previous roost record (Wardell Armstrong, 2018b)	Results of this study, roosting potential status and emergence/ re-entry survey results	Status
T9	*Quercus robur*	Single brown long-eared dropping recorded in 2014	Moderate Potential No bats recorded	Small day roost Local significance only

Tree number	Tree species	Previous roost record (Wardell Armstrong, 2018b)	Results of this study, roosting potential status and emergence/ re-entry survey results	Status
T76	*Quercus robur*	Multiple brown long-eared droppings recorded in 2014. Feature no longer present in 2018.	Low Potential No bats recorded	Small day roost (No longer present) Local significance only.
T239	*Fraxinus excelsior*	Single *Myotis* species observed in a frost crack in 2018.	Moderate Potential No bats recorded	Small day roost Local significance only

3.3 Bat activity surveys – walked transects

3.3.1 The following species or species groups were recorded during the survey work undertaken: Common pipistrelle; Soprano pipistrelle; *Pipistrellus* species (common or soprano pipistrelle, no Nathusius' pipistrelle were recorded); Noctule; *Nyctalus* species (either Leisler's bat or Noctule); *Myotis* species; serotine and brown long-eared bat.

3.3.2 A summary of the results of transects undertaken from April to July 2018; together with results from transects previously undertaken in 2017 [REF 8] is provided in **Table 6**. Full Walked Transect survey results from May to July 2018 are given in Annex I and shown on **Figure 9.5E**. Full results of Transects July, August, September and October 2017 are detailed in the Bat Activity Survey Report [REF 9] (Annex J).

3.3.3 Common pipistrelle was overwhelmingly the most common bat recorded during walked transect surveys, followed by Noctule bat on Transect routes 1 and 2; and by soprano pipistrelle at Transect routes 4 and 5. It is important to note that a comparison of the relative occurrence of each species should be treated with caution due to the different way different species of bats echolocate and the range at which different species calls can be received on bat detectors (Russ 2012) [REF 19], for instance long-eared bats are under recorded due to their quiet calls. In addition different equipment and analysis software was used for the 2017 and 2018 transects.

3.3.4 Comparisons of the same species between different transect routes and different times of year are, however, valid. These comparisons show the most active areas of the site are along Transect route 2 and that Noctule bats were particularly active at this location in June 2018.

3.3.5 The bat activity surveys completed between July and October 2017 and between May and July 2018 has recorded bat foraging and commuting activity on all transects across the Order Limits. The vast majority of activity was by common pipistrelle, with soprano pipistrelle, Noctule, *Nyctalus* species, *Myotis* species and serotine occasionally recorded. The levels of activity are considered to be low and typical of the habitats present and are not considered to be high. The highest levels of bat activity recorded were along hedgerows in fields to the west of Catherine-de-Barnes Lane and in the vicinity of Aspbury's Coppice. Activity was also recorded along hedgerows, tree lines and plantation woodland immediately east of the M42, and along hedgerows between Catherine-de-Barnes Lane and the M42. The lowest levels of activity were recorded in the north of the study area east of Catherine-de-Barnes.

3.3.6 Further analysis of the data and comparisons of areas of higher activity will be made upon completion of the full set of transects in October 2018; however no significant differences in activity patterns are anticipated.

3.4 Bat activity surveys – static monitoring

3.4.1 The following species or species groups were recorded during the survey work undertaken: Common pipistrelle; Soprano pipistrelle; *Pipistrellus* species (common or soprano pipistrelle, no Nathusius' pipistrelle were recorded); Noctule; Leisler's, *Nyctalus* species (either Leisler's bat or Noctule); Serotine; and *Myotis* species.

3.4.2 A summary of the results of static monitoring to date is presented in **Table 8**.

3.4.3 The assemblage of bat species present is not considered to meet any of the Warwickshire Local Wildlife Site species selection criteria [REF 21]. Overall the assemblage of bats is considered to be consistent with the local records and unexceptional. On this basis the foraging and commuting habitats present are considered to be of no more than Local importance.

Table 7: Walked transect results summary

Transect 1

Species	July '17	Aug '17 dawn	Sept '17 dusk	Sept '17 dawn	Oct '17	April '18[1]	May '18	June '18[1]	July '18 dusk	July '18 dawn
Common pipistrelle	13	1	5	12	8	n/a	16	n/a	10	17
Soprano pipistrelle	0	0	0	0	0	n/a	1	n/a	0	0
Pipistrellus species	-	-	-	-	-	n/a	0	n/a	0	0
Noctule	3	2	0	0	0	n/a	4	n/a	0	0
Nyctalus species	0	0	0	0	0	n/a	0	n/a	0	0
Myotis species	0	1	1	1	0	n/a	0	n/a	0	
Long-eared bat	-	-	-	-	-	n/a	1	n/a	0	0

Transect 2

Species	July '17	Aug '17 dawn	Sept '17 dusk	Sept '17 dawn	Oct '17	April '18[1]	May '18	June '18	July '18 dusk	July '18 dawn
Common pipistrelle	40	8	48	20	63	n/a	26	21	28	13
Soprano pipistrelle	0	0	8	5	5	n/a	0	1	1	2
Pipistrellus species	-	-	-	-	-	n/a	0	0	0	2
Noctule	3	0	1	0	0	n/a	6	19	1	1
Nyctalus species	0	0	1	0	0	n/a	0	3	1	0
Myotis species	0	0	1	0	2	n/a	0	0	1	0
Long-eared bat	-	-	-	-	-	n/a	1	0	0	0

Transect 4 (note the route for transect 4 from April 2018 was modified to add a small section of the previous (2017 surveys) transect 6)

Species	July '17	Aug '17 dawn	Sept '17 dusk	Sept '17 dawn	Oct '17	April '18[1]	May '18[2]	June '18	July '18 dusk[2]	July '18 dawn[2]
Common pipistrelle	22	43	11	2	6	n/a	15	19	3	15
Soprano pipistrelle	0	3	5	1	3	n/a	7	8	2	2
Pipistrellus species	-	-	-	-	-	n/a	1	1	0	1
Noctule	0	1	0	0	0	n/a	1	1	0	1
Nyctalus species	0	0	0	0	0	n/a	0	1	0	0
Myotis species	0	0	0	0	1	n/a	1	0	0	1
Long-eared bat	-	-	-	-	-	n/a	0	0	0	1

Transect 5

Species	July '17	Aug '17 dawn	Sept '17 dusk	Sept '17 dawn	Oct '17	April '18[1]	May '18	June '18	July '18 dusk	July '18 dawn
Common pipistrelle	28	26	12	12	34	n/a	11	18	6	8
Soprano pipistrelle	1	1	0	1	2	n/a	1	3	4	1
Pipistrellus species	-	-	-	-	-	n/a	0	0	0	0
Noctule	0	0	0	0	0	n/a	1	3	0	0
Nyctalus species	0	0	0	0	0	n/a	0	0	0	0
Myotis species	0	1	0	0	1	n/a	1	1	0	0
Long-eared bat	-	-	-	-	-	n/a	0	0	0	1

Table 8: Automatic bat detector survey results

Month	Detector Location	Number of passes per bat species (over five consecutive nights)									Total Number of bat passes	Bat activity index (bat passes per hour)	Bat activity index value
		Common pipistrelle	Soprano pipistrelle	Pipistrelle sp.	Noctule	Leisler	*Nyctalus* sp.	*Nyctalus/Eptesicus*	Serotine	*Myotis* sp.			
May	1	13	1	3	-	-	-	-	-	-	17	0.45	Very Low
	2	101	-	-	89	-	45	-	-	-	235	6.27	Low
	3	120	6	6	-	-	-	-	-	-	132	3.52	Low
	4	93	1	-	149	-	7	-	-	3	253	6.75	Low
	5	1189	12	3	-	-	-	-	-	6	1210	32.27	Moderate
	6	16	-	-	19	1	3	-	-	5	44	1.17	Very Low
	7	-	-	-	-	-	-	-	-	-	0	0	-
	8	362	29	3	13	4	8	-	-	22	441	11.76	Low
June	1	27	33	11	-	-	-	-	-	1	72	2.06	Low
	2	33	1	1	7	-	-	-	-	-	42	1.2	Very Low
	3	1	-	-	5	-	1	-	-	-	7	0.2	Very low
	4	153	5	24	-	-	-	-	-	-	182	5.2	Low
	5	1946	5	27	5	-	4	55	-	-	2042	56.11	Moderate
	6	8	-	2	4	-	-	2	-	-	16	0.46	Very Low
	7	530	4	9	-	-	-	2	-	6	551	15.74	Low
	8	109	-	-	-	-	-	-	-	-	109	3.11	Low
July	1	296	22	-	1	-	-	-	-	-	319	8.51	Low
	2	149	12	44	-	-	-	-	-	-	205	5.47	Low
	3	90	-	10	-	-	-	-	-	-	100	2.67	Low
	4	1175	19	148	-	-	-	-	-	-	1343	35.79	Moderate
	5	170	6	2	2	-	-	-	-	-	180	4.8	Low
	6	99	2	2	10	-	1	5	-	16	135	3.6	Low
	7	329	19	37	-	-	-	-	-	-	385	10.27	Low
	8	2223	2	6	7	1	4	160	2	-	2405	64.13	Moderate

3.5 Bat activity surveys – assessment of value

3.5.1 Following the scoring values given in Wray et al (2010) [REF 20] for valuing bat foraging areas and commuting routes scores of 19 and 20 respectively are calculated, see **Table 9**, which correspond to foraging areas and commuting routes of district, local or parish value. These values are interim to date and subject to change based on analysis of activity surveys undertaken in August, September and October, to be detailed in an updated report, but are not anticipated to change.

Table 9: Scoring values for assessing bat foraging and commuting values (from Wray et al 2010)

a. **Commuting value by species**

Species	National rarity	Number of bats	Site/nearby roost potential	Type & complexity of linear features	Total score	Value
Common pipistrelle	2	5	4	3	14	District/local
Soprano pipistrelle	2	5	4	3	14	District/local
Noctule/*Nyctalus* sp.	5	5	4	3	17	District/local
Long-eared	5	5	4	3	17	District/local
Myotis sp	5	5	4	3	17	District/local

*Serotine bats are not included in this assessment as just two passes were recorded at one location on one night.

b. **Foraging value by species**

Species	National rarity	Number of bats	Site/Nearby roost potential	Foraging habitat characteristics	Total score	Value
Common pipistrelle	2	10	4	3	19	District/local
Soprano pipistrelle	2	5	4	3	14	District/local
Noctule/*Nyctalus* sp.	5	5	4	3	17	District/local
Long-eared	5	5	4	3	17	District/local
Myotis sp	5	5	4	3	17	District/local

*Serotine bats are not included in this assessment as just two passes were recorded at one location on one night.

4 Discussion

4.1.1 Detailed analysis and discussion of results will be undertaken following the completion of the 2018 survey season. A brief summary of results to date is given below.

4.2 Buildings and Structures

4.2.1 Access was available to the single building (B1 Heath End House) and all other structures that are likely to be impacted by the scheme. Building B1 Heath End House was recorded as supporting a small roost of brown long-eared bats (one individual) and a small roost of common pipistrelle bats (four individuals). These roosts were assessed as small day roosts of low conservation significance. Following the assessment value used by Wray et al (2010) [REF 20] this bat roost is assessed as District or Local level.

4.2.2 No evidence of bats or potential roosts has been recorded from any of the other accessible structures. Single visit roost surveys were undertaken at two structures assessed as providing Low potential for bats; S1, East Way bridge under the A45, and S2, culvert for Hollywell Brook under M42. No bats were recorded roosting at either feature and bats are considered absent from these structures.

4.3 Trees

4.3.1 Initial GLTA of trees undertaken in 2017 and subsequently refined and added to in 2018 recorded thirty-five trees rated as high potential, one hundred and twenty-two as moderate and ninety-five as low.

4.3.2 Following tree climbing assessments of all high and moderate potential trees within the proposed scheme boundary the list of trees with bat potential was refined to 21 High, 39 Moderate and 124 Low. No confirmed roosts were identified

4.3.3 Scoping out of all trees beyond the proposed scheme boundary roost (dusk and dawn) surveys were undertaken on 53 trees, although four of these were scoped out during the surveys as they were removed from the proposed scheme boundary. Roost surveys were undertaken on 16 high potential trees, 24 moderate, five low and two previously confirmed tree roosts within 50m of the proposed works boundary

4.3.4 Nocturnal roost surveys of trees have confirmed bat roosts at six trees:

a. one common pipistrelle bat was recorded roosting at tree T17;
b. one common pipistrelle bat at tree T21;
c. two soprano pipistrelle bats at tree T80;
d. two common pipistrelle bats at tree T83;
e. four soprano pipistrelle bats at tree T85.2; and
f. one soprano pipistrelle bat at tree T242.

4.3.5 These roosts were assessed as small day roosts of low conservation significance.

4.4 Bat activity surveys

4.4.1 The bat activity surveys completed between July and October 2017 and between May and July 2018 recorded bat foraging and commuting activity on all transects and static monitoring locations across the Order Limits. The following species or species groups were recorded during the survey work undertaken: Common pipistrelle; Soprano pipistrelle; *Pipistrellus* species (common or soprano pipistrelle, no Nathusius' pipistrelle were recorded); Noctule; *Nyctalus* species (either Leisler's bat or Noctule); *Myotis* species; serotine and brown long-eared bat.

4.4.2 The levels of activity are considered to be low and typical of the habitats present and are not considered to be high. The highest levels of bat activity recorded were along hedgerows in fields to the west of Catherine-de-Barnes Lane and in the vicinity of Aspbury's Coppice. Activity was also recorded along hedgerows, tree lines and plantation woodland immediately east of the M42, and along hedgerows between Catherine-de-Barnes Lane and the M42. The lowest levels of activity were recorded in the north of the study area east of Catherine-de-Barnes.

4.4.3 Interim results suggest that while there will be some severance impacts and disturbance to commuting and foraging routes, this will be limited to Local significance and no key flight paths and or foraging routes of significant maternity roosts have been recorded.

4.4.4 The assemblage of bat species present is not considered to meet any of the Warwickshire Local Wildlife Site species selection criteria [REF 21]. Overall the assemblage of bats is considered to be consistent with the local records and unexceptional. Following the scoring system devised by Wray et al (2010) [REF 20] the foraging areas and commuting routes within the proposed scheme boundary for all bat species have provisionally been assessed as District or Local value. On this basis the foraging and commuting habitats present are considered to be of no more than Local importance.

4.5 Impacts

4.5.1 The proposals will result in the loss of roosts associated with building B1 and trees T17, T21 and T242. None of the remaining roosts will be directly affected by the proposals.

4.5.2 It is considered that a protected species derogation licence will be required for the loss of roosts in B1, T17, T21 and T242.

4.5.3 Demolition of building B1 and felling of trees T17, T21 and T242 should follow the methods and procedures specified in the licence documents. This will specify pre-work checks for bats prior to demolition/felling, followed by soft stripping of suitable roosting features or soft felling of trees under the supervision of an appropriately licenced bat worker.

4.5.4 Compensation in the form of alternative roosting locations will provided and detailed in the licence documents. This compensation will take the form of at least, and preferably more than, like for like replacement. Such compensation is considered to be appropriate and suitable to maintain the local conservation status of bats.

4.5.5 Highways England, or subsequent landowner(s) if applicable, will be responsible for the maintenance and upkeep of these bat boxes for a minimum period of five years.

4.5.6 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.

4.5.7 The Method Statement for the felling of any trees with rated bat potential (High, Moderate and Low), but no confirmed roost, within the Scheme will include the following key points:

a. trees will be subject to an updated survey to comprise (i) ground based assessment (GLTA) to note any potential change in roosting potential status (i.e. upgrade or downgrade); and (ii) climbed inspection for trees rated as providing Moderate or High potential for bats (including any additions from possible upgrades resulting from the GLTA;

b. where any bat roosts are confirmed from these pre-works surveys protected species derogation licences will be sought before trees are felled (existing site licence sought for T17 and T21 to be amended);

c. trees will be felled outside of the main summer activity season May-August.

d. trees with rated or unknown hibernation potential (see Annex E) will be felled outside of the core winter period November – February inclusive;

e. felling of trees will be undertaken under the supervision of a bat licence holder and competent ecological clerk of works. Where possible trees will be either section felled or lowered to the ground by other means (such as by a mechanical digger);

f. provision of additional bat boxes (in addition to agreed licensed compensation) will be available in the unlikely event that a bat is encountered during felling;

g. provision will be made for the potential transfer of any injured bat to a recognised bat carer;

h. upon felling of the tree a check will be undertaken by the bat licence holder and competent ecological clerk of work and the tree left in-situ for one day prior to removal to allow any potential bats time to leave; and

i. contractors should also consider the presence of nesting birds and the legal protection given to these.

5 References

Reference number	Source
REF 1	The Conservation of Habitats and Species Regulations 2017. http://www.legislation.gov.uk/uksi/2017/1012/contents/made
REF 2	The Wildlife and Countryside Act 1981. https://www.legislation.gov.uk/ukpga/1981/69
REF 3	Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework. https://www.gov.uk/government/publications/national-planning-policy-framework--2
REF 4	Department for Transport (2015) Road Investment Strategy for the 2015/16 to 2019/20 Road Period. https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period
REF 5	Highways England (2015) Highways England Biodiversity Action Plan.
REF 6	Warwickshire Wildlife Trust (2015 to 2017) Warwickshire Coventry and Solihull Local Biodiversity Action Plan
REF 7	Highways Agency (2008) Interim Advice Note 116/08: Nature conservation advice in relation to bats. http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian116.pdf
REF 8	WSP (2017) M42 Junction 6 Improvement Preliminary Bat Assessment May 2017 WSP (UK) LTD.
REF 9	WSP (2017) M42 Junction 6 Improvement Preliminary Bat Activity Survey Report November 2017 WSP (UK) LTD
REF 10	Wardell Armstrong (2018) Motorway Service Area (MSA) and New Junction between Junctions 5 & 6 of the M42, Solihull. Bat Activity Survey – 2018 Update. July 2018.
REF 11	Wardell Armstrong (2018) Motorway Service Area (MSA) and New Junction between Junctions 5 & 6 of the M42, Solihull. Bat Roost Survey Report – 2018 Update. July 2018.
REF 12	Collins (2016), English Nature (2004) and Joint Nature Conservation Committee (2004).
REF 13	Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines. English Nature, Peterborough. http://www.warksbats.co.uk/pdf/Batmitigationguide.pdf
REF 14	Mitchell-Jones, A.J. and McLeish, A.P. (eds) (2004) Bat Workers' Manual (3rd edn). JNCC, Peterborough. http://jncc.defra.gov.uk/page-2861
REF 15	Forestry Commission England (2005) Woodland Management for Bats. Forestry Commission Publications, Wetherby. https://www.forestry.gov.uk/forestry/infd-6k3cxy
REF 16	Arboriculture and Forestry Advisory Group (AFAG) Tree Climbing Operations Leaflet (AFAG40115).
REF 17	Andrews H et al. (2016) Bat Tree Habitat Key (3rd Edition). AEcol, Bridgwater
REF 18	Bat Tree Habitat Key (2018). http://battreehabitatkey.co.uk/
REF 19	Russ, J.M. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.
REF 20	Wray, S. Wells, D, Long, E Mitchell-Jones, T (2010). Valuing Bats in Ecological Impact Assessment. CIEEM In Practice Issue 70 (December 2010)
REF 21	Habitat Biodiversity Audit (HBA) for Warwickshire: The Green Book revised ver. 12/13 Guidance for the Selection of Local Wildlife Sites in Warwickshire, Coventry and Solihull https://apps.warwickshire.gov.uk/api/documents/WCCC-863-559
REF 22	Barlow, K.E. and Briggs, P.A. (2012) Grey long-eared bat surveillance 2012. JNCC Report No 478

Annex A: Buildings and structures assessment

Reference building /structure	Description	External survey	Internal survey	Bat roosting potential
B1	Heath End House. Detached bungalow with pitched tiled roof and wooden boarding on gable end walls	06/12/2017. Noted numerous gaps which could provide potential access points for bats: under roof tiles on the southern elevation; around a dormer window on the northern roof elevation; around lead flashing at the two (east and west) gable-end and at the window on the northern roof elevation; chimneys; gaps to western gable end soffit box; missing mortar at the ridge at the eastern gable end and under wooden boarding at the northeast corner of the building.	21/03/2018 Lead flashing had been removed from most of the roof (stolen) in recent days and was being repaired whilst the internal survey was undertaken. Internal roof voids inspected. Main roof void F1 bitumen felt present, height ~2m from floor to apex. No sign of actual bats present. 2x brown long-eared bat droppings on the floor of the roof void directly in the centre below the ridge beam at the eastern gable end. Small void at north-west corner of building adjacent to northern dormer window. One bat dropping noted on floor (likely *Pipistrellus* species). No signs of evidence in other small voids in areas of restricted height; many cobwebs present in these areas and areas where older F1 felt replaced with modern BRMs.	Confirmed. Direct Impact. Further (roost) surveys undertaken small day roosts of brown ling-eared and common pipistrelle bats confirmed. Local significance only.

Reference building /structure	Description	External survey	Internal survey	Bat roosting potential
B2	Birmingham Dogs Home. Recently constructed dog kennels and associated buildings.	no access	no access	Low Potential (presumed) (no access)
B3	Detached House on Catherine-de-Barnes Lane.	no access	no access	Unknown (no access)
B4	Páirc na hÉireann (Gaelic Athletic Association). Various clubhouse and associated buildings.	no access	no access	Unknown (no access)
B5	A series of three small wooden sheds off Catherine-de-Barnes Lane.	25.09.18 (from roadside) Three small separate wooden structures; 1. To the north a small wooden-board shed with gently pitched corrugated metal roof; 2. In the middle and back from the road a part collapsed wooden shed with missing doors and/or windows, with a wooden roof; and 3. To the south a small wooden board shed with flat felt roof.	no access	Negligible
B6	Sewage Pumping Station off Clock Lane.	no access	no access	Negligible (presumed) (no access)
B7	Detached House and outbuildings.	no access	no access	Unknown (no access)
B8	National Motorcycle Museum/ National Conference Centre.	no access	no access	Low Potential (presumed) (no access)

Reference building /structure	Description	External survey	Internal survey	Bat roosting potential
B9	DHL, Middle Bickenhill Lane.	no access	no access	Low Potential (presumed) (no access)
B10	Two houses and outbuildings at Middle Bickenhill Lane.	no access	no access	Unknown (no access)
B11	Two detached houses and associated outbuildings off Solihull Road B4102, east of M42.	no access	no access	Unknown (no access)
S1	Bridge under A45 at East Way	Concrete deck bridge over concrete abutment walls. Possible expansion gaps which could provide roosting opportunities for bats where decking meets outer wall, especially on the northern side of the bridge. Possible gaps at expansion joints in-between decking and internal abutment walls. Lighting columns present under the bridge. Immediately adjacent habitat poor to medium value and presence of lighting columns under the bridge decrease any potential suitability for bats.		Low Potential. Further (roost) survey undertaken – bats confirmed absent. No impacts anticipated (TBC).
S2	Culvert for Hollywell Brook under M42	Ridged concrete culvert (laid concrete not sections). No signs of potential PRFs, west exit overshadowed by NEC car park lighting. Assessed as Low as a precaution..		Low Potential Further (roost) survey undertaken – bats confirmed absent. Potential direct impacts (extension of culvert)

Reference building /structure	Description	External survey	Internal survey	Bat roosting potential
S3	Bridge East Way over M42.	Large concrete bridge spanning M42 with two concrete pillars and concrete abutments on earth embankments. Potential gaps on both west and east abutment walls; the western abutment giving covered access into suitable bat foraging habitat, the eastern abutment being more exposed. No access for surveys or inspection.		Low No impacts anticipated and no access available, therefore scoped out of any further surveys.
S4	A45 over Railway	No access to Network Rail land. Twin bridge. Southern bridge: concrete decking over concrete abutments. Potential roosting opportunities unlikely. Northern Bridge: Unknown decking, brick pillars either side of railway with possible space/gaps where decking meets embankments. Roosting opportunities unknown.		Unknown. No access. No known impacts and no access, therefore scoped out of further surveys.
S5	M42 over Railway	No access to Network Rail land.		Unknown. No access. No known impacts. Scoped out of further surveys.
S6	Field access bridge over M42	Concrete abutments with concrete decking, side abutments walls checked with no gaps or suitable PRF features. No access to M42 carriageway (i.e. under the bridge).		Negligible. Scoped out of further surveys.
S7	Shadowbrook Lane over M42	Concrete abutments with concrete decking, side abutments walls checked with no gaps or suitable PRF features. No access to M42 carriageway (i.e. under the bridge).		Negligible. Scoped out of further surveys.
S8	Solihull Road over M42	Concrete abutments with concrete decking, side abutments walls checked with no gaps or suitable PRF features. No access to M42 carriageway (i.e. under the bridge).		Negligible. Scoped out of further surveys (Direct Impacts anticipated).
S9	Friday Lane over M42	Concrete abutments with concrete decking, side abutments walls checked with no gaps or suitable PRF features. No access to M42 carriageway (i.e. under the bridge).		Negligible. Scoped out of further surveys.

Reference building /structure	Description	External survey	Internal survey	Bat roosting potential
S10	Existing M42 Junction 6 bridges	No access. Concrete decking over M42 with concrete abutments. No obvious roosting opportunities.		Negligible. Scoped out of further surveys.
S11	Bridge: M42 over River Blythe.	No access. Concrete decking with concrete abutments. No access for surveys or inspection.		No known impacts. Scoped out of further surveys.

Annex B: Buildings and structures roost survey results

Building /structure number	PRF suitability	Date of survey	Results	Roost present (Y/N)
B1	Confirmed	30/05/2018 (Dusk)	One brown long-eared bat suspected emergence at eastern gable end, gap present at apex. One Noctule bat pass and several common pipistrelle bats also recorded foraging and commuting nearby during the survey.	Y
		05/07/2018 (Dawn)	No bats recorded emerging. Noctule and common pipistrelle bats recorded during the survey	
		04/09/2018 (Dawn)	Four common pipistrelle bats re-entered under verge mortar at western gable end, in the middle of the southern section. Noctule and common pipistrelle bats recorded during the survey	
S1	Low	20/08/2018 (Dusk)	No bats recorded emerging. Noctule and common pipistrelle bats recorded during the survey.	N
S2	Low	31/08/2018 (Dusk)	No bats recorded emerging.	N

Annex C: Ground level tree assessments

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
1	419143	280692	High	WSP April 2017	*Quercus robur*	Stem (multiple locations), major branch (multiple locations)	Multiple	Multiple	Knot holes, missing bark, cracks, broken branches
2	419260	280932	Moderate	WSP April 2017	*Quercus robur*	Stem, major branch	Multiple	Multiple	PRF on stem where branch broken off, missing bark, knot holes in dead branches
3	419320	280887	Low	WSP April 2017	*Quercus robur*	2 x Major branches	Multiple	Multiple	Knot hole in dead branch, knot hole in living branch
4	419369	280882	Low	WSP April 2017	*Quercus robur*	Limb	NW	20	Knot hole
5	419334	280827	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Missing bark, small knot holes, cracks
6	418855	280417	Moderate	WSP April 2017	*Crataegus monogyna*	Stem	Multiple	20	Missing branch
7	418939	280480	High	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot holes, missing limb
8	418961	280467	Moderate	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot hole, missing limbs
9	418901	280209	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Missing bark

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
10	418901	280209	Moderate	WSP April 2017	*Quercus robur*	Stem	N	10	Split in stem, missing bark
11	418882	280863	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Knot holes, missing bark, lifted bark, split stem
12	418787	280763	Low	WSP April 2017	*Quercus robur*	Major branches	N	8	Rotten branch
13	419762	280889	Moderate	WSP April 2017	*Quercus robur*	Stem	NE	6	Knot hole
14	418775	280892	Moderate	WSP April 2017	*Quercus robur*	Stem	NW	5	Split in stem
15	418779	280942	Low	WSP April 2017	*Quercus robur*	Limb	NW	8	Split in bark
16	418790	280966	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Missing limbs
17	418811	281023	Low	WSP April 2017	*Quercus robur*	Minor branch	NE	6	Missing branch
18	418814	281067	Low	WSP April 2017	*Quercus robur*	Multiple locations	NW	6	Missing branches
19	418817	281080	Low	WSP April 2017	*Quercus robur*	Stem	SW	7	Missing branches
20	418779	281153	Low	WSP April 2017	*Quercus robur*	Stem	S	4	Knot hole
21	418745	281092	Moderate	WSP April 2017	*Quercus robur*	Stem	N	6	Knot hole

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
22	418743	281097	Moderate	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot hole, dead branch with holes
23	418745	281074	Low	WSP April 2017	*Quercus robur*	Minor branch	W	7	Rotten limb
24.1	418749	281042	High	24/07/2017	*Populus alba*	Multiple			Loose bark, cavities
24.3	418749	281042	Moderate	24/07/2017	*Fraxinus excelsior*	Limb			Snapped limb
25	418749	282044	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Multiple
26	418690	280947	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Three knot holes, missing branch
27	418672	280932	Low	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Small holes and crack
28	418689	280900	Low	WSP April 2017	*Quercus robur*	Branch	E	6	Hole and dead branch
29	419015	282567	High	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Cavities, splits, dead wood
30	419069	282540	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Splits, cavities, missing limbs
31	419001	282537	Moderate	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot hole, split
32	419028	282513	Low	WSP April 2017	*Quercus robur*	Branch	N	8	Knot hole
33	419914	282502	High	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Knot holes

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
34	419099	282546	High	WSP April 2017	*Aesculus hippocastanum*	Stem	NE	8	Cavity
35	419106	282567	High	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Woodpecker holes
36	419117	282559	High	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot holes, large cavities
37	419252	282634	Low	WSP April 2017	*Quercus robur*	Branch	W	10	Split in branch
38	419192	282579	Moderate	WSP April 2017	*Fraxinus excelsior*	Branch	NW	20	Woodpecker holes
39	419146	282575	Moderate	WSP April 2017	*Quercus robur*	Stem	Multiple	Multiple	Splits
40	419131	282556	High	WSP April 2017	*Quercus robur*	Stem	N	6	Cavity
41	419122	282561	High	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Knot holes and cavities
42	418156	282287	Low	WSP April 2017	*Quercus robur*	Stem	SE	1	Split
43	418156	282300	High	WSP April 2017	*Quercus robur*	Stem	All	Multiple	Five tear outs, dead wood
44	418172	282332	Low	WSP April 2017	*Quercus robur*	Major branch	N	9	Woodpecker hole
45	419226	281200	Low	WSP April 2017	*Fraxinus excelsior*	Multiple locations	S & W	6.5	Knot hole

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
46	419207	281198	Moderate	WSP April 2017	*Quercus robur*	Multiple locations, upper limbs	Multiple	8	Missing bark, missing limbs, splits in limbs
47	419190	281203	High	WSP April 2017	*Fraxinus excelsior*	Stem	N & S	7	Stem split and missing limb
48	419107	281216	Moderate	WSP April 2017	*Quercus robur*	Limbs - two main features	N	7	Splits in limb
49	419053	281249	Moderate	WSP April 2017	*Fraxinus excelsior*	Stem	S	2.5	Cavity in stem
50	418915	281296	Moderate	WSP April 2017	*Quercus robur*	Multiple - cavity on stem and limbs	Multiple	4 to 10	Knot holes, lifted bark,
51	418844	281411	Moderate	WSP April 2017	*Fraxinus excelsior, Quercus robur*	Stem, limbs	SW	4 and up	Knot holes, missing limbs, lifted bark
52	418817	281441	Low	WSP April 2017	*Quercus robur*	Limbs	W & E	4	Broken limbs
53	418801	281426	Moderate	WSP April 2017	*Quercus robur*	Multiple limbs	Multiple	6	Limbs, split limb, knot hole
54	418756	281396	High	WSP April 2017	*Quercus robur*	Stem and limbs	S & SW	2 and up	Knot holes, split limbs
55	418736	281376	Moderate	WSP April 2017	*Quercus robur*	Stem and limbs	Multiple	8 and up	Knot hole, split branches, lifting bark, missing limb
56.1	418733	281367	Low	WSP April 2017	*Quercus robur*	Limb	W	8	Dead branch off limb

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
56.2	418733	281367	Low	WSP April 2017	*Quercus robur*	-	-	-	-
57	418738	281344	Low	WSP April 2017	*Quercus robur*	Stem	Multiple	5	Knot holes, lifted bark
58	418709	281254	Moderate	WSP April 2017	*Quercus robur*	Limb	N	8	Split in limb
59	418805	281218	Low	WSP April 2017	*Quercus robur*	Stem	S	3	Knot hole
60	418202	280837	Low	WSP April 2017	*Fraxinus excelsior*	Stem	S	4	Knot hole
61	419036	281167	High	WSP April 2017	*Quercus robur*	Upper limbs	Multiple	8	Knot holes, cavities
62	419024	281150	Low	WSP April 2017	*Quercus robur*	Stem	NW	7	Tear out
63	409013	281150	Moderate	WSP April 2017	*Quercus robur*	Stem	NW	6	Split bark, knot hole
64	418947	281150	Moderate	WSP April 2017	*Quercus robur*	Stem	W & E	10	Woodpecker hole on western tree - eastern tree dead branches with overlap
65	418846	281131	Low	WSP April 2017	*Quercus robur*	Limbs	N & E	10	Branches grown into each other
66	418744	281162	Low	WSP April 2017	*Quercus robur*	Stem	SE	7	Knot hoke
67	418728	281270	Moderate	25/04/2018	*Quercus robur*	Stem	Multiple	7	Dead wood and gaps

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
68	418699	281273	Moderate	25/04/2018	*Fraxinus excelsior*	Stem	S	4	Cavity present. Precautionary upgraded as tree will be lost and adjoining trees are to be surveyed
69	418685	281172	Moderate	25/04/2018	*Quercus robur*	Multiple locations	Multiple	5	Dead wood
70	418519	281118	Moderate	WSP April 2017	*Quercus robur*	Stem	N	Multiple	Four woodpecker holes
71	418571	281092	Moderate	WSP April 2017	*Fraxinus excelsior*	Stem	Multiple	7	Knot holes and cavities
72	418565	281082	Moderate	WSP April 2017	*Quercus robur*	Stem	Multiple	5	Knot holes and cavities
73	418655	281059	Moderate	WSP April 2017	*Fraxinus excelsior*	Stem	N	5	Missing limb
74	418661	281061	Moderate	WSP April 2017	*Populus alba*	Stem	Multiple	6	Missing limbs and branches
75	418683	281048	Low	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	7	Dead wood and missing branches
76	419175	280944	Low	WSP April 2017	*Quercus robur*	Minor limb	SW	12	Deadwood
77	419149	280940	Low	WSP April 2017	*Quercus robur*	Branches	N	6	Deadwood
78.1	419124	280961	Low	WSP April 2017	*Quercus robur*	Minor branches	Multiple	7	Deadwood

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
78.2	419124	280961	Low	WSP April 2017	*Fraxinus excelsior*	Minor branches	Multiple	7	Deadwood
79	419079	281133	Moderate	WSP April 2017	*Fraxinus excelsior*	Multiple locations	Multiple	Multiple	Cavities knot holes
80	419094	280978	Moderate	WSP April 2017	*Fraxinus excelsior*	Major branches	Multiple	Multiple	Knot holes and broken branches
81.1	418894	281053	Low	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	5	Knot holes deadwood missing branches
81.2	418894	281053	Low	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	5	Knot holes deadwood missing branches
81.3	418894	281053	Low	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	5	Knot holes deadwood missing branches
82	418290	482180	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	8m	Woodpecker hole, dead branch and lifted bark
83	418330	482040	Moderate	WSP April 2017	*Quercus robur*	Multiple locations	Multiple	Multiple	Woodpecker holes, splits in bark and cavity
84.1	418404	281589	Low	30/08/2017	*Quercus robur*	Multiple locations	E, SE, SW	7m, 3m, 2m	Tear out - no recess. Knot hole behind limb (limb still present). Crevice above and below. Knot hole on limb - small cavity
84.2	418404	281589	Low	30/08/2017	*Quercus robur*	-	-	-	-

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
85.1	418980	281063	Moderate	15/08/2017	*Quercus robur*	limb			Hole /cavity
85.2	418980	281063	High	15/08/2017	*Fraxinus excelsior*	multiple			Woodpecker holes and other cavities
86.1	418519	281474	Moderate	07/09/2017	*Fraxinus excelsior*	multiple			Sveral cavities
86.2	418605	281483	Moderate	07/09/2017	*Quercus robur*	multiple			Split and possible cavities
86.3	418587	281493	Moderate	14/06/2018	*Quercus robur*	Outer lower limb	NW		Woodpecker hole plus other possible features
86.4	418528	281494	Moderate	14/06/2018	*Quercus robur*	Branch, stem	SE,S		Lifted bark; knot hole
86.5	418526	218518	Moderate	14/06/2018	*Quercus robur*	multiple			Branch wounds, possible cavities
87	418450	281310	Low	WSP April 2017	*Quercus robur*	Trunk and limb	S & SW	3, 7	Knothole and deadwood
88	418450	281340	High	WSP April 2017	*Quercus robur*	Trunk	E	Base upwards	Split trunk
89	418270	281600	Moderate	WSP April 2017	*Fraxinus excelsior*	Limb	S	10	Woodpecker hole
90	418240	281590	Moderate	WSP April 2017	*Fraxinus excelsior*	Limb	S	10	Woodpecker hole
91	418160	281620	Low	WSP April 2017	*Quercus robur*	All	All	All	Ivy, possibly obscuring features

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
92	418260	281410	Low	WSP April 2017	*Quercus robur, Alnus glutinosa*	Multiple locations	All	Multiple	Multiple
101	-	-	Low	25/04/2018	*Fraxinus excelsior*	multiple			Thick ivy, dead wood in outer branch
102	-	-	Low	25/04/2018	*Quercus robur*	limbs			Deadwood, stropped bark on minor branches
104	418485	281224	Moderate	25/04/2018	*Quercus robur*	centre of trunk + outer branched		4-7m	Snapped branches
105	418552	281263	Moderate	25/04/2018	*Quercus robur*	throughout			Dead wood and snapped branches throughout, precautionary rating for climbing
106	-	-	Moderate	25/04/2018	*Quercus robur*	throughout			Dead wood and snapped branches throughout, precautionary
107	418548	281288	Moderate	25/04/2018	*Quercus robur*	throughout			Dead wood and snapped branches throughout, precautionary rating for climbing
108	-	-	Moderate	25/04/2018	*Quercus robur*	throughout			Dead wood and snapped branches throughout, precautionary rating for climbing

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
109	-	-	Low	25/04/2018	*Quercus robur*	Limb /branch		10	Snapped branches but no obvious gaps
110	-	-	Moderate	25/04/2018	*Quercus robur*	Stem		2m, 5m	Two cavities
111	-	-	High	25/04/2018	*Quercus robur*	Stem			Wood pecker holes, one large cavity
112	418547	281604	Moderate	25/04/2018	*Quercus robur*	multiple	multiple	multiple (high)	Dead braches and callus wounds, possible hazard beam or tear; other features possible. Precautionary
113	418549	281601	Low	25/04/2018	*Quercus robur*	throughout			Dead wood throughout, precautionary rating for climbing
114	-	-	Low	25/04/2018	*Populus alba*	multiple	n/a	n/a	Thick ivy and some dead wood
115	-	-	Low	25/04/2018	*Populus alba*	multiple	n/a	n/a	Thick ivy and some dead wood
116	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Dead wood and branch snaps precautionary climb
117	-	-	Moderate	30/04/2018	*Quercus robur*	Limb	SW	6m	Deadwood in canopy, possible hazard beam at 6m at 40cm long split
118	-	-	Moderate	30/04/2018	*Quercus robur*	multiple		5m	Thick ivy, dead minor limb, possible hole at

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									5m, climb to check
119	-	-	High	30/04/2018	*Quercus robur*	Limbs	N	6m	Woodpecker holes outer branch
120	-	-	Moderate	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Rot holes could have cavities, outer limbs snapped, deadwood, bird nest
121	-	-	High	30/04/2018	*Quercus robur*	multiple	-	-	Four rot holes, possible bird nest, dead limb with possible small cavities, further rot hole on opposite side
122	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Minor dead wood & snapped branch.4m split, minor ivy. Rot holes with cavity at 1.5m facing field
124	-	-	Low	30/04/2018	*Fraxinus excelsior*	throughout	-	-	Ivy
125	-	-	Low	30/04/2018	*Salix fragilis*	throughout	-	-	ivy
126	-	-	Low	30/04/2018	*Fraxinus excelsior*	throughout	-	-	Ivy
127	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Large mature tree with restricted access Climb to check Precautionary. Fox

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									path, prints and scat
128	-	-	High	30/04/2018	*Quercus robur*	limb and stem	SW, NE	8m, 7m	Snapped main branch at 8m with large split to heartwood 3m long. Additional split at 7m on other side with possible gaps along occluded wound. Woodpecker hole.
129	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Deadwood and rot holes, climb to check
130	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Canopy restricts view, climb to check
131	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Dead wood, missing bark, precautionary climb
132	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to check, precautionary
133	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to check, precautionary
134	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to check, precautionary
135	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									check, precautionary
136	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to check, precautionary
137	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Mature oak possible features climb to check, precautionary. Possible Buzzard nest or perch site
138	-	-	High	30/04/2018	*Quercus robur*	Limb	N	5m	3m long split in large branch, downward-facing opening with stripped/loose bark
144	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Deadwood and minor ivy, large mature tree precautionary - climb to check
145	-	-	Low	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Thick ivy
146	-	-	Low	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Ivy, lots of decay /deadwood
147	-	-	High	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Branch split off, missing bark, 5m(SE) woodpecker holes
148	-	-	Low	30/04/2018	*Quercus robur*	trunk	-	-	Leading limb snapped at 4m, loose bark, occluded wound

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
149	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Deadwood, loose bark, woodpecker feeding holes. Precautionary climb.
150	-	-	Moderate	30/04/2018	*Quercus robur*	trunk	-	-	Loose bark 4m (W). Possible gap 5m (S)
151	-	-	Moderate	30/04/2018	*Fraxinus excelsior*	trunk	NW	5m	Woodpecker hole
152	-	-	Low	30/04/2018	*Alnus glutinosa*	trunk	-	-	Rot holes
153	-	-	Moderate	30/04/2018	*Alnus glutinosa*	trunk	-	-	Small woodpecker hole
154	-	-	Moderate	30/04/2018	*Alnus glutinosa*	trunk	-	-	Small woodpecker hole
155	-	-	Low	30/04/2018	*Alnus glutinosa*	trunk	-	5m	Rot holes
156	-	-	Moderate	30/04/2018	*Alnus glutinosa*	trunk	E	2m	Woodpecker hole, rot hole
157	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Split in dead branched 4, 5, 7m, loose bark at dead limb on outer beam at 7m
158	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Main trunk fallen into field, loose bark. Gaps. Deadwood. Gaps under splits
159	-	-	Low	30/04/2018	*Quercus robur*	trunk	-	-	Thick ivy

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
160	-	-	High	30/04/2018	*Quercus robur*	multiple	-	-	Loose/ stripped bark at 5m. Possible WP holes 8m (NW), very large rot hole. Crown to base splits
161	-	-	Moderate	30/04/2018	*Quercus robur*	trunk	-	-	Deadwood, stripped bark on dead limbs. Possible splits (SE)
162	-	-	High	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Woodpecker holes. 3 Gaps at 7m (W), broken limbs at 4m
163	-	-	High	30/04/2018	*Fraxinus excelsior*	trunk	-	-	Woodpecker holes (E) at 4m & rot holes
164	-	-	Moderate	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Branch splits. Gaps under loose bark at crown (fallen branch), deadwood, snapped branches
165	-	-	Low	30/04/2018	*Crataegus monogyna*	multiple	-	-	Very thick ivy
166	-	-	Low	30/04/2018	*Crataegus monogyna*	multiple	-	-	Very thick ivy
167	-	-	Low	30/04/2018	*Alnus glutinosa*	trunk	-	-	Main trunk snapped 4m. Loose bark
168	-	-	High	30/04/2018	*Alnus glutinosa*	multiple	-	-	2-4m cavity /split, woodpecker holes 2m (E), leading limb snapped, likely to be

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									hollow
169	-	-	High	30/04/2018	*Alnus glutinosa*	multiple	-	-	Woodpecker holes 3m (N) splits loose bark2 snapped branches 9m. Snapped main branch
170	-	-	High	30/04/2018	*Alnus glutinosa*	trunk	-	3-5m	More than ten woodpecker holes between 3-5m
171	-	-	Moderate	30/04/2018	*Alnus glutinosa*	trunk	-	-	Split (exposed cavity), 3-4.5m not that deep
172	-	-	Moderate	30/04/2018	*Alnus glutinosa*	throughout	-	-	Split 2-3m long
173	-	-	Moderate	30/04/2018	*Alnus glutinosa*	throughout	-	-	Large mature tree with dead wood precautionary climb
174	-	-	Low	30/04/2018	*Alnus glutinosa*	throughout	-	-	Standing deadwood
175	-	-	Low	30/04/2018	*Quercus robur*	throughout	-	-	Lightning strike split main trunk, loose bark,
176	-	-	Moderate	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Thick ivy cover. Loose bark possible split, ivy
177	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Some deadwood, no obvious feature, precautionary climb
178	-	-	Low	30/04/2018	*Quercus robur*	-	-	-	No obvious features but poor access, precautionary Low

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
179	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Restricted access mature trees with noted branch splits and possible other features. Precautionary - climb to check
180	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Restricted access mature trees with noted branch splits and possible other features. Precautionary - climb to check
181	-	-	Moderate	30/04/2018	*Quercus robur*	throughout	-	-	Restricted access mature trees with noted branch splits and possible other features. Precautionary - climb to check
183	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Standing dead wood, loose bark,
184	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Rot holes. Loose bark. Possible cavities
185	-	-	Moderate	30/04/2018	*Fraxinus excelsior*	stem	-	-	Possible rot holes
186	-	-	Low	30/04/2018	*Quercus robur*	throughout	-	-	Ivy

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
187	-	-	Low	30/04/2018		throughout	-	-	Ivy
188	-	-	Low	30/04/2018	*Quercus robur*	throughout	-	-	Ivy and minor split
189	-	-	Low	30/04/2018	*Fraxinus excelsior*	throughout	-	-	Ivy
190	-	-	Low	30/04/2018	*Quercus robur*	throughout	-	-	Ivy
191	-	-	High	30/04/2018	*Alnus glutinosa*	stem		5m	Four woodpecker holes
192	-	-	Moderate	30/04/2018	*Alnus glutinosa*	stem	-	-	Two rot holes leading to possible cavities
193	-	-	Low	30/04/2018		trunk	-	-	Exposed standing deadwood, trunk snapped at 4m.
194	-	-	Low	30/04/2018	*Alnus glutinosa*	trunk		4m	Rot hole with possible cavity
195	-	-	Moderate	30/04/2018	*Alnus glutinosa*	trunk		4m	Two woodpecker holes, standing deadwood with top of tree snapped off,
196	-	-	Moderate	30/04/2018	*Alnus glutinosa*	-	-	-	Three bat boxes
197	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy, rot holes
198	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	branch split, occluded wound
199	-	-	High	30/04/2018	*Quercus robur*	multiple	-	-	Large hole at 4m with possible cavity, rot holes, two woodpecker

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									holes
200	-	-	Low	30/04/2018	*Quercus robur*	trunk	-	-	Minor rot holes
201	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Thick ivy
202	-	-	Moderate	30/04/2018	*Quercus robur*	trunk	-	4m	Rot hole with possible cavity
203	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Thick ivy, possible minor cavities
204	-	-	Moderate	30/04/2018	*Quercus robur*	multiple	-	-	Thick ivy, possible minor cavities, deadwood
205	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
206	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
207	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
208	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
209	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
210	-	-	Low	30/04/2018	*Quercus robur*	multiple	-	-	Ivy
211	-	-	Low	30/04/2018	*Quercus robur*	Trunk	-	-	Small rot hole, deadwood
212	-	-	High	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Three woodpecker holes high in crown, minor rot holes, loose bark, branch split
213	-	-	Low	30/04/2018	*Fraxinus excelsior*	multiple	-	-	Thick ivy, possible dead wood

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
214	-	-	Low	30/04/2018	*Fraxinus excelsior*	Limb	-	-	Major snapped limb but appears to be exposed
246	-	-	Low	30/04/2015	*Quercus robur*	multiple	-	-	Split at 3-5m on main leaning truck. No likely cavity and exposed
216	-	-	Low	12/06/2018	*Quercus robur*	limbs	S	4m	Minor dead branch, snag with small cracks/gap, callus roll in outer branch
217	420102	283521	Moderate	12/06/2018	*Quercus robur*	trunk	S	2m	rot hole, lifted bark, branch wounds, minor cavities
218	-	-	Low	12/06/2018	*Quercus robur*	throughout	-	-	Minor dead wood & potential for small cavities, rated L as precaution
219	-	-	Low	12/06/2018	*Fraxinus excelsior*	main trunk	-	-	Ivy
220	420216	283242	Moderate	12/06/2018	*Crataegus monogyna*	not accessible	-	-	Ivy, precautionary
221	420193	283246	Moderate	12/06/2018	*Quercus robur*	not accessible	trunk	-	Trunk cavities and ivy

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
222	420178	283245	Moderate	12/06/2018	*Fraxinus excelsior*	not accessible	-	-	Thick ivy & precautionary
223	-	-	Low	12/06/2018	*Alnus glutinosa*	main trunk	-	-	Thick ivy
224	-	-	Low	12/06/2018	*Quercus robur*	throughout	-	-	Minor dead wood, precautionary
225	420023	283695	Moderate	12/06/2018	*Fraxinus excelsior*	throughout	-	-	Thick ivy, exposed dead wood, small crevices, missing & lifted bark
229	420159	283019	Moderate	12/06/2018	*Quercus robur*	trunk	N	5m	Possible callus roll. Also dead wood, black fungal staining, bird nest
230	420183	282969	Moderate	12/06/2018	*Quercus robur*	throughout	-	-	Most bark exposed or missing, much dead wood, with small crevices & others possible
231	420192	282967	Moderate	12/06/2018	*Quercus robur*	trunk	SE	6m	Possible splits
232	420220	283001	Moderate	12/06/2018	*Quercus robur*	-	-	-	Minor dead wood, precautionary- difficult to see
233	420219	282983	Moderate	12/06/2018	*Quercus robur*	branch wound on outer branch	S		minor dead wood, precautionary- difficult

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
									to see, possible cavity at callus roll
234	420221	282962	Moderate	12/06/2018	*Quercus robur*	-	-	-	Minor dead wood, precautionary- difficult to see
235	420258	283060	High	12/06/2018	*Quercus robur*	throughout	N	8m	Dead wood, lifted bark, possible hazard beam or gaps around large callus role
236	420259	283005	Moderate	12/06/2018	*Quercus robur*	trunk	N	3m	Possible cavity at rot hole
237	420250	282951	High	12/06/2018	*Quercus robur*	leading branch	NW	5-7m	Long split with decay and wound/ cavity around an old callus wound, minor splits elsewhere
238	420261	282950	Moderate	12/06/2018	*Quercus robur*	outer branch	S, NW	-	Minor branch snap & wound, possible callus roll
239	418983	280595	High		*Quercus robur*	trunk		0.3-2m	Thin frost crack from 30cm to ~2m. Myotis bat observed in crack by WA surveys for motorway service station in 2018

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
240	418931	280629	Moderate		*Quercus robur*				Dead Oak with multiple features on the woodland / arable field edge (small amount of hazard tape on the tree, next to a hawthorn) NW of woodland edge.
241	418962	280530	Moderate		*Quercus robur*				knot holes, minor dead wood
242	418976	280632	High		*Populus alba*		SW		Broken limb with potential features, woodpecker holes, knotholes
243	418984	280633	Moderate		*Populus alba*		S/SW		Tear out, broken branches,
244	419054	280615	Moderate		*Populus alba*				Dead wood, possible cavities, precautionary rating
245	420334	283081	Moderate	20/07/2018	*Fraxinus excelsior*	trunk	multiple	-	Small cavities or rot holes
246	420272	282932	Moderate	20/07/2018	*Quercus robur*	Branch	-	-	Two large splits
247	420276	282925	Moderate	20/07/2018	*Fraxinus excelsior*	Trunk	multiple	-	Woodpecker holes
248	420350	282924	Moderate	20/07/2018	*Quercus robur*	Trunk	multiple	-	Loose bark, callus on branch wound, small splits, woodpecker holes
249	420375	282916	Moderate	20/07/2018	*Quercus robur*	Trunk	SE	5	Possible cavity

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
250	420382	282916	Moderate	20/07/2018	*Fraxinus excelsior*	branch	multiple	-	Branch wounds, possible cavities
251	420360	282936	Moderate	20/07/2018	*Fraxinus excelsior*	branch	multiple	-	Branch wounds, possible cavities, woodpecker holes
252	-	-	Low	30/04/2018	*Quercus robur*	Trunk	-	3-5	Split but no cavity and exposed
253	418960	280537	Low		*Acer campestre*	-	-	-	Dead wood, knot holes, loose bark, but suboptimal features providing very little shelter
254	418936	280636	Low		*Populus alba*	-	-	-	Peeling bark
255	418933	280635	Low		*Crataegus monogyna*	Trunk	-	-	Ivy
256	418951	280621	Low		*Quercus robur*	-			Large possibly veteran tree precautionary rating as no obvious features
257	418978	280627	Low		*Populus alba*	-	W		One small hole
258	418949	280609	Low		*Populus alba*	Trunk	All		Ivy
259	419044	280614	Low		*Populus alba*	Trunk	All		Ivy

Tree no.	Location		GLTA rating	GLTA date	Tree species	PRF location	PRF orientation	Approx. height	PRF form & general information
	X	Y							
260	419015	280619	Low		*Populus alba*	-			Small hole

Annex D: Tree climbing results

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
1	*Quercus robur*	1a	31/08/2017	Deadwood with desiccation fissure	S	13m	No	High	High
		1b		Deadwood with desiccation fissure	E	9m	No		
		1c		Deadwood with desiccation fissure and cavity	W	8m	No		
		1d		Deadwood with desiccation fissure and cavity	S	10m	No		
		1e		Knot hole	NE	7m	No		
		1f		Knot hole forming cavity	S	5m	No		
		1g		Knot hole forming cavity	S	4m	No		
		1h		Deadwood with cavity	SE	7m	No		
2	*Quercus robur*	2a	31/08/2017	Minor desiccation fissure on limb	W	7m	No	Moderate	Negligible
		2b		Knot hole forming - no PRF.	E	2m	No		
		2c		Some ivy 2-8m - checked as much as possible and no PRF	All	2-8m	No		
3	*Quercus robur*	3a	31/08/2017	Knot hole end of limb - small cavity	N	12m	No	Low	Low
		3b		Wound - topside of dead limb - small cavity only	N	10m	No		
		3c		Raised bark	S	9m	No		
		3d		Cavity on topside of limb - small cavity with potential water egress	E	6m	No		
		3e		Dead limb - multiple knot holes/cavities - small cavities only	S	5m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
4	*Quercus robur*		27/07/2018	Number of deadwood limbs offering no shelter	W	4m	No	Low	Negligible
5	*Quercus robur*	5a	31/08/2017	Knot hole forming - cavity behind	E	7m	No	Moderate	Moderate
		5b		Multiple areas of deadwood but no true PRF	n/a	n/a	No		
6	*Crataegus monogyna*			Branch cavity - Knot hole opening 3 x 1 cm on underside of lower limb, extending laterally 7 cm deep, woodlice in the apex.	NE	2.5m	No		
7	*Fraxinus excelsior*	7a	06/09/2017	2x Knot hole on limb - no recess	S	14m	No	Moderate	Moderate
		7b		Squirrel hole on stem	S	11m	No		
		7c		Split in stem - no recess/prf	N	8m	No		
		7d		Snapped limb - no recess/prf	NW	7m	No		
8	*Fraxinus excelsior*	8a	06/09/2017	Woodpecker hole on stem - entrance enlarged by squirrel	W	10m	No	High	Moderate
		8b		Knot hole on limb - small cavity	NW	10m	No		
		8c		Transverse snap on limb - small cavity	E	5m	No		
		8d		Knot hole forming - small cavity only	N	4m	No		
		8e		Large knot hole - exposed feature - no real potential	S	4m	No		
9	*Quercus robur*	9a	06/09/2017	Lightning strike with rams horns, raised bark and desiccation fissures	E	0-11m	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		9b		Various small sections of raised bark and desiccation fissures	W	5-11m	No		
10	*Quercus robur*	10a	06/09/2017	Knot hole on limb - small cavity	S	12m	No	Moderate	Low
		10b		Deadwood on limb - rams horns and desiccation fissures	NE	8-11m	No		
		10c		Transverse split on limb - no prf.	E	3m	No		
11	*Quercus robur*	11a	07.09.17	Knot hole on topside of limb - no recess/prf	S	5m	No	Moderate	Negligible
		11b		Knot hole - no recess/prf	W	4m	No		
13	*Quercus robur*	13a	07.09.17	Knot hole	N	6m	No	Moderate	Low
		13b		Crevice under deadwood on limb	N	6m	No		
14	*Quercus robur*	14a	01/09/2017	Dead limbs x2 - desiccation fissures	W	7m	No	Moderate	Low
16	*Quercus robur*	14b	01/09/2017	Lifted bark	S	3-6m	No	Moderate	Moderate
		14c		Lifted bark	E	1-3m	No		
		16a		Snapped limb/split in limb - desiccation fissures	SE	10-12.5m	No		
		16b		Transverse snap - no recess/PRF	S	9m	No		
		16c		Split in dead limb	N	8m	No		
		16d		Snapped limb with large cavity	W	6m	No		
		16e		Split in stem ear base - very deep feature	SW	0.5 - 1m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
21	*Quercus robur*	21a	23/08/2017	Cavity in rotten limb	W	5m	No	Moderate	Moderate
		21b		Knot hole - joins 21a	W	5m	No		
22	*Fraxinus excelsior*	22a	23/08/2017	2x limb with rot hole. Could not inspect with endoscope as on end of rotten limb - low potential only	N & W	6m	No	Moderate	Low
		22b		No recess in all knot holes present	n/a	n/a	No		
24.1	*Populus alba*	24.1a	24.07.2017	Poplar to west. Raised bark on stem	N	15m-16m	No	Unknown	High
		24.1b		Multiple cavity on stem in deadwood	N	15m	No		
		24.1c		Large wound on stem. Including multiple cavities. Also raised bark and rams horns.	N	9m-13m	No		
		24.1d		Large wound on stem with multiple cavities.	N	6-7m	No		
24.2	*Fraxinus excelsior*	24.2	24/07/2017	Ash to west. No recessed features	n/a	n/a	No	Unknown	Negligible

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
24.3	*Fraxinus excelsior*	24.3 a	24/07/2017	Ash to east. Large tear-out (missing limb). Cavity 0.5m on stem	S	5-6m	No	Unknown	Moderate
		24.3 b		Knot hole on stem - no recess/PRF	S	6m	No		
24.4	*Populus alba*	24.4 a	24/07/2017	Poplar to east. Woodpecker holes on deadwood on limb - no recess/PRF	N	18m-20m	No	Unknown	Negligible
		24.4 b		Snapped limbs - no recess	N	Multiple	No		
25	-	-	-	No tree present	-	-	-	-	-
26	*Quercus robur*	26a	01/09/2017	Knot hole forming - limb	S	7.5m	No	Moderate	Low
		26b		Knot hole on limb	S	7m	No		
		26c		Knot hole on stem	S	4.5m	No		
		26d		Knot hole forming	W	4	No		
46	*Quercus robur*	46a	10/08/2017	Raised bark and small cavity in deadwood on limb	N	6m	No	Moderate	Moderate
		46b		Raised bark on limb	W	5m	No		
		46c		Desiccation-fissures on limb and crevice on lifted bark on collar	E	4m	No		
47	*Fraxinus excelsior*	47a	10/08/2017	Tear out on stem	N	11m (top of tree)	No	High	High
		47b		Tear out on stem	S	7m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		47c		Tear out on stem (leads to 47b)	S	6m	No		
		47d		Tear out on stem - cavity leading to 47b	N	5m	No		
48	*Quercus robur*	48a	14/08/2017	Rams horns on east side of limb north of tree - also behind heartwood	E	7m	No	Moderate	Low
49	*Fraxinus excelsior*	49a	14/08/2017	Cavity in deadwoods	E	3.5m	No	Moderate	Moderate
		49b		Knot hole	W	3m	No		
		49c		Cavity in deadwoods	E	2.5m	No		
50	*Quercus robur*	50a		Knot hole	NW	3.5m	No	Moderate	Moderate
		50b		Lifted bark on stem	All	all above 3m	No		
		50c	14/08/2017	Desiccation-fissures present	All	all above 3m	No		
51.1	*Fraxinus excelsior*	51.1a	07/09/2017	Knot hole on stem with small cavity	W	10m	No	Moderate	Low
		51.1b		Knot hole on stem with small cavity	E	4m	No		
		51.1c		Ash - North. Knot hole on stem - honeycomb present swarm gone	W	4m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
51.2	*Quercus robur*	51.2 a	07/09/2017	Oak. Small desiccation fissures and small cavity	W	4m	No	Moderate	Low
51.3	*Fraxinus excelsior*	51.3	07/09/2017	Ash - South. Dense ivy on stem - not possible to climb. Visual from ground and from climb on 51.2. No PRF observed.	n/a	n/a	No	Moderate	Low
53.1	*Quercus robur*	53.1 a	07/09/2017	Oak - East. Subsidence crack on limb - small crevice only.	S	6m	No	Moderate	Low
53.2	*Quercus robur*	53.2 a	07/09/2017	Oak - West. Rams horns on deadwood on topside of limbs	W	7m	No	Moderate	Low
		53.2 b		Deadwood on limb - lifted bark and small cavity	S	5-6m	No		
54	*Quercus robur*	54a	10/08/2017	Tear out on stem with desiccation-fissures and rams horns	S	12 - 14m	No	High	Moderate
		54b		Weld on stem.	S	6m	No		
		54c		Weld on stem.	S	3-5m	No		
55	*Quercus robur*	55a	10/08/2017	Small area of raised bark. No further PRF	Multiple	Multiple	No	Moderate	Low
58	*Quercus robur*	58a	23/08/2017	Canker	N	6m	No	Moderate	Low
		58b		Knot hole on topside of limb not visible from ground. Goes up into dry cavity	N	6m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
61	*Quercus robur*	61a	10/08/2017	Tear out on limb (6a,b,a all link)	S	8m	No	High	High
		61b		Tear out on limb (6a,b,a all link)	N	7m	No		
		61c		Tear out on limb (6a,b,a all link)	W	7m	No		
		61d		Tear out - but no cavity present i.e. no prf	E	7m	No		
63	*Quercus robur*	63a	10/08/2017	Minor lifted bark exposed at top and bottom. No true know hole present. Also, desiccation-fissures on limbs but no suitable PRF	Multiple	Multiple	No	Moderate	Low
64-1	*Quercus robur*	64.1a	15/08/2017	Squirrel hole on stem	W	10m	No	Moderate	High
		64.1b		Wound on stem	NW	10m	No		
		64.1c		Wound on limb. Large cavity on topside of limb, but goes into dry cavity. Not visible from ground level	W	9m	No		
		64.1d		Wound topside of limb	S	9m	No		
		64.1e		Wound on underside of limb	S	8.5m	No		
64-2	*Quercus robur*	64.2a	15/08/2017	False knot hole - no recess	E	7m	No	Moderate	Negligible
67	*Quercus robur*	67a	15/08/2017	Rams horns	N	4-6m	No	Moderate	Moderate
		67b		Rams horns	S	4-6m	No		
		67c		Raised bark	Multiple	Multiple	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
68	*Fraxinus excelsior*	68a	15/08/2017	Multiple rot cavities on stem - subject to water egress	Multiple	7m	No	Moderate	Low
		68b		Multiple rot cavities on stem	Multiple	2-3m	No		
69	*Quercus robur*	69a	27/07/2018	Shelter 10cm deep behind callus roll. Sub optimal.	NE	10	No	Moderate	High
		69b		Cavity behind callus roll 8cm deep. Very enclosed.	NE	9	No		
		69c		clean smooth dry cavity behind old flush cut leading into main trunk. Very tight, twisted cavity, upward developed. Estimate 30 cm deep. Access hole 4x2cm.	SE	3	No		
70	*Quercus robur*	70a	27/07/2018	Woodpecker hole on stem	N	12m	No	Moderate	High
		70b		Subsidence crack on limb - small cavities	S	8m	No		
		70c		Subsidence crack on limb - multiple cavities	SE	8m	No		
		70d		Woodpecker hole on stem	S	5m	No		
		70e		Woodpecker hole on stem	S	5m	No		
		70f		Woodpecker hole started but no recess/PRF	S	4m	No		
71	*Fraxinus excelsior*	71a	27/07/2018	Knot hole - no recess	NW	11m	No	Moderate	High
		71b		Knot hole with large cavity - approx. 0.5m	W	7m	No		
		71c		Snapped limb - small crevice only	NW	6m	No		
		71d		Knot hole with large cavity	SW	5m	No		
		71e		Fluting on stem - no recess/PRF	SE	3-5m	No		
72	*Quercus robur*	72a	27/07/2018	Knot hole forming - PRF into cavity behind dead limb	SE	7m	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		72b		Raised bark	S	7m	No		
		72c		Knot hole on stem - cavity deep behind rotten limb	W	5m	No		
		72d		Multiple knot holes with no cavity yet formed - no PRF	Multiple	Multiple	No		
73	*Fraxinus excelsior*	73a	20/07/2017	Knot hole on stem - large cavity goes down to 73b	N	7m	No	Moderate	High
		73b		Knot hole on stem - large cavity goes down and up to 73b	SW	6m	No		
		73c		Large tear out with multiple cavities in deadwood	N	4m	No		
		73d		Knot hole - no current recess/PRF	S	4m	No		
74	*Populus alba*	74a	23/08/2017	Missing Limb	N	15m	No	Moderate	Low
		74b		Missing Limb	SE	13m	No		
		74c		Missing Limb	S	6m	No		
79	*Fraxinus excelsior*	79a	14/08/2017	Multiple know holes on north of stem and limbs	N	5-7m	No	Moderate	High
		79b		raised bark on stem	N	5-7m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		79c		Butt rot	N	0-1m	No		
80	*Fraxinus excelsior*	80a	14/08/2017	Knot hole on limb	N	12.5m	No	Moderate	Moderate
		80b		Knot hole on stem	SW	12m	No		
		80c		Rot wood cavity on snapped limb	S	7m	No		
		80d		Knot hole cavity covered by ivy	NE	4m	No		
82	*Quercus robur*	82a	30/08/2017	Woodpecker hole - no cavity above or below	E	20m	No	Moderate	Low
		82b		Dead limb - lifted bark	S	8m	No		
		82c		Transverse snap -crevice	NE	7m	No		
83	*Quercus robur*	83a	30.08.17	5x squirrel holes on limb - with 2x connected	N	8-10m	No	Moderate	High
		83b		Knot hole - large cavity connected to squirrel holes	N	11m	No		
		83c		Subsidence crack with 2x squirrel holes, rams horns and cavities	S	10-14m	No		
		83d		Knot hole - no PRF	W	8m	No		
		83e		Knot hole	W	3m	No		
84.1	*Quercus robur*	84.1a	30/08/2017	Tear out - no recess	E	7m	No	Moderate	Low
		84.1b		Knot hole behind limb (limb still present). Crevice above and below.	SE	3m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		84.1 c		Knot hole on limb - small cavity	SW	2m	No		
84.2	*Quercus robur*	84.2	30/08/2017	Desiccation fissure at top of stem/tree	N	15m	No	Moderate	Low
85-1	*Quercus robur*	85-1a	15/08/2017	Oak - knot hole on limb	SW	4m	No	Moderate	Low
85-2	*Fraxinus excelsior*	85-1a	15/08/2017	Ash - squirrel hole	E	15m	No	High	High
		85-1b		Woodpecker hole	N	14m	No		
		85-1c		Knot hole	S	10m	No		
		85-1d		Knot hole	NW	10m	No		
		85-1e		Weld	N	1m	No		
86.1	*Fraxinus excelsior*	86.1 a	07/09/2017	Knot hole in hollow stem (not vis from ground).	W	8m	No	Moderate	Moderate
		86.1 b		Knot hole	S	7m	No		
		86.1 c		2x knot holes on stem. Enlarged by squirrel and connected.	S	6m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
86.2	*Quercus robur*	86.2 a	07/09/2017	Small split on topside of stem - not visible from the ground	W	8m	No	Moderate	Moderate
		86.2 b		Hazard beam with cavity	S	6m	No		
		86.2 c		2x knot holes enlarged by squirrel	S	5m	No		
86.3	*Quercus robur*	86.3 a	14/06/2018	Woodpecker hole Located on outer lower limb, opening 7 cm diameter, leading into downward 20 cm diameter cavity with nesting material in the base, also extends upwards in two parts approximately 30 cm, unable to fully inspect due to the gnarly deadwood structure. Bumpy	NW	6.5	No	Moderate	High
		86.3 b		Small branch stud with receding 5 cm deep cavity behind callus roll	SE	6	No		
		86.3 c		Attached small dead limb with upward facing split cavity offering limited shelter	N	6	No		
86.4	*Quercus robur*	86.4 a	14/06/2018	Branch cavity. Cracks in deadwood flush cut. 5cm deep 2cm width, clean and dry, Smooth	N	4	No	Moderate	Moderate
		86.4 b		Knot hole. Small area of shelter under callus roll 5cm deep 3cm width	NE	4	No		
		86.4 c		Shelter offered behind callus roll at base of deadwood stump, 3cm deep, rough	NW	6	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		86.4 d		Numerous areas of lifted bark on trunk and deadwood around the canopy.	SE	10	No		
		86.4 e		50cm length of lifted bark on underside of dead branch 12cm depth shelter	SE	12	No		
		86.4 f		Small branch cavity underside of lateral limb over building 3cm by 6cm depth	E	8	No		
		86.4 g		Small hole upward developing cavity, dry, smooth inside 3cm x 8cm depth, woodlice in apex, rough.	SE	4	No		
86.5	*Quercus robur*	86.5 a	14/06/2018	Offering no suitable shelter	E	6	No	Moderate	Low
		86.5 b		Completely healed over	SE	5.5	No		
		86.5 c		Upward facing with a small 4cm deep cavity at the top with woodlice in the apex, rough	N	5	No		
		86.5 d		Small inward developed cavity at the base of dead limb, 7 cm deep and limited opportunities to shelter, rough.	SE	4.5	No		
		86.5 e		At the end of lower limb, no cavity	SW	4	No		
88	*Quercus robur*	88a	10.08.17	>1m lifted bark	E	6-7m	No	High	Moderate
		88b		Weld at top of stem.	E	5m	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		88c		Wound round 0-5m in height. Cavity at top of wounds and rams horns near top	E	0-5m	No		
89	*Fraxinus excelsior*	89a	30/08/2017	Woodpecker hole - no cavity above or below	S	12m	No	Moderate	Low
90	*Fraxinus excelsior*	90a	30/08/2017	3x squirrel holes on stem and limbs, including deadwood	N & E	8m - 16m	No	Moderate	High
		90b		7x woodpecker holes on stem and limbs	N, E & S	10m - 15m	No		
		90c		Tear out of stem - small crevice only and rams horns present	E	16m	No		
		90d		Wound - large cavity	E	12m	No		
		90e		Wound - large exposed cavity	E	11m	No		
104	*Quercus robur*	104 a	14/06/2018	Branch cavity, opening 9x9cm 12cm depth	W	10	No	Moderate	Moderate
		104 b		Large section of dead tree. Multiple cracks in deadwood up to 10cm deep from 5m to 10m.	N	10	No		
		104 c		Small branch cavity 1x5cm opening developing upwards 15cm to a tight apex, dry and clean	NW	12	No		
		104 d		Loose bark around dead lateral branch over field, mostly upward facing shelter, but a 10cm cavity under the bark where dead branch meets main limb	NW	7	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
105	*Quercus robur*	105 a	14/06/2018	30cm deep loose bark cavity on underside of dead stump	E	5	No	Moderate	High
		105 b		Cavity at base of dead limb 10cm deep into main trunk. Cobwebs present	W	9	No		
		105 c		Small branch cavity within deadwood 2x5cm opening developing down 10cm, enclosed, dry, clean	W	1	No		
		105 d		Knot hole 4x3cm and 4cm depth, clean	W	211	No		
		105 e		Branch cavity & knot hole on underside of limb, dry, clean, 4x4cm opening leading upwards into 40cm of clean branch cavity then reaching nesting material from above cavity with separate entrance 5x5cm on top of branch	W	11	No		
		105f		Branch cavity 30x3cm developed upwards further 12cm at top, dry, clean	S	12	No		
		105 g		Branch cavity 3x12cm in the end of a dead stump, dry and enclosed	W	9	No		
		105 h		Branch cavity in side of same dead stump as above. 6x12cm entrance developing inwards 40cm into multiple apex, dry, some cobwebs	W	9	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
106	*Quercus robur*	106 a	14/06/2018	Lower dead limb with lifted bark extending 2m long and 30 cm wide in some areas, majority of the substrate is smooth - not all of the lifted could be inspected due to camera access	NE	5	No	Moderate	Moderate
		b		On the branch union, damp and cluttered substrate with a 5 cm deep cavity behind callus roll	NW	5	No		
		c		Deadwood, no splits or cavities	E	4.5	No		
		d		Callus roll on underside of lower limb, no cavities	W	5	No		
		e		Knot hole opening 7 cm, 10 cm deep, rough substrate and cobwebby	N	2.5	No		
107	*Quercus robur*	107 a	14/06/2018	Lifted/loose bark Offering some optimal shelter but exposed from the top	E	7	No	Moderate	Low
		107 b		Lower dead limb with lifted bark near the end	NE	6	No		
		107 c		Lifted bark but not fully enclosed and possibly exposed to the elements	E	6	No		
		107 d		Old snapped out limb with a split near the trunk, no cavities	E	6	No		
		107 e		Callous roll on end of broken limb	SW	6	No		
		107f		knot hole opening 6 cm diameter, 25 cm deep, very cobwebby at the entrance and cluttered inside but dry and clean near the apex	SW	6	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		107 g		Dead stub with fissures leading into the branch offering limited roosting potential	W	7	No		
108	*Quercus robur*	108 a	14/06/2018	Lateral dead limb with many areas of loose bark 4m in length. Shelter offered 4-6cm in depth. Also a pocket cavity at base near trunk 9x9cm	E	5	No	Moderate	Low
		108 b		Deadwood limb with loose bark creating cavity 15cm depth upwards	SW	7	No		
		108 c		Loose bark at base of deadwood, upward facing pocket 5x8cm depth	S	5	No		
		108 d		Branch cavity and damage from old tear out offering no shelter	W	6	No		
		108 e		Small cavity from tare out wound 8cm deep upward facing	S	5	No		
109	*Quercus robur*	109 a	14/06/2018	Knot hole on side of lower limb, 4 x 8 cm opening, developing inwards 6 cm behind callus roll	SE	7	No	Low	Low
		109 b		Branch cavity, opening 5 x 5 cm, 12 cm deep and upward facing	W	9	No		
		109 c		Branch cavity, opening 7 x 12 cm, 7 cm deep	S	11	No		
110	*Quercus robur*	110 a	14/06/2018	Attached deadwood with small inward shallow pocket behind callus roll, 10 cm deep	W	6	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		110 b		Laterally developed cavity underneath the dead stub, opening 3 cm diameter, 15 cm deep to single apex, rough substrate but enclosed and dry	S	2	No		
		110 c		Old tear out wound opening 5 x 30 cm leading into a downward developed cavity 60 cm deep, bird nesting material in the base	S	2	No		
111	*Quercus robur*	111 a	14/06/2018	Woodpecker hole. Large branch cavity with nesting material in the base, entrances consists of two woodpecker holes and a large open knot hole in the middle - all connected to the same cavity, approximately 1.2m long, clean and smooth substrate	SW	5	No	High	High
		111 b		Woodpecker hole, opening 5 cm diameter leading into a downward developed cavity 30 cm deep with cob webs and nesting material in the base	N	6.5	No		
		111 c		Branch cavity with Two connecting knotholes located on branch elbow, extending laterally to a dry, clean single apex with smooth substrate 60 cm long, and downward developed 50 cm long with nesting material in the base	W	4.5	No		
		111 d		Knot hole on lower limb, opening 20 cm diameter, 15 cm deep with a small upward 10 cm deep cavity at the back of the feature	NE	4	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
112	*Quercus robur*	112 a	27/07/2018	Callus roll Upward facing scar, laterally developed 2m long with areas of 12 cm shelter beneath the callus roll, cob webs. Smooth substrate.	N	9	No	Moderate	Moderate
		112 b		Callus roll Upward facing scar, upward developed 1m long with areas of 12 cm shelter beneath the callus roll, cob webs Smooth substrate.	NW	11	No		
		112 c		Callus roll Upward facing scar, upward developed 2m long with areas of 10 cm shelter beneath the callus roll, cob webs - this branch scar twists round to the underneath of feature 4 (as follows). Smooth substrate.	SW	8	No		
		112 d		Branch Cavity following on from feature 3 - 2m long branch scar underneath the limb, callus roll extends the full length with a cavity at the end of the deadwood scar, developed laterally inwards 25 cm, 4 cm opening, enclosed and dry with a small amount of cob webs Smooth substrate.	SW	9	No		
		112 e		Branch Cavity lower down on the underside of the same limb, opening 40 x 3 cm, 10 cm deep with additional loose bark offering more shelter Smooth substrate.	SW	8.5	No		
113	*Quercus robur*	113 a	14/06/2018	60 cm long upward facing offering sub optimal shelter	N	7	No	Moderate	Low

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		113 b		Upward facing branch stub on lower limb overhanging the road, offering no shelter	N	6	No		
		113 c		Small cavity behind callus roll on dead stub, 5cm deep	SW	8.5	No		
217	*Quercus robur*	217 a	26/07/2018	Shelter beneath deadwood and callus roll, opening 5 x 8 cm, 20 cm deep offering enclosed, dry shelter for one bat	NW	4	No	Moderate	Moderate
		217 b		Knot Hole. Opening 4 cm diameter, developing inwards 10 cm to a point	W	5	No		
		217 c		Knot Hole. 6 cm diameter opening, 8 cm deep	S	5	No		
		217 d		Branch cavity. Upward facing 12 x 7 cm opening, developing downwards 50 cm behind deadwood, cob webs	S	5	No		
		217 e		Knot Hole. Opening 10 x 5 cm, Developing inwards and upwards 15 cm, cob webs	SE	7	No		
		217f		Small enclosed cavity 15 cm deep shelter behind callus roll	E	5.5	No		
		217 g		Knot Hole. 4 cm diameter opening, 20 cm deep laterally developed into trunk enclosed and suitable for one bat	E	3	No		
		217 h		Knot Hole. Opening 10 x 5 cm, 12 cm deep laterally developed offering sub optimal shelter, dry rot powder fills the cavity	S	2.5	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
220	*Crataegus monogyna*	220 a	26/07/2018	dense ivy cover across the tree with no other obvious PRFs, although the feature is classes as moderate, the overall classification is low due to the DBH and the amount of sub optimal shelter the tree offers	N/A	3.5	No	Moderate	Moderate
221	*Quercus robur*	221 a	26/07/2018	Cavity at base 7cm diameter opening leading up hollow trunk 1m with two entrances at top 1cm diameter and 6cm diameter leading into same cavity.	S	0.5	No	Moderate	Low
		221 b		Medium density ivy around upper part of multiple stems	N/A	5	No		
222	*Fraxinus excelsior*	222 a	26/07/2018	Knot hole at the end of the limb, opening 7 cm diameter leading downwards 20 cm	E	4	No	Moderate	Moderate
		222 b		Dense ivy across the majority of the main stem with thick established ivy stems covering most the eastern aspect - recommended a further nocturnal survey because of this feature	N/A	1.5	No		
		222 c		Opening 10 cm diameter developing downwards 30 cm	SE	0.5	No		
225	*Fraxinus excelsior*	225 a	26/07/2018	Opening 10x20cm developing down into spacious cavity 40cm deep. Two eggs (possibly pigeon) in bottom	5	S	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		225 b		Wound on smaller stem with upward developed cavity at top 8cm and shelter on side behind lifted bark 5cm	3	N	No		
		225 c		Numerous areas of lifted bark on stem near a canker offering small crevices max depth 10cm	2.5	S	No		
		225 d		Opening 2 x 15 cm wide, leading into a downward developed cavity 20 cm deep, enclosed with clean smooth walls	2	N	No		
		225 e		Knot hole leading into a wide spacious cavity, upward developed 1.3m leading into other possible fissures or cavities	0.5	N/A	No		
229	*Quercus robur*	229 a	19/07/2018	Small cavity in flush cut.	N	5	No	Moderate	Low
		229 b		Lateral limb with callus roll on top 2m length offering shelter in places 10cm deep.	N	11	No		
		229 c		Callus roll 2m length in vertical dying limb offering shelter 5cm deep in places.	NE	12	No		
		229 d		7x7cm diameter 6cm depth shelter.	W	11	No		
		229 e		Small cavity in flush cut wound 4x4x6cm deep.	S	4	No		
230	*Quercus robur*	230 a	19/07/2018	Patches of loose bark across the tree potentially offering optimal shelter	N/A	6	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		230 b		Tree is completely dead with no live growth, thus standing deadwood which could potentially have a number of fissures and holes and associated cavities.	N/A	5	No		
231	*Quercus robur*	231 a	19/07/2018	Split. Old tear out limb with a large 40cm long split leading to pockets of sub optimal shelter, cobwebby inside	SE	6	No	Moderate	Low
		231 b		Small attached dead limb on the outer canopy with patches of loose bark offering 5 - 10cm deep pockets of shelter but too small for any roost potential,	S	5	No		
232	*Quercus robur*	232 a	19/07/2018	Flush cut with inward developed cavity, opening 3cm diameter, 12 deep splitting into two cavities, dry and enclosed	S	6	No		Low
233	*Quercus robur*	233 a	19/07/2018	Small cavity within flush cut 3x3cm 6cm depth.	10	N	No	High	High
		233 b		Entrance 8x7cm at the end of a dead limb, developed inwards 45cm to a conical apex, woodlice present with some cobwebs.	15	E	No		
		233 c		Large opening 30x7 on underside of branch with down developed pocket 15cm deep. Second small enclosed cavity upwards 3x6cm opening and 10cm deep. Dry. Two other small cavities upwards into deadwood 7cm deep.	15	S	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		233 d		Cavity in large flush cut. Small cavity opening 8x8cm 12cm deep.	5	S	No		
		233 e		Small cavity at base of large flush cut. 6x4cm opening developed in and behind dead wood 12cm.	3	W	No		
		233f		Knot hole, opening 8x8cm with multiple small cavities developing laterally up to 15cm in depth. Dry, enclosed	9	E	No		
		233 g		Knot hole in end of dead limb. Unable to inspect due to canopy die back. Unsafe	15	N	No		
234	*Quercus robur*	234 a	19/07/2018	Loose bark attached to one of the stags horns in the upper canopy offering 10 -15cm deep shelter but mostly narrow and exposed to the elements	N	7	No	Moderate	Low
		234 b		Flush cut with small cavity in the bottom corner, opening 6 x 3cm, developing laterally inwards 15cm, cobwebby	N	3.5	No		
		234 c		Flush cut with split, opening 6 x 2cm, developing inwards 10cm to a narrow point	W	2.5	No		
235	*Quercus robur*	235 a	19/07/2018	Opening 10 x 7cm and 13cm laterally developed, dry but shallow	N	5	No	High	High

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		235 b		50cm deep downward developed cavity with old bird nesting material in the base, clean and smooth substrate but possibly exposed to the elements - also a long dead limb attached to the same feature is hollowed out, branch cavity extends 1m with some exposure from the top	N	9	No		
		235 c		Knot hole opening 12cm diameter, developed laterally 12cm dry but shallow	W	9	No		
		235 d		branch cavity, opening 10cm diameter, leading into a 40 deep laterally developed cavity located on the outer upper canopy, substrate is clean, dry and smooth with an enclosed single apex, woodlice present	W	10	No		
		235 e		Knot hole, opening 10cm diameter, 7cm deep	S	8	No		
		235f		not hole opening 12cm diameter, 25cm deep spacious cavity, clean smooth substrate leading laterally to an enclosed point	S	9.5	No		
236	*Quercus robur*	236 a	19/07/2018	Trunk cavity, 8x8cm opening 30cm depth into smaller cavity 4x3cm. Also developing down 10cm into open pocket	N	6	No	High	Moderate
		236 b		Small area of loose bark offering some but limited shelter. 15cm depth	W	8	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		236 c		30cm of loose bark covering a part of the underside of branch creating fairly exposed shelter	E	7	No		
237	*Quercus robur*	237 a	19/07/2018	Large deadwood limb with multiple fissures descending into the main stem offering optimal shelter under lifted bark and within the fissured dead wood	N	6	No	High	High
		237 b		Large upward facing 5m long branch scar offering pockets of shelter beneath the callus roll and dead wood	E	6	No		
		237 c		4m long upward facing scar on upper limb offering shelter within the fissures dead wood and pockets of 10cm deep shelter behind the callus roll.	S	10	No		
		237 d		Small 8cm deep cavity extending into the healthy limb, opening 12 x 6cm upward facing.	W	16	No		
		237 e		Large 4m long upward facing fissured branch scar offering areas of shelter up to 6cm depth and pockets of shelter behind the callus roll up to 10cm deep	N	15	No		
		237f		Large 4m branch scar upward facing offering 8cm deep shelter behind the callus roll	S	12	No		
		237 g		2m long branch scar offering pockets of shelter	W	10	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		237 h		Upward facing lateral 2m scar, offering optimal pockets of shelter beneath the callus roll, also at the top and additional 40cm long branch cavity, dry and enclosed with a small opening	S	6	No		
		237i		5m long scar with pockets of shelter behind the callus roll	E	5	No		
238	*Quercus robur*	238 a	19/07/2018	Loose bark around dead limb offering sub optimal shelter	W	10	No	Moderate	Low
		238 b		Loose bark underneath dead limb 30cm long but not enclosed	W	9	No		
		238 c		Upward facing knot hole on the main stem, no cavity and exposed to the elements	N	4.5	No		
245	*Fraxinus excelsior*	245 a	20/07/2018	Knot Hole opening 8 x 3cm, 3cm deep	E	7	No	Moderate	Low
		245 b	20/07/2018	Knot Hole opening 6 x 9cm, 8cm deep	S	6	No		
		245 c	20/07/2018	Knot Hole opening 6 x 7cm, 8cm deep	S	5	No		
		245 d	20/07/2018	Cavity opening 5cm diameter, developed laterally 25cm deep dry and enclosed	W	4.5	No		
246	*Quercus robur*	246 a	20/07/2018	Branch cavity 10 x 15cm, developing laterally inwards 20cm	S	5	No	Moderate	Moderate

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		246 b		Large split hazard beam on lower dead limb, extend upwards 12cm into an enclosed sheltered cavity.	NE	3	No		
247	*Fraxinus excelsior*	247 a	20/07/2018	Woodpecker hole opening 3cm, developing downwards 20cm with nesting material in the base, cavity is 15cm diameter, bumpy	E	10	No	Moderate	Moderate
		247 b		Woodpecker hole opening 7cm, developing downwards 15cm, cavity 20cm diameter, nest material in base, bumpy	E	9	No		
		247 c		Woodpecker hole opening 10 x 3cm developing downwards 15cm, squirrel droppings in the base. Smooth	W	8.5	No		
		247 d		3 Woodpecker feeding holes, developing laterally only up to 12cm, rough	NE	7	No		
248	*Quercus robur*	248 a	20/07/2018	Multiple dead limbs stag horns in the upper canopy with multiple fissures and lifted bark	N/A	10	No	Moderate	Moderate
		248 b		Dead stub with inward developed cavity 15cm deep.	NE	8	No		
		248 c		Cavity opening 3cm diameter, 20cm deep, cobwebby and dry rot powder covering the entrance	SW	6.5	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
		248 d		Callus roll opening 4 x 2cm leading into a downward developed cavity, 15cm deep, dry, clean and enclosed	SW	6	No		
		248 e		Knot hole opening 2cm diameter, leading laterally inwards 15cm deep	N	5	No		
		248f		Lightning strike scar with associated loose bark 30cm long 15cm wide offering limited shelter. Smooth	NE	6	No		
		248 g		Knot hole opening 3cm diameter, 25cm deep, cobwebby and dry inside	E	6.5	No		
		248 h		Woodpecker hole opening 5cm diameter, developing laterally 20cm, cobwebby	NE	6	No		
249	*Quercus robur*	249 a	20/07/2018	knot hole opening 6cm diameter, developed laterally 25cm, dry and cobwebby with woodlice in the apex	SE	5	No	Moderate	Moderate
250	*Fraxinus excelsior*	250 a	20/07/2018	Branch Cavity upward facing 1.5m long cavity in a dead broken limb with 3 entry points, clean inside offering optimal shelter	N	11	No		High
		250 b		Large open wound with 2 enclosed cavities, 3 x 3cm opening leading inwards 5cm and 4 x 4cm opening, developing upwards 50cm, clean and enclosed	S	10	No		

Tree no.	Species	PRF no.	Date	PRF form	PRF orientation	Approx. PRF height	Evidence of bat presence	Roosting potential before climbing	Roosting potential after climbing
251	*Fraxinus excelsior*	251 a	20/07/2018	Knot hole opening 5cm diameter, developing inwards 15cm deep and upwards 4cm and downwards 15cm with nesting material in the base.	SW	10	No	Moderate	Moderate
		251 b		Woodpecker hole connects to a branch cavity developing downwards 40cm to the branch elbow with another opening leading down to nesting material 40cm further down the limb. Smooth	N	10	No		

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

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
1	*Quercus robur*	High	High	OUT	unknown
2	*Quercus robur*	Moderate	Negligible	OUT	N
3	*Quercus robur*	Low	Low	OUT	N
4	*Quercus robur*	Low	Negligible	OUT	N
5	*Quercus robur*	Moderate	Moderate	IN	N
6	*Crataegus monogyna*	Moderate	Low	OUT	N
7	*Fraxinus excelsior*	High	Moderate	IN	N
8	*Fraxinus excelsior*	Moderate	Moderate	IN	Y
9	*Quercus robur*	Moderate	Moderate	IN	N
10	*Quercus robur*	Moderate	Low	OUT	N
11	*Quercus robur*	Moderate	Negligible	OUT	N
12	*Quercus robur*	Low	-	OUT	N
13	*Quercus robur*	Moderate	Low	OUT	N
14	*Quercus robur*	Moderate	Low	OUT	N
15	*Quercus robur*	Low	-	OUT	N
16	*Quercus robur*	Moderate	Moderate	IN	Y
17	*Quercus robur*	Low	Moderate	IN	N
18	*Quercus robur*	Low	-	OUT	N
19	*Quercus robur*	Low	-	OUT	N
20	*Quercus robur*	Low	-	OUT	N
21	*Quercus robur*	Moderate	Moderate	IN	N
22	*Fraxinus excelsior*	Moderate	Low	IN	N
23	*Quercus robur*	Low	-	OUT	N
24.1	*Populus alba*	High	High	IN	Y
24.3	*Fraxinus excelsior*	Moderate	Moderate	IN	Y
25	*Quercus robur*	Moderate	tree doesn't exist	n/a	n/a
26	*Quercus robur*	Moderate	Low	OUT	N
27	*Quercus robur*	Low	-	OUT	N
28	*Quercus robur*	Low	-	OUT	N
29	*Quercus robur*	High	-	OUT	-
30	*Quercus robur*	Moderate	-	OUT	-
31	*Fraxinus excelsior*	Moderate	-	OUT	-

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
32	*Quercus robur*	Low	-	OUT	N
33	*Quercus robur*	High	-	OUT	-
34	*Aesculus hippocastanum*	High	-	OUT	-
35	*Fraxinus excelsior*	High	-	OUT	-
36	*Fraxinus excelsior*	High	-	OUT	-
37	*Quercus robur*	Low	-	OUT	N
38	*Fraxinus excelsior*	Moderate	-	OUT	-
39	*Quercus robur*	Moderate	-	OUT	-
40	*Quercus robur*	High	-	OUT	-
41	*Fraxinus excelsior*	High	-	OUT	-
42	*Quercus robur*	Low	-	OUT	N
43	*Quercus robur*	High	-	OUT	-
44	*Quercus robur*	Low	-	OUT	N
45	*Fraxinus excelsior*	Low	-	OUT	N
46	*Quercus robur*	Moderate	Moderate	OUT	N
47	*Fraxinus excelsior*	High	High	IN	Y
48	*Quercus robur*	Moderate	Low	OUT	N
49	*Fraxinus excelsior*	Moderate	Moderate	OUT	Y
50	*Quercus robur*	Moderate	Moderate	OUT	N
51	*Fraxinus excelsior & Quercus robur*	Moderate	Low	OUT	N
52	*Quercus robur*	Low	-	OUT	N
53	*Quercus robur*	Moderate	Low	OUT	N
54	*Quercus robur*	High	Moderate	OUT	Y
55	*Quercus robur*	Moderate	Low	OUT	N
56.1	*Quercus robur*	Low	-	OUT	N
56.2	*Quercus robur*	Low	-	OUT	N
57	*Quercus robur*	Low	-	OUT	N
58	*Quercus robur*	Moderate	Low	OUT	N
59	*Quercus robur*	Low	-	OUT	N
60	*Fraxinus excelsior*	Low	-	OUT	N
61	*Quercus robur*	High	High	IN	Y
62	*Quercus robur*	Low	-	OUT	N
63	*Quercus robur*	Moderate	Low	OUT	N
64	*Quercus robur*	Moderate	High	IN	Y
65	*Quercus robur*	Low	-	OUT	N
66	*Quercus robur*	Low	-	OUT	N

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
67	*Quercus robur*	Moderate	Moderate	IN	N
68	*Fraxinus excelsior*	Moderate	Low	IN	N
69	*Quercus robur*	Moderate	Moderate	IN	Y
70	*Quercus robur*	Moderate	High	IN	Y
71	*Fraxinus excelsior*	Moderate	High	IN	Y
72	*Quercus robur*	Moderate	Moderate	IN	N
73	*Fraxinus excelsior*	Moderate	High	IN	Y
74	*Populus alba*	Moderate	Low	IN5	N
75	*Quercus robur*	Low	-	IN5	N
76	*Quercus robur*	Low	-	IN6	N
77	*Quercus robur*	Low	-	IN6	N
78.1	*Quercus robur*	Low	-	OUT	N
78.2	*Fraxinus excelsior*	Low	-	OUT	N
79	*Fraxinus excelsior*	Moderate	High	IN	Y
80	*Fraxinus excelsior*	Moderate	Moderate	IN	N
81.1	*Quercus robur*	Low	-	OUT	N
81.2	*Quercus robur*	Low	-	OUT	N
81.3	*Quercus robur*	Low	-	OUT	N
82	*Quercus robur*	Moderate	Low	OUT	N
83	*Quercus robur*	Moderate	High	IN	Y
84.1	*Quercus robur*	Low	-	OUT	N
84.2	*Quercus robur*	Low	-	OUT	N
85.1	*Quercus robur*	Moderate	Low	OUT	Y
85.2	*Fraxinus excelsior*	High	High	IN	Y
86.1	*Fraxinus excelsior*	Moderate	Moderate	IN	N
86.2	*Quercus robur*	Moderate	Moderate	IN	N
86.3	*Quercus robur*	Moderate	High	IN	Y
86.4	*Quercus robur*	Moderate	Moderate	IN	N
86.5	*Quercus robur*	Moderate	Low	OUT	N
87	*Quercus robur*	Low	-	OUT	N
88	*Quercus robur*	High	Moderate	OUT	unknown
89	*Fraxinus excelsior*	Moderate	Low	OUT	N
90	*Fraxinus excelsior*	Moderate	High	IN	Y
91	*Quercus robur*	Low	-	OUT	N
92	*Quercus robur & Alnus glutinosa*	Low	-	OUT	N
101	*Fraxinus excelsior*	Low	-	OUT	N
102	*Quercus robur*	Low	-	OUT	N

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
104	*Quercus robur*	Moderate	Moderate	IN	N
105	*Quercus robur*	Moderate	High	IN	Y
106	*Quercus robur*	Moderate	Moderate	IN	N
107	*Quercus robur*	Moderate	Low	OUT	N
108	*Quercus robur*	Moderate	Low	IN7	N
109	*Quercus robur*	Low	Low	OUT	N
110	*Quercus robur*	Moderate	Moderate	IN	N
111	*Quercus robur*	High	High	IN	Y
112	*Quercus robur*	Moderate	Moderate	IN	N
113	*Quercus robur*	Low	Low	OUT	N
114	*Populus alba*	Low	-	OUT	N
115	*Populus alba*	Low	-	OUT	N
116	*Quercus robur*	Moderate	-	OUT	-
117	*Quercus robur*	Moderate	-	OUT	-
118	*Quercus robur*	Moderate	-	OUT	-
119	*Quercus robur*	High	-	OUT	-
120	*Fraxinus excelsior*	Moderate	-	OUT	-
121	*Quercus robur*	High	-	OUT	-
122	*Quercus robur*	Moderate	-	OUT	-
124	*Fraxinus excelsior*	Low	-	OUT	N
125	*Salix fragilis*	Low	-	OUT	N
126	*Fraxinus excelsior*	Low	-	OUT	N
127	*Quercus robur*	Moderate	-	OUT	-
128	*Quercus robur*	High	-	OUT	-
129	*Quercus robur*	Moderate	-	OUT	-
130	*Quercus robur*	Moderate	-	OUT	-
131	*Quercus robur*	Moderate	-	OUT	-
132	*Quercus robur*	Moderate	-	OUT	-
133	*Quercus robur*	Moderate	-	OUT	-
134	*Quercus robur*	Moderate	-	OUT	-
135	*Quercus robur*	Moderate	-	OUT	-
136	*Quercus robur*	Moderate	-	OUT	-
137	*Quercus robur*	Moderate	-	OUT	-
138	*Quercus robur*	High	-	OUT	-
144	*Quercus robur*	Moderate	-	OUT	unknown
145	*Fraxinus excelsior*	Low	-	OUT	N
146	*Fraxinus excelsior*	Low	-	OUT	N
147	*Fraxinus excelsior*	High	-	OUT	-

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
148	*Quercus robur*	Low	-	OUT	N
149	*Quercus robur*	Moderate	-	OUT	-
150	*Quercus robur*	Moderate	-	OUT	-
151	*Fraxinus excelsior*	Moderate	-	OUT	-
152	*Alnus glutinosa*	Low	-	OUT	N
153	*Alnus glutinosa*	Moderate	-	OUT	-
154	*Alnus glutinosa*	Moderate	-	OUT	-
155	*Alnus glutinosa*	Low	-	OUT	N
156	*Alnus glutinosa*	Moderate	-	OUT	-
157	*Quercus robur*	Moderate	-	OUT	-
158	*Quercus robur*	Low	-	OUT	N
159	*Quercus robur*	Low	-	OUT	N
160	*Quercus robur*	High	-	OUT	-
161	*Quercus robur*	Moderate	-	OUT	-
162	*Fraxinus excelsior*	High	-	OUT	-
163	*Fraxinus excelsior*	High	-	OUT	-
164	*Fraxinus excelsior*	Moderate	-	OUT	-
165	*Crataegus monogyna*	Low	-	OUT	N
166	*Crataegus monogyna*	Low	-	OUT	N
167	*Alnus glutinosa*	Low	-	OUT	N
168	*Alnus glutinosa*	High	-	OUT	-
169	*Alnus glutinosa*	High	-	OUT	-
170	*Alnus glutinosa*	High	-	OUT	-
171	*Alnus glutinosa*	Moderate	-	OUT	-
172	*Alnus glutinosa*	Moderate	-	OUT	-
173	*Alnus glutinosa*	Moderate	-	OUT	-
174	*Alnus glutinosa*	Low	-	OUT	N
175	*Quercus robur*	Low	-	OUT	N
176	*Fraxinus excelsior*	Moderate	-	OUT	-
177	*Quercus robur*	Moderate	-	OUT	-
178	*Quercus robur*	Low	-	OUT	N
179	*Quercus robur*	Moderate	-	OUT	-
180	*Quercus robur*	Moderate	-	OUT	-
181	*Quercus robur*	Moderate	-	OUT	-
183	*Quercus robur*	Moderate	-	OUT	-
184	*Quercus robur*	Moderate	-	OUT	-
185	*Fraxinus excelsior*	Moderate	-	OUT	-

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
186	*Quercus robur*	Low	-	OUT	N
187	*Quercus robur*	Low	-	OUT	N
188	*Quercus robur*	Low	-	OUT	N
189	*Fraxinus excelsior*	Low	-	OUT	N
190	*Quercus robur*	Low	-	OUT	N
191	*Alnus glutinosa*	High	-	OUT	-
192	*Alnus glutinosa*	Moderate	-	OUT	-
193	-	Low	-	OUT	N
194	*Alnus glutinosa*	Low	-	OUT	N
195	*Alnus glutinosa*	Moderate	-	OUT	-
196	*Alnus glutinosa*	Moderate	-	OUT	-
197	*Quercus robur*	Low	-	OUT	N
198	*Quercus robur*	Low	-	OUT	N
199	*Quercus robur*	High	-	OUT	-
200	*Quercus robur*	Low	-	OUT	N
201	*Quercus robur*	Low	-	OUT	N
202	*Quercus robur*	Moderate	-	OUT	-
203	*Quercus robur*	Moderate	-	OUT	-
204	*Quercus robur*	Moderate	-	OUT	-
205	*Quercus robur*	Low	-	OUT	N
206	*Quercus robur*	Low	-	OUT	N
207	*Quercus robur*	Low	-	OUT	N
208	*Quercus robur*	Low	-	OUT	N
209	*Quercus robur*	Low	-	OUT	N
210	*Quercus robur*	Low	-	OUT	N
211	*Quercus robur*	Low	-	OUT	N
212	*Fraxinus excelsior*	High	-	OUT	-
213	*Fraxinus excelsior*	Low	-	OUT	N
214	*Fraxinus excelsior*	Low	-	OUT	N
246	*Quercus robur*	Low	-	OUT	N
216	*Quercus robur*	Low	-	OUT	N
217	*Quercus robur*	Moderate	Moderate	OUT	N
218	*Quercus robur*	Low	-	OUT	N
219	*Fraxinus excelsior*	Low	-	OUT	N
220	*Crataegus monogyna*	Moderate	Low	OUT	N
221	*Quercus robur*	Moderate	Moderate	OUT	N
222	*Fraxinus excelsior*	Moderate	Moderate	OUT	N

Tree no.	Species	GLTA rating	Bat roosting potential[1]		
			Rating after climbing	Scope in/out[2] of roost surveys	Hibernation potential[3]
223	*Alnus glutinosa*	Low	-	OUT	N
224	*Quercus robur*	Low	-	OUT	N
225	*Fraxinus excelsior*	Moderate	Moderate	IN	Y
229	*Quercus robur*	Moderate	Low	OUT	N
230	*Quercus robur*	Moderate	Moderate	OUT	Y
231	*Quercus robur*	Moderate	Low	OUT	N
232	*Quercus robur*	Moderate	Low	OUT	N
233	*Quercus robur*	Moderate	High	OUT	Y
234	*Quercus robur*	Moderate	Low	OUT	N
235	*Quercus robur*	High	High	OUT	Y
236	*Quercus robur*	Moderate	Low	OUT	Y
237	*Quercus robur*	High	High	OUT	Y
238	*Quercus robur*	Moderate	Low	OUT	N
239	*Quercus robur*	High (Confirmed)	n/a4	IN	Y
240	*Quercus robur*	Moderate	n/a4	IN	Unknown
241	*Quercus robur*	Moderate	n/a4	IN	N
242	*Populus alba*	High	n/a4	IN	N
243	*Populus alba*	Moderate	n/a4	IN	Unknown
244	*Populus alba*	Moderate	n/a4	IN	N
245	*Fraxinus excelsior*	Moderate	Low	OUT	No
246	*Quercus robur*	Moderate	Moderate	OUT	No
247	*Fraxinus excelsior*	Moderate	Moderate	OUT	unknown
248	*Quercus robur*	Moderate	Moderate	OUT	No
249	*Quercus robur*	Moderate	Moderate	OUT	No
250	*Fraxinus excelsior*	Moderate	High	OUT	Y
251	*Fraxinus excelsior*	Moderate	Moderate	OUT	unknown
252	*Quercus robur*	Low	-	OUT	N
253	*Acer campestre*	Low	-	OUT	N
254	*Populus alba*	Low	-	OUT	N
255	*Crataegus monogyna*	Low	-	OUT	N
256	*Quercus robur*	Low	-	OUT	N
257	*Populus alba*	Low	-	OUT	N
258	*Populus alba*	Low	-	OUT	N
259	*Populus alba*	Low	-	OUT	N
260	*Populus alba*	Low	-	OUT	N

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)
T5	Moderate	31/07/2018 (Dusk)	No emergence from tree. One species, Common pipistrelle, foraging.	17/08/2018 (Dawn)	..	n/a	n/a	N
T7	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and Myotis species bats recorded. Mostly common pipistrelle foraging and commuting activity but also two	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			Myotis recorded commuting along the hedgerow late on.					
T8	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded foraging near the tree.	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N
T9	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T16	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			Noctule bats detected during the survey.					
T17	Moderate	31/07/2018 (Dusk)	..	03/09/2018 (Dusk)	..	18/09/2018 (Dawn)	..	Y
T21	Moderate	27/06/18 (Dusk)	One common pipistrelle emerged from tree. . Common pipistrelle detected foraging near the tree during the survey.	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the survey, including foraging along western side of hedgerow close to dawn but did not enter tree.	13/09/2018 (Dusk)	..	Y
T22	Low	27/06/18 (Dusk)	No emergence from tree. Common pipistrelle and Noctule	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the	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)
			bats recorded during the survey.		survey, including foraging along western side of hedgerow close to dawn but did not enter tree.			
T24.1	Moderate	27/06/18 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded foraging.	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle, soprano pipistrelle recorded. Regular foraging activity by these species throughout the survey.	01/08/2018 (Dawn)	..	N
T24.3	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T47	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	05/09/2018 (Dusk)	..	N
T61	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	04/09/2018 (Dawn)	..	N
T64	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	04/09/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T67	MOD	27/06/18 (Dusk)	No emergence from tree. Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the survey.	n/a	n/a	N
T68	Low	27/06/18 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and Myotis species bats recorded foraging during the survey.	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle and *Nyctalus* species bats recorded foraging during the survey. Swarming activity (common pipistrelle) around the southern side of the tree, but did not enter tree	09/08/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
					and flew west along the hedgerow towards T69 and the woodland block beyond.			
T69	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T70	High	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle & Noctule bats detected during the survey.	01/08/2018 (Dawn)	..	N
T71	High	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	01/08/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
T72	Moderate	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the survey.	n/a	n/a	N
T73	High	28/06/18 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	13/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	01/08/2018 (Dawn)	..	N
T74	Low	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats detected	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)
			during the survey.					
T75	Low	132072018 (Dawn)	No re-entry to tree. Common pipistrelle and Noctule bats detected during the survey.	n/a	n/a	n/a	n/a	N
T76		18/09/2018 (Dusk)	..	n/a	n/a	n/a	n/a	N
T77		18/09/2018 (Dusk)	..	n/a	n/a	n/a	n/a	N Reported brown long-eared roost
T79	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	18/09/2018 (Dusk)	..	N
T80	Moderate	08/08/2018 (Dawn)	..	20/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	Y
T83	High	08/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	05/09/2018 (Dusk)	..	Y
T85.2	High	08/08/2018 (Dawn)	..	20/08/2018 (Dusk)	..	20/08/2018 (Dusk)	..	Y
T86.1	Moderate	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	04/09/2018 (Dawn)	..	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)
T86.2	Moderate	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	04/09/2018 (Dawn)	..	n/a	n/a	N
T86.3	High	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	04/09/2018 (Dawn)	..	12/09/2018 (Dusk)	..	N
T86.4	Moderate	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded	04/09/2018 (Dawn)	..	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)
			foraging during the survey.					
T90	High	09/08/2018 (Dusk/Dawn)	..	No access	n/a	No access	n/a	N
T104	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and brown long-eared bats recorded during the survey.	25/07/2018 (Dawn)	No re-entry to tree. Regular common pipistrelle foraging and commuting throughout the survey. Bats crossing the proposed scheme route at this point.	n/a	n/a	N
T105	High	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded	13/09/2018 (Dusk)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			Noctule bats recorded foraging during the survey.		during the survey.			
T106	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule, *Nyctalus & Myotis*) were detected during survey foraging and commuting.	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	n/a	n/a	N
T108	Low	25/07/2018 (Dawn)	No emergence from tree. Common and soprano pipistrelle 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)
T110	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle and Noctule bats recorded.	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	n/a	n/a	N
T111	High	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and long-eared bats foraging and commuting during the survey.	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle both foraging along the southern edge of the wood. Possible long-eared bat also recorded.	13/09/2018 (Dusk)	..	N
T112	Moderate	08/08/2018 (Dusk/Dawn)	..	03/09/2018 (Dusk/Dawn)	..	n/a	n/a	N
T225	Moderate	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T230	Moderate	24/07/2018 (Dusk)	No	Scoped out of further	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)
			emergence from tree. Common pipistrelle recorded during the survey.	surveys.				
T233	Moderate	24/07/2018 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	Scoped out of further surveys.	n/a	n/a	n/a	N
T235	High	24/07/2018 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	Scoped out of further surveys.	n/a	n/a	n/a	N
T237	High	24/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and *Myotis*	Scoped out of further surveys.	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)
			species bats recorded foraging during the survey.					
T239	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	N Reported *Myotis* roost
T240	..	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T241	..	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T242	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	Y
T243	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	n/a	n/a	N
T244	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	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)**
T5	Moderate	31/07/2018 (Dusk)	No emergence from tree. One species, Common pipistrelle, foraging.	17/08/2018 (Dawn)	..	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)
T7	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and Myotis species bats recorded. Mostly common pipistrelle foraging and commuting activity but also two Myotis recorded commuting along the hedgerow late on.	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N
T8	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle,	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			soprano pipistrelle and Noctule bats recorded foraging near the tree.					
T9	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T16	Moderate	31/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats detected during the survey.	14/08/2018 (Dusk)	..	14/09/2018 (Dawn)	..	N
T17	Moderate	31/07/2018 (Dusk)	..	03/09/2018 (Dusk)	..	18/09/2018 (Dawn)	..	Y
T21	Moderate	27/06/18 (Dusk)	One common pipistrelle emerged from tree. . Common pipistrelle	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the	13/09/2018 (Dusk)	..	Y

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			detected foraging near the tree during the survey.		survey, including foraging along western side of hedgerow close to dawn but did not enter tree.			
T22	Low	27/06/18 (Dusk)	No emergence from tree. Common pipistrelle and Noctule bats recorded during the survey.	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the survey, including foraging along western side of hedgerow close to dawn but did not enter tree.	n/a	n/a	N
T24.1	Moderate	27/06/18 (Dusk)	No emergence	12/07/2018 (Dawn)	No re-entry to	01/08/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded foraging.		tree. Common pipistrelle, soprano pipistrelle recorded. Regular foraging activity by these species throughout the survey.			
T24.3	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T47	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	05/09/2018 (Dusk)	..	N
T61	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	04/09/2018 (Dawn)	..	N
T64	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	04/09/2018 (Dawn)	..	N
T67	MOD	27/06/18 (Dusk)	No emergence from tree. Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle recorded during the survey.	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)
T68	Low	27/06/18 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and Myotis species bats recorded foraging during the survey.	12/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle and *Nyctalus* species bats recorded foraging during the survey. Swarming activity (common pipistrelle) around the southern side of the tree, but did not enter tree and flew west along the hedgerow towards T69 and the woodland	09/08/2018 (Dawn)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
					block beyond.			
T69	Moderate	09/08/2018 (Dawn)	..	22/08/2018 (Dusk)	..	n/a	n/a	N
T70	High	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common pipistrelle & Noctule bats detected during the survey.	01/08/2018 (Dawn)	..	N
T71	High	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	13/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	01/08/2018 (Dawn)	..	N
T72	Moderate	28/06/18 (Dusk)	No emergence from tree.	13/07/2018 (Dawn)	No re-entry to tree.	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)
			Common pipistrelle & Noctule bats detected during the survey.		Common pipistrelle recorded during the survey.			
T73	High	28/06/18 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	13/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	01/08/2018 (Dawn)	..	N
T74	Low	28/06/18 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats detected during the survey.	n/a	n/a	n/a	n/a	N
T75	Low	132072018 (Dawn)	No re-entry	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)
			to tree. Common pipistrelle and Noctule bats detected during the survey.					
T76		18/09/2018 (Dusk)	..	n/a	n/a	n/a	n/a	N
T77		18/09/2018 (Dusk)	..	n/a	n/a	n/a	n/a	N Reported brown long-eared roost
T79	High	07/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	18/09/2018 (Dusk)	..	N
T80	Moderate	08/08/2018 (Dawn)	..	20/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	Y
T83	High	08/08/2018 (Dusk)	..	21/08/2018 (Dawn)	..	05/09/2018 (Dusk)	..	Y
T85.2	High	08/08/2018 (Dawn)	..	20/08/2018 (Dusk)	..	20/08/2018 (Dusk)	..	Y
T86.1	Moderate	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	04/09/2018 (Dawn)	..	n/a	n/a	N
T86.2	Moderate	04/07/2018 (Dusk)	No emergence from tree.	04/09/2018 (Dawn)	..	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)
			Common pipistrelle & Noctule bats detected during the survey.					
T86.3	High	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle & Noctule bats detected during the survey.	04/09/2018 (Dawn)	..	12/09/2018 (Dusk)	..	N
T86.4	Moderate	04/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded foraging during the survey.	04/09/2018 (Dawn)	..	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)
T90	High	09/08/2018 (Dusk/Dawn)	..	No access	n/a	No access	n/a	N
T104	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and brown long-eared bats recorded during the survey.	25/07/2018 (Dawn)	No re-entry to tree. Regular common pipistrelle foraging and commuting throughout the survey. Bats crossing the proposed scheme route at this point.	n/a	n/a	N
T105	High	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and Noctule bats recorded foraging	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	13/09/2018 (Dusk)	..	N

Tree number	PRF suitability	Date of survey	Results	Date of survey	Results	Date of survey	Results	Roost present (Y/N)
			during the survey.					
T106	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule, *Nyctalus* & *Myotis*) were detected during survey foraging and commuting.	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle recorded during the survey.	n/a	n/a	N
T108	Low	25/07/2018 (Dawn)	No emergence from tree. Common and soprano pipistrelle recorded.	n/a	n/a	n/a	n/a	N
T110	Moderate	12/07/2018 (Dusk)	No emergence from tree. Common	25/07/2018 (Dawn)	No re-entry to tree. Common	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)
			pipistrelle and Noctule bats recorded.		and soprano pipistrelle recorded during the survey.			
T111	High	12/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle, Noctule and long-eared bats foraging and commuting during the survey.	25/07/2018 (Dawn)	No re-entry to tree. Common and soprano pipistrelle both foraging along the southern edge of the wood. Possible long-eared bat also recorded.	13/09/2018 (Dusk)	..	N
T112	Moderate	08/08/2018 (Dusk/Dawn)	..	03/09/2018 (Dusk/Dawn)	..	n/a	n/a	N
T225	Moderate	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T230	Moderate	24/07/2018 (Dusk)	No emergence from tree. Common pipistrelle	Scoped out of further surveys.	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)
			recorded during the survey.					
T233	Moderate	24/07/2018 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	Scoped out of further surveys.	n/a	n/a	n/a	N
T235	High	24/07/2018 (Dusk)	No emergence from tree. Common and soprano pipistrelle recorded.	Scoped out of further surveys.	n/a	n/a	n/a	N
T237	High	24/07/2018 (Dusk)	No emergence from tree. Common pipistrelle, soprano pipistrelle and *Myotis* species bats recorded foraging	Scoped out of further surveys.	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)
			during the survey.					
T239	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	N Reported *Myotis* roost
T240	..	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T241	..	16/08/2018 (Dusk)	..	31/08/2018 (Dawn)	..	n/a	n/a	N
T242	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	13/09/2018 (Dusk)	..	Y
T243	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	n/a	n/a	N
T244	..	17/08/2018 (Dawn)	..	30/08/2018 (Dusk)	..	n/a	n/a	N

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

Heath End House – Dusk – 30 May 2018

MAY				
Project Name	M42 Junction 6	Surveyor		JT
Survey Location	B	Rain (0-5)		1
Date	30/05/2018	Wind (0-7)		0
Start	21:10	Cloud Cover (0-5)		5
Sunset	21:17	Temperature		18°C
Finish	23:00	Weather description		Rain earlier in evening but stopped during survey, light fog but not enough to impact visibility, 82% humidity, still and cloudy.
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
22:17	Noctule	1	Y	Heard not seen (HNS) commuting
22:20	Pip 45	1	Y	HNS commuting
22:24 – 22:30	Pip 45	16	Y	HNS foraging and commuting
22:32 – 22:47	Pip 45	24	Y	HNS foraging and commuting
22:38	Long-Eared Bat	2	Y	Seen flying outside eastern gable end, suspected emergence.
22:44 – 22:45	Pip 45	2	Y	HNS foraging and commuting
22:49 – 22:53	Pip 45	10	Y	HNS foraging and commuting
22:56	Pip 45	2	Y	HNS foraging and commuting
22:59 - 23:01	Pip 45	4	Y	HNS foraging and commuting

MAY				
Project Name	M42 Junction 6	Surveyor		GG
Survey Location	C	Rain (0-5)		1
Date	30/05/2018	Wind (0-7)		0
Start	21:10	Cloud Cover (0-5)		5
Sunrise	21:17	Temperature		18°C
Finish	23:00	Weather description		Rain earlier in evening but stopped during survey, light fog but not enough to impact visibility, 82% humidity, still and cloudy.
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
22:06	Pip 45	1	Y	Heard not seen (HNS) commuting
22:17	Noctule	2	Y	HNS commuting
22:20	Pip 45	1	Y	HNS commuting
22:21	Pip 45	1	Y	HNS commuting
22:40 - 22:43	Pip 45	10	Y	HNS foraging and commuting
22:45 – 22:50	Pip 45	15	Y	HNS foraging and commuting
22:52 – 22:53	Pip 45	2	Y	HNS foraging and commuting
22:56	Pip 45	1	Y	HNS foraging and commuting
22:57	Myotis sp.	1	Y	HNS foraging and commuting
23:00	Pip 45	1	Y	HNS foraging and commuting

Heath End House – Dawn – 5 July 2018

JULY				
Project Name	M42 Junction 6	Surveyors		DR
Survey Location	A	Rain (0-5)		0
Date	05/07/2018	Wind (0-7)		0
Start	03:00	Cloud Cover (0-5)		3
Sunrise	04:52	Temperature		16°C
Finish	05:00	Weather description		Dry, warm, no wind
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
03:05	Pip sp.	2	Y	Heard not seen (HNS) foraging
03:07	Pip 45	1	Y	HNS foraging
03:11	Pip 45	3	Y	HNS foraging
03:13	Pip 45	2	Y	HNS foraging
03:21	Pip 45	2	Y	HNS foraging

03:29	Pip 45	1	Y	HNS foraging
03:41	Pip 45	1	Y	HNS foraging
03:50 – 03:53	Noctule	6	Y	HNS foraging
04:08	Pip 45	2	Y	HNS foraging
04:18 – 04:19	Noctule	4	Y	Heard and seen (H&S) commuting from south east to north west

JULY				
Project Name	M42 Junction 6	Surveyors		TC
Survey Location	B	Rain (0-5)		0
Date	05/07/2018	Wind (0-7)		0
Start	03:00	Cloud Cover (0-5)		3
Sunrise	04:52	Temperature		16°C
Finish	05:00	Weather description		Dry, warm, no wind
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
03:06	Pip sp.	2	Y	Heard not seen (HNS) foraging
03:07	Pip 45	1	Y	HNS foraging
03:09	Pip sp.	1	Y	HNS foraging
03:10	Pip 45	5	Y	HNS foraging
03:15	Pip sp.	1	Y	HNS foraging
03:22 – 03:23	Pip 45	3	Y	HNS foraging
03:30	Pip 45	1	Y	HNS foraging
03:30	Pip sp.	1	Y	HNS foraging
03:37	Pip 45	1	Y	HNS foraging
03:43	Pip 45	1	Y	HNS foraging
03:51 – 03:52	Noctule	1	Y	HNS foraging
04:09	Pip 45	1	Y	Heard and seen (H&S) commuting, flew north west towards trees
04:20	Noctule	1	Y	HNS commuting

JULY				
Project Name	M42 Junction 6	Surveyors		JW
Survey Location	C	Rain (0-5)		0
Date	05/07/2018	Wind (0-7)		0
Start	03:00	Cloud Cover (0-5)		3
Sunrise	04:52	Temperature		16°C
Finish	05:00	Weather description		Dry, warm, no wind
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**

03:06	Pip sp.	1	Y	Heard not seen (HNS) foraging
03:10	Pip 45	1	Y	HNS foraging
03:12	Pip 45	1	Y	HNS foraging
03:12	Pip sp.	2	Y	HNS foraging
03:14	Pip 45	1	Y	HNS foraging
03:15	Pip 55	1	Y	Heard and seen (H&S) foraging adjacent to house
03:22 – 03:24	Pip 45	4	Y	HNS foraging
03:39	Pip 45	1	Y	H&S commuting between building and surveyor
03:51	Noctule	2	Y	HNS commuting

Heath End House – Dawn – 4 September 2018

SEPTEMBER					
Project Name	M42 Junction 6	Surveyors		AR	
Survey Location	A	Rain (0-5)		0	
Date	04/09/2018	Wind (0-7)		3	
Start	04:52	Cloud Cover (0-5)		5	
Sunrise	06:22	Temperature		15°C	
Finish	06:22	Weather description		Wet night, cool, breezy and cloudy	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. Number**	**Description of behaviour**
05:02	Pip 45	1	Y		Heard not seen (HNS) foraging
05:05 – 05:06	Pip 45	2	Y		HNS commuting
05:25	Pip 45	3	Y		HNS commuting
05:38	Pip 45	3	Y		HNS foraging
05:43	Pip 45	1	Y		HNS foraging
05:44	Pip 45	1	Y		HNS foraging
06:05	Pip 45	1	Y		HNS foraging
06:08 – 06:09	Pip 45	2	Y		HNS foraging
06:10	Pip 45	2	Y	1 & 2	Heard and seen (H&S) re-entered building, see notes from location C for full details
06:10	Pip sp.	1	Y		HNS foraging
06:17	Pip 45	2	Y	2	Heard and seen (H&S) re-entered building, see notes from location C for full details

SEPTEMBER			
Project Name	M42 Junction 6	Surveyors	DR
Survey Location	B	Rain (0-5)	0
Date	04/09/2018	Wind (0-7)	3

Start	04:52	Cloud Cover (0-5)		5
Sunrise	06:22	Temperature		15°C
Finish	06:22	Weather description		Wet night, cool, breezy and cloudy
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
04:47	Pip 45	1	Y	Heard not seen (HNS) commuting
04:56	Pip 45	3	Y	HNS brief foraging pass
05:06 – 05:07	Pip 45	3	Y	HNS foraging
05:26 – 05:27	Pip 45	15	Y	H&S foraging between surveyor and building
05:39	Pip 45	3	Y	HNS foraging
05:44	Pip 45	3	Y	H&S foraging overhead
05:48 – 05:51	Pip 45	6	Y	HNS foraging
06:05	Pip 45	1	Y	HNS brief pass
06:18	Pip 45	3	Y	H&S commuting

SEPTEMBER					
Project Name	M42 Junction 6	Surveyors		LS	
Survey Location	C	Rain (0-5)		0	
Date	04/09/2018	Wind (0-7)		3	
Start	04:52	Cloud Cover (0-5)		5	
Sunrise	06:22	Temperature		15°C	
Finish	06:22	Weather description		Wet night, cool, breezy and cloudy	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. Number**	**Description of behaviour**
04:45	Pip 45	2	Y		Heard not seen (HNS) foraging
04:54	Pip 45	2	Y		HNS foraging
05:00	Pip 45	1	Y		HNS foraging
05:04	Pip 45	2	Y		HNS foraging
05:24	Pip 45	13	Y		Heard and seen (H&S) foraging around south west of house
05:37	Pip 45	1	Y		HNS foraging
05:41 – 05:42	Pip 45	2	Y		HNS foraging
06:03	Pip 45	2	Y		HNS foraging
06:06 – 06:08	Pip 45	24	Y		HNS foraging
06:08	Pip 55	3	Y		HNS foraging
06:09 – 06:11	Pip 45	2	Y	1 & 2	H&S two bats re-entered building, one re-entered on south west corner of chimney (1) and the second bat re-entered on the very edge of the house/chimney in cavity between wood paneling (2)

06:09	Pip sp.	1	Y		HNS foraging
06:15 – 06:16	Pip 45	7	Y	2	H&S two more bats re-entered on the very edge of the house/chimney in cavity between wood paneling

Tree 17 – Dawn – 9 August 2018

AUGUST					
Project Name	M42 Junction 6	Surveyors		KC	
Survey Location	D	Rain (0-5)		0	
Date	09/08/2018	Wind (0-7)		1	
Start	04:07	Cloud Cover (0-5)		5	
Sunrise	05:37	Temperature		16°C	
Finish	05:37	Weather description		Rain evening previous but before dusk. During survey dry and cool	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**	
04:46	Pip 45	1	Y	Heard not seen (HNS0 very brief and faint pass	
05:22	Pip 55	1	Y	HNS brief commuting pass	

AUGUST					
Project Name	M42 Junction 6	Surveyors		GG	
Survey Location	E	Rain (0-5)		0	
Date	09/08/2018	Wind (0-7)		1	
Start	04:07	Cloud Cover (0-5)		5	
Sunrise	05:37	Temperature		16°C	
Finish	05:37	Weather description		Rain evening previous but before dusk. During survey dry and cool	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. Number**	**Description of behaviour**
04:45	Pip sp.	1	Y		Heard not seen (HNS) foraging
04:46	Pip 55	1	Y		HNS foraging
05:21	Pip 55	1	Y	3	Heard and seen (H&S) bat approached the tree canopy from North West and was not seen exiting the canopy from either side of the tree so assumed re-entry.

Tree 17 – Dusk – 3 September 2018

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		DH
Survey Location	D	Rain (0-5)		0
Date	03/09/2018	Wind (0-7)		2-3
Start	19:39	Cloud Cover (0-5)		4
Sunrise	19:54	Temperature		20°C
Finish	21:24	Weather description		Gentle breeze, overcast and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:23	Pip 55	1	Y	Heard not seen (HNS) brief pass
20:28 – 20:31	Pip 45	4	Y	Heard and seen (H&S) multiple bats foraging along hedgerow
20:36 – 20:37	Pip 45	2	Y	H&S commuting along hedgerow
20:39 – 20:47	Pip 45	23	Y	H&S multiple bats foraging along hedgerow
20:52 – 21:03	Pip 45	40	Y	H&S multiple bats foraging along hedgerow
20:55	Pip 55	1	Y	H&S foraging along hedgerow
20:58	Pip sp.	1	Y	H&S foraging along hedgerow
21:06 – 21:09	Pip 45	15	Y	H&S multiple bats foraging along hedgerow
21:11	Pip 45	2	Y	H&S foraging along hedgerow
21:11	Pip 55	1	Y	H&S foraging along hedgerow
21:15 – 21:19	Pip 45	19	Y	H&S multiple bats foraging along hedgerow
21:21 – 21:24	Pip 45	12	Y	H&S multiple bats foraging along hedgerow

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		DM
Survey Location	E	Rain (0-5)		0
Date	03/09/2018	Wind (0-7)		2-3
Start	19:39	Cloud Cover (0-5)		4
Sunrise	19:54	Temperature		20°C
Finish	21:24	Weather description		Gentle breeze, overcast and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:29 – 20:31	Pip 45	6	Y	Heard and seen (H&S) foraging along hedgerow
20:33	Pip 45	1	Y	H&S foraging along hedgerow
20:36 – 20:37	Pip 45	2	Y	H&S multiple bats foraging along hedgerow

20:39 – 20:47	Pip 45	40	Y	H&S multiple bats foraging along hedgerow
20:51	Pip 45	1	Y	H&S foraging along hedgerow
20:53 – 21:11	Pip 45	86	Y	H&S multiple bats foraging along hedgerow
20:55	Pip 55	2	Y	H&S foraging along hedgerow
21:11	Pip 55	1	Y	H&S foraging along hedgerow
21:15 – 21:26	Pip 45	73	Y	H&S multiple bats foraging along hedgerow

Tree 17 – Dusk – 18 September 2018

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		TC
Survey Location	D	Rain (0-5)		0
Date	18/09/2018	Wind (0-7)		3
Start	18:59	Cloud Cover (0-5)		1
Sunrise	19:14	Temperature		20°C
Finish	20:44	Weather description		Gentle breeze, warm and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:33	Pip 55	1	Y	Heard and seen (H&S) commuting south along hedgerow
19:36 – 19:39	Pip 55	11	Y	H&S continuous foraging over field to east
19:40	Noctule	1	Y	Heard not seen (HNS) commuting
19:42	Pip 55	3	Y	H&S foraging, flew overhead into field
19:47 – 19:48	Pip 45	4	Y	HNS foraging
19:58	Pip 45	1	Y	HNS commuting
19:58	Noctule	2	Y	HNS commuting
20:00 – 20:03	Pip 45	17	Y	HNS foraging
20:05	Pip 55	1	Y	HNS foraging
20:11	Pip 45	1	Y	HNS foraging
20:14	Nyctalus sp.	1	Y	HNS foraging
20:14	Leisler	1	Y	HNS foraging
20:26	Pip 45	1	Y	HNS foraging
20:33	Nyctalus sp.	2	Y	HNS foraging
20:36	Pip 45	2	Y	HNS foraging
20:41	Long-eared bat	1	Y	HNS foraging
20:41	Nyctalus sp.	1	Y	HNS foraging
20:45	Pip 55	4	Y	HNS foraging

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		GG
Survey Location	D	Rain (0-5)		0
Date	18/09/2018	Wind (0-7)		3
Start	18:59	Cloud Cover (0-5)		1
Sunrise	19:14	Temperature		20°C
Finish	20:44	Weather description		Gentle breeze, warm and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:33	Pip 55	2	Y	Heard and seen (H&S) foraging along hedgerow
19:36	Pip 55	2	Y	Heard not seen (HNS) foraging
19:38	Pip 55	3	Y	HNS foraging
19:40	Pip 55	3	Y	HNS foraging
19:40	Noctule	1	Y	HNS foraging
19:42	Pip 55	1	Y	HNS foraging
19:48 – 19:49	Pip 45	1	Y	H&S foraging in field
19:51	Pip 55	1	Y	HNS foraging
19:58	Noctule	1	Y	HNS foraging
19:59	Pip 45	1	Y	HNS foraging
20:01 – 20:03	Pip 45	11	Y	HNS foraging
20:06	Pip 55	22	Y	HNS foraging
20:12	Pip 45	1	Y	HNS foraging
20:15	Noctule	1	Y	HNS foraging
20:20	Pip 45	2	Y	HNS foraging
20:27 – 20:28	Pip 45	6	Y	HNS foraging
20:34	Noctule	1	Y	HNS foraging
20:36	Pip 45	1	Y	HNS foraging
20:38	Noctule	2	Y	HNS foraging
20:41 – 20:46	Pip 45	17	Y	HNS foraging
20:45	Pip 55	1	Y	HNS foraging

Tree 22 – Dusk – 27 June 2018

JUNE				
Project Name	M42 Junction 6	Surveyors		TC
Survey Location	F	Rain (0-5)		0
Date	27/06/2018	Wind (0-7)		1
Start	21:17	Cloud Cover (0-5)		0
Sunrise	21:33	Temperature		22°C
Finish	23:09	Weather description		Humid, warm, still, dry and clear skies
Time	**Species**	**No. of**	**Recording**	**Description of behaviour**

		passes	(Y/N)	
22:22	Pip 45	1	Y	Heard not seen (HNS) foraging
22:26	Pip 45	1	Y	HNS foraging
22:26	Pip sp.	1	Y	Heard and seen (H&S) foraging along hedgerow
22:28	Pip 45	1	Y	H&S foraging along hedgerow
22:33	Noctule	1	Y	HNS foraging
22:33	Nyctalus sp.	1	Y	HNS foraging
22:37	Pip 45	1	Y	HNS foraging
22:43 – 22:44	Pip 45	3	Y	HNS foraging
22:56 – 22:57	Pip 45	2	Y	HNS foraging
23:00 – 23:01	Pip 45	4	Y	HNS foraging
23:05	Pip 45	1	Y	HNS foraging
23:05	Pip sp.	1	Y	HNS brief and distant pass
23:09	Pip sp.	1	Y	HNS foraging
23:10	Pip 45	1	Y	HNS foraging
23:12	Pip 45	4	Y	HNS foraging

JUNE					
Project Name	M42 Junction 6	Surveyors		GG	
Survey Location	G	Rain (0-5)		0	
Date	27/06/2018	Wind (0-7)		1	
Start	21:17	Cloud Cover (0-5)		0	
Sunrise	21:33	Temperature		22°C	
Finish	23:09	Weather description		Humid, warm, still, dry and clear skies	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. Number**	**Description of behaviour**
22:20	Pip 45	1	Y		Heard not seen (HNS) commuting
22:28	Pip 45	1	Y		Heard and seen (H&S) foraging north to south along hedgerow
22:44	Pip 45	1	Y		HNS foraging
22:44	Pip sp.	2	Y		H&S foraging along west side of hedgerow
22:48	Pip sp.	1	Y	4	H&S bat flew into tree canopy and wasn't seen emerging from either side assumed re-entry
22:56	Pip 45	1	Y		HNS foraging
22:57	Pip 45	1	Y		H&S foraging south to north along hedgerow
23:08	Pip sp.	1	Y		HNS foraging

Tree 22 – Dawn – 12 July 2018

JULY				
Project Name	M42 Junction 6	Surveyors		CA
Survey Location	F	Rain (0-5)		0
Date	12/07/2018	Wind (0-7)		1
Start	02:59	Cloud Cover (0-5)		4
Sunrise	04:59	Temperature		15-16°C
Finish	04:59	Weather description		Warm, light breeze and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
02:45	Pip 45	1	Y	Heard not seen (HNS) foraging
02:47	Pip 45	1	Y	HNS foraging
02:50	Pip 45	1	Y	HNS foraging
02:54	Pip 45	3	Y	HNS foraging
02:56	Pip 45	1	Y	HNS foraging
02:58	Pip 45	3	Y	HNS foraging
03:03 – 03:05	Pip 45	5	Y	HNS foraging
03:09 – 03:10	Pip 45	8	Y	HNS foraging
03:13	Pip 45	2	Y	HNS foraging
03:24 – 03:26	Pip 45	8	Y	HNS foraging
03:28 – 03:29	Pip 45	5	Y	HNS foraging
03:41	Pip 45	7	Y	HNS foraging
03:45 – 03:46	Pip 45	6	Y	HNS foraging
03:48	Pip 45	1	Y	HNS foraging
03:50 – 03:51	Pip 45	9	Y	HNS foraging
03:54	Pip 45	1	Y	HNS foraging
03:58	Pip 45	3	Y	HNS foraging
04:01	Pip 45	3	Y	HNS foraging
04:05 – 04:06	Pip 45	9	Y	HNS foraging
04:08	Pip 45	3	Y	HNS foraging
04:10 – 04:13	Pip 45	7	Y	HNS foraging

Tree 22 – Dusk – 13 September 2018

SEPTEMBER			
Project Name	M42 Junction 6	Surveyors	GG
Survey Location	F	Rain (0-5)	0
Date	13/09/2018	Wind (0-7)	2

Start	19:10	Cloud Cover (0-5)		5
Sunrise	19:25	Temperature		15°C
Finish	20:55	Weather description		Cloudy with slight wind
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:50	Pip 55	1	Y	Heard not seen (HNS) foraging
19:52	Pip sp.	1	Y	HNS foraging
19:53 – 19:54	Pip 55	2	Y	HNS multiple bats foraging
19:58	Pip sp.	1	Y	HNS foraging
20:04	Pip 55	1	Y	HNS foraging
20:07	Pip sp.	1	Y	HNS foraging
20:12	Pip 45	2	Y	HNS foraging
20:14 – 20:16	Pip 45	10	Y	HNS multiple bats foraging
20:20 – 20:25	Pip 45	18	Y	HNS multiple bats foraging
20:36	Pip 45	1	Y	HNS foraging
20:40	Pip 45	1	Y	HNS foraging
20:46	Pip 45	3	Y	HNS foraging

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		AS
Survey Location	G	Rain (0-5)		0
Date	13/09/2018	Wind (0-7)		2
Start	19:10	Cloud Cover (0-5)		5
Sunrise	19:25	Temperature		15°C
Finish	20:55	Weather description		Cloudy with slight wind
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:52 – 19:53	Pip sp.	2	Y	Heraed not seen (HNS) brief faint passes
19:49	Pip sp.	3	Y	Heard not seen (HNS) foraging
19:51 – 19:52	Pip sp.	4	Y	Heard and seen (H&S) foraging east to west across hedgerow
19:54	Pip sp.	2	Y	HNS foraging
19:56	Pip sp.	2	Y	HNS foraging
20:04	Pip sp.	1	Y	HNS foraging
20:07	Pip sp.	1	Y	HNS foraging
20:12 – 20:16	Pip 45	12	Y	H&S foraging north to south along hedgerow
20:16	Long-eared Bat	1	Y	HNS foraging
20:20 – 20:24	Pip 45	13	Y	H&S foraging north to south along hedgerow
20:26	Pip 45	2	Y	HNS foraging
20:35 –	Pip 45	2	Y	HNS foraging

20:36				
20:39 – 20:40	Pip 45	3	Y	HNS foraging
20:45 – 20:46	Pip 45	2	Y	HNS foraging
20:49	Pip 45	1	Y	HNS foraging

Tree 80 – Dawn – 8 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		MD
Survey Location	H	Rain (0-5)		0
Date	08/08/2018	Wind (0-7)		3
Start	04:05	Cloud Cover (0-5)		2
Sunrise	05:36	Temperature		13-11°C
Finish	05:36	Weather description		Cool, dry, gentle breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
04:20	Pip 45	1	Y	Heard not seen (HNS) commuting

AUGUST				
Project Name	M42 Junction 6	Surveyors		CA
Survey Location	I	Rain (0-5)		0
Date	08/08/2018	Wind (0-7)		3
Start	04:05	Cloud Cover (0-5)		2
Sunrise	05:36	Temperature		13-11°C
Finish	05:36	Weather description		Cool, dry, gentle breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
04:21	Pip 45	1	Y	Heard not seen (HNS) foraging

Tree 80 – Dusk – 20 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		KC
Survey Location	H	Rain (0-5)		0
Date	20/08/2018	Wind (0-7)		0
Start	20:07	Cloud Cover (0-5)		5
Sunrise	20:23	Temperature		23°C
Finish	21:53	Weather description		Light rain 30 minutes before dusk and off throughout survey, overcast and still
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**

20:25	Pip 55	1	Y	Heard not seen (HNS) foraging
20:35	Pip 55	1	Y	HNS foraging
20:44	Nyctalus sp.	1	Y	HNS foraging
20:44	Noctule	1	Y	HNS foraging
20:54 – 20:55	Pip 45	4	Y	HNS multiple bats foraging
21:03	Pip 45	1	Y	HNS foraging
21:08	Pip 45	3	Y	HNS foraging
21:10	Pip 45	1	Y	HNS foraging
21:12	Myotis sp.	1	Y	HNS foraging
21:12	Pip 45	1	Y	HNS foraging
21:14 – 21:15	Pip 45	1	Y	HNS multiple bats foraging
21:17	Pip 45	1	Y	HNS foraging
21:17	Noctule	2	Y	HNS foraging
21:26 – 21:27	Pip 45	2	Y	HNS multiple bats foraging
21:31	Pip 45	2	Y	HNS foraging
21:35	Pip 45	1	Y	HNS foraging
21:39	Nyctalus sp.	1	Y	HNS foraging
21:49	Myotis sp.	1	Y	HNS foraging
21:49	Pip 45	1	Y	HNS foraging

AUGUST					
Project Name	M42 Junction 6	Surveyors		JH	
Survey Location	I	Rain (0-5)		0	
Date	20/08/2018	Wind (0-7)		0	
Start	20:07	Cloud Cover (0-5)		5	
Sunrise	20:23	Temperature		23°C	
Finish	21:53	Weather description		Light rain 30 minutes before dusk and off throughout survey, overcast and still	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
20:15	Noctule	1	Y		Heard and seen (H&S) high flying from south to north across hedgerow
20:25	Pip 55	1	Y	5	H&S 1 bat emerged from south west corner of tree, did a 180° turn and flew north
20:34	Pip 55	1	Y	6	H&S 1 bat emerged from the south and flew south across field
20:44	Noctule	1	Y		HNS foraging
20:51	Pip 45	1	Y		HNS foraging
20:52	Noctule	1	Y		HNS foraging
21:06	Pip 55	1	Y		HNS foraging

21:10	Noctule	2	Y		HNS foraging
21:12	Myotis sp.	1	Y		HNS foraging
21:14	Pip 45	1	Y		HNS foraging
21:17	Noctule	1	Y		HNS foraging
21:19	Pip 45	1	Y		HNS foraging
21:26	Pip 45	1	Y		HNS foraging
21:31	Pip 45	2	Y		HNS foraging
21:37	Pip 55	2	Y		HNS foraging
21:38	Noctule	3	Y		HNS foraging
21:49	Myotis sp.	1	Y		HNS foraging
21:49	Pip 45	1	Y		HNS foraging

Tree 80 – Dusk – 13 September 2018

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		LS
Survey Location	H	Rain (0-5)		0
Date	13/09/2018	Wind (0-7)		9
Start	19:13	Cloud Cover (0-5)		4
Sunrise	19:28	Temperature		16°C
Finish	20:58	Weather description		Cool breezy evening after a sunny day
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:52	Pip 55	1	Y	Heard not seen (HNS) commuting
20:00	Pip 55	1	Y	HNS foraging
20:03	Noctule	1	Y	HNS foraging
20:19 – 20:22	Pip 45	8	Y	HNS foraging

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		LS
Survey Location	H	Rain (0-5)		0
Date	13/09/2018	Wind (0-7)		9
Start	19:13	Cloud Cover (0-5)		4
Sunrise	19:28	Temperature		16°C
Finish	20:58	Weather description		Cool breezy evening after a sunny day
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:52	Pip 55	1	Y	Heard not seen (HNS) commuting
20:03	Noctule	2	Y	HNS foraging
20:19	Pip 45	3	Y	HNS foraging
20:21	Pip 45	3	Y	HNS foraging

Tree 83 – Dusk – 8 August 2018

AUGUST					
Project Name	M42 Junction 6	Surveyors		KC	
Survey Location	J	Rain (0-5)		0	
Date	08/08/2018	Wind (0-7)		0	
Start	21:05*	Cloud Cover (0-5)		5	
Sunrise	20:45	Temperature		16°C	
Finish	22:15	Weather description		Rain during day but stopped before dusk *survey started late as tree was difficult to access	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
21:15	Pip 45	1	Y	7	Heard and seen (H&S) emerged from the tree headed east then flew back west
21:16	Noctule	2	Y		Heard not seen (HNS) commuting
21:18 – 21:19	Pip 45	6	Y		H&S commuting along hedgerow
21:18	Pip 55	1	Y		H&S commuting along hedgerow
21:22	Myotis sp.	1	Y		H&S commuting along hedgerow
21:23	Pip 45	2	Y		H&S commuting along hedgerow
21:23	Pip 55	1	Y		H&S commuting along hedgerow
21:27	Pip 45	1	Y		H&S circled tree and then flew along hedgerow
21:30	Pip 45	1	Y	8	H&S appears to have emerged from tree but too dark to tell rom which feature – would recommend Thermal Imaging for future surveys
21:32 – 21:33	Pip 45	3	Y		HNS foraging
21:37	Pip 45	1	Y		HNS foraging
21:40 – 21:42	Pip 45	3	Y		HNS foraging
21:45	Pip 45	1	Y		HNS foraging
21:49	Pip 45	3	Y		HNS foraging
21:53 – 21:54	Pip 45	2	Y		HNS foraging
21:56	Pip 45	2	Y		HNS foraging
22:00	Pip 45	2	Y		HNS foraging
22:04	Pip 45	1	Y		HNS foraging
22:06	Pip 45	1	Y		HNS foraging

AUGUST					
Project Name	M42 Junction 6	Surveyors		JW	
Survey Location	K	Rain (0-5)		0	
Date	08/08/2018	Wind (0-7)		0	
Start	21:05*	Cloud Cover (0-5)		5	
Sunrise	20:45	Temperature		16°C	
Finish	22:15	Weather description		Rain during day but stopped before dusk *survey started late as tree was difficult to access	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
21:15	Pip 45	1	Y	7	Heard and seen (H&S) emerged from the tree headed east then flew back west
21:16	Noctule	3	Y		Heard not seen (HNS) foraging
21:18	Pip 55	1	Y		HNS foraging
21:18 – 21:19	Pip 45	6	Y		HNS foraging
21:23	Myotis sp.	1	Y		HNS foraging
21:23	Pip 55	1	Y		HNS foraging
21:23	Pip 45	2	Y		HNS foraging
21:27	Pip 45	1	Y		HNS foraging
21:30	Pip 45	1	Y	8	H&S appears to have emerged from tree but too dark to tell rom which feature – would recommend Thermal Imaging for future surveys
21:33	Pip 45	2	Y		HNS foraging
21:41	Pip 45	2	Y		HNS foraging
21:45	Pip 45	1	Y		HNS foraging
21:49	Pip 45	2	Y		HNS foraging
21:54	Pip 45	1	Y		HNS foraging
21:56	Pip 45	2	Y		HNS foraging
22:01	Pip 45	1	Y		HNS foraging
22:04	Pip 45	1	Y		HNS foraging
22:06	Pip 45	1	Y		HNS foraging
22:14	Pip 45	1	Y		HNS foraging

Tree 83 – Dawn – 21 August 2018

AUGUST			
Project Name	M42 Junction 6	Surveyors	RMB & FMC
Survey Location	J&I (Thermal Imaging)	Rain (0-5)	0
Date	21/08/2018	Wind (0-7)	0
Start	04:29	Cloud Cover (0-5)	3
Sunrise	05:59	Temperature	18°C

Finish	06:14	Weather description		Light breeze, dry and mild	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
04:28	Pip 45	4	Y		Heard not seen (HNS) foraging
04:31 – 04:36	Pip 45	20	Y		HNS foraging
04:47	Long-eared bat	2	Y	9	Heard and seen (H&S) flew back into left side branch of tree
04:54	Pip 45	3	Y	10	H&S continuous foraging and then flew back into left side branch of tree
04:55 – 04:56	Pip 45	9	Y		HNS foraging
04:57	Long-eared bat	1	Y		HNS foraging
05:11	Pip 45	1	Y		HNS foraging
05:11	Noctule	1	Y		HNS foraging
05:28	Pip 45	1	Y		HNS foraging
05:29 – 05:41	Noctule	47	Y		HNS multiple bats continuous foraging
05:45 – 05:49	Noctule	15	Y		HNS multiple bats continuous foraging

Tree 83 – Dusk – 5 September 2018

SEPTEMBER					
Project Name	M42 Junction 6	Surveyors		GG	
Survey Location	J	Rain (0-5)		0	
Date	05/09/2018	Wind (0-7)		2	
Start	19:31	Cloud Cover (0-5)		2	
Sunrise	19:47	Temperature		16°C	
Finish	21:17	Weather description		Warm, mild sunny with scattered cloud	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
20:20	Pip 45	1	Y	11	Heard and seen (H&S) Bat emerged, not clear from which feature
20:24 – 20:25	Pip 45	3	Y		HNS foraging
20:27	Pip 45	1	Y		HNS foraging
20:33	Pip 45	1	Y		HNS foraging
20:37	Pip 45	2	Y		HNS foraging
20:40	Nyctalus sp.	1	Y		HNS foraging
21:15	Nyc/Epi	2	Y		HNS foraging

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		GG
Survey Location	J	Rain (0-5)		0
Date	05/09/2018	Wind (0-7)		2
Start	19:31	Cloud Cover (0-5)		2
Sunrise	19:47	Temperature		16°C
Finish	21:17	Weather description		Warm, mild sunny with scattered cloud
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:20	Pip 45	1	Y	Heard and seen (H&S) commuting from south to north
20:23 – 20:25	Pip 45	3	Y	H&S foraging along hedgerow
20:27	Pip 45	1	Y	Heard not seen (HNS) foraging
20:33	Pip 45	1	Y	HNS foraging
20:35	Pip 45	1	Y	HNS foraging
20:37	Pip 45	1	Y	HNS foraging
20:39	Nyctalus sp.	1	Y	HNS foraging
21:15	Nyctalus sp.	1	Y	HNS foraging

Tree 85.2 – Dawn – 8 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		TC
Survey Location	L	Rain (0-5)		0
Date	08/08/2018	Wind (0-7)		2
Start	04:05	Cloud Cover (0-5)		3
Sunrise	05:36	Temperature		15°C
Finish	05:36	Weather description		Cool, dry, gentle breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
04:21	Pip 45	1	Y	Heard not seen (HNS) foraging
04:53	Pip 55	1	Y	HNS foraging

AUGUST			
Project Name	M42 Junction 6	Surveyors	DR
Survey Location	M	Rain (0-5)	0
Date	08/08/2018	Wind (0-7)	2
Start	04:05	Cloud Cover (0-5)	3
Sunrise	05:36	Temperature	15°C
Finish	05:36	Weather description	Cool, dry, gentle breeze

Time	Species	No. of passes	Recording (Y/N)	Description of behaviour
04:21	Pip 45	1	Y	Heard not seen (HNS) commuting
04:57	Pip 55	2	Y	HNS commuting

AUGUST				
Project Name	M42 Junction 6	Surveyors		LS
Survey Location	N	Rain (0-5)		0
Date	08/08/2018	Wind (0-7)		2
Start	04:05	Cloud Cover (0-5)		3
Sunrise	05:36	Temperature		15°C
Finish	05:36	Weather description		Cool, dry, gentle breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
04:21	Pip 45	1	Y	Heard not seen (HNS) commuting
04:54	Pip 55	1	Y	HNS commuting
04:57	Pip 55	1	Y	HNS commuting

Tree 85.2 – Dusk – 20 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		RR
Survey Location	L	Rain (0-5)		0
Date	20/08/2018	Wind (0-7)		0
Start	20:07	Cloud Cover (0-5)		5
Sunrise	20:23	Temperature		23°C
Finish	21:53	Weather description		Light rain 30 minutes before dusk and off throughout survey, overcast and still
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:16	Noctule	1	Y	HNS commuting
20:26	Pip 55	4	N	HNS commuting
20:28	Pip 55	1	Y	Single bat emerged from knot hole on branch
20:29	Pip 55	1	Y	Second bat emerged from knot hole on branch
20:31	Pip 55	2	Y	HNS commuting
20:34	Pip 55	Multiple	Y	Foraging through trees
20:35	Pip 55	1	Y	HNS commuting
20:44	Pip 55	1	Y	Commute
20:45	Pip 55	1	Y	Commute
20:45	Myotis	1	Y	Commute
20:53	Pip 45	Multiple	Y	Foraging
20:55	Pip 55	1	Y	Commute

20:57	Pip 55	1	Y	Commute
21:03	Pip 45	1	Y	Commute
21:05	Pip 45	2	Y	HNS forage
21:06	Pip 45	2	Y	HNS Commute
21:06	Ble	1	Y	HNS faint pass
21:07	Pip 45	2	Y	HNS Commute
21:08-21:21	Ble	Multiple	Y	HNS forage
21:23-21:28	Ble	Multiple	Y	HNS forage
21:31-21:37	Ble	Multiple	Y	HNS forage
21:39	Ble	1	Y	HNS faint pass
21:44-21:47	Ble	Multiple	Y	HNS forage
21:52-21:55	Myotis	Multiple	Y	HNS forage

AUGUST				
Project Name	M42 Junction 6	Surveyors		LW
Survey Location	M	Rain (0-5)		0
Date	20/08/2018	Wind (0-7)		0
Start	20:07	Cloud Cover (0-5)		5
Sunrise	20:23	Temperature		23°C
Finish	21:53	Weather description		Light rain 30 minutes before dusk and off throughout survey, overcast and still
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:33	Pip 55	1	Y	Heard not seen (HNS) foraging
20:47	Pip 55	1	Y	HNS foraging
20:48	Pip 45	1	Y	HNS foraging
20:50	Pip 45	1	Y	HNS foraging
20:55	Pip 55	1	Y	HNS foraging
20:57	Pip 55	1	Y	HNS foraging
21:02 – 21:03	Pip 45	2	Y	HNS foraging
21:06	Pip 45	2	Y	HNS foraging
21:13	Pip 45	1	Y	HNS foraging
21:15 – 21:16	Pip 45	1	Y	HNS foraging
21:19	Pip 45	1	Y	HNS foraging
21:22	Pip 45	1	Y	HNS foraging
21:24 – 21:26	Pip 45	3	Y	HNS foraging
21:32 – 21:36	Pip 45	4	Y	HNS foraging
21:39 –	Pip 45	1	Y	HNS foraging

21:40				
21:45 – 21:46	Pip 45	1	Y	HNS foraging
21:52 - 21:53	Pip 45	2	Y	HNS foraging

AUGUST				
Project Name	M42 Junction 6	Surveyors		LW
Survey Location	M	Rain (0-5)		0
Date	20/08/2018	Wind (0-7)		0
Start	20:07	Cloud Cover (0-5)		5
Sunrise	20:23	Temperature		23°C
Finish	21:53	Weather description		Light rain 30 minutes before dusk and off throughout survey, overcast and still
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:25 – 20:47	Pip 55	59	Y	Heard not seen (HNS) foraging
20:48 – 20:50	Pip 45	4	Y	HNS foraging
20:54	Pip 45	3	Y	HNS foraging
20:55	Pip 55	2	Y	HNS foraging
20:57	Pip 55	1	Y	HNS foraging
21:01 – 21:03	Pip 45	6	Y	HNS foraging
21:06 – 21:56	Pip 45	198	Y	HNS multiple bats foraging

Tree 85.2 – Dusk – 25 September 2018

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		JT
Survey Location	L	Rain (0-5)		0
Date	25/09/2018	Wind (0-7)		1
Start	19:00	Cloud Cover (0-5)		1
Sunrise	18:58	Temperature		12°C
Finish	20:31	Weather description		Fine, clear and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:54	Noctule	1	Y	Heard not seen (HNS) commuting
19:58 – 19:59	Pip 45	9	Y	HNS commuting

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		TC
Survey Location	M	Rain (0-5)		0
Date	25/09/2018	Wind (0-7)		1
Start	19:00	Cloud Cover (0-5)		1
Sunrise	18:58	Temperature		12°C
Finish	20:31	Weather description		Fine, clear and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
19:49	Long-eared bat	1	Y	Heard not seen (HNS) brief pass
19:51	Long-eared bat	2	Y	HNS brief pass
19:57 – 19:58	Pip 45	7	Y	HNS multiple commuting passes

SEPTEMBER				
Project Name	M42 Junction 6	Surveyors		GG
Survey Location	N	Rain (0-5)		0
Date	25/09/2018	Wind (0-7)		1
Start	19:00	Cloud Cover (0-5)		1
Sunrise	18:58	Temperature		12°C
Finish	20:31	Weather description		Fine, clear and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:19	Myotis sp.	1	Y	Heard not seen (HNS) commuting
20:28	Pip 45	1	Y	HNS brief faint pass

Tree 242 – Dawn – 17 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		RR
Survey Location	O	Rain (0-5)		0
Date	17/08/2018	Wind (0-7)		1
Start	04:21	Cloud Cover (0-5)		1
Sunrise	05:51	Temperature		12°C
Finish	06:06	Weather description		Light breeze and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
No bats were detected during the survey				

AUGUST				
Project Name	M42 Junction 6	Surveyors		RR
Survey Location	P	Rain (0-5)		0
Date	17/08/2018	Wind (0-7)		1
Start	04:21	Cloud Cover (0-5)		1
Sunrise	05:51	Temperature		12°C
Finish	06:06	Weather description		Light breeze and dry
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
No bats were detected during the survey				

Tree 242 – Dusk – 30 August 2018

AUGUST				
Project Name	M42 Junction 6	Surveyors		AR
Survey Location	O	Rain (0-5)		0
Date	30/08/2018	Wind (0-7)		1
Start	19:46	Cloud Cover (0-5)		4
Sunrise	20:01	Temperature		19°C
Finish	21:31	Weather description		Dry with a slight breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:14 – 20:16	Pip 45	10	Y	Heard not seen (HNS) foraging
20:20	Pip 45	1	Y	HNS foraging
20:29	Pip 45	1	Y	HNS foraging
20:34	Pip 55	1	Y	HNS foraging
20:34	Pip 45	1	Y	HNS foraging
21:22	Pip 45	1	Y	HNS foraging

AUGUST				
Project Name	M42 Junction 6	Surveyors		DR
Survey Location	P	Rain (0-5)		0
Date	30/08/2018	Wind (0-7)		1
Start	19:46	Cloud Cover (0-5)		4
Sunrise	20:01	Temperature		19°C
Finish	21:31	Weather description		Dry with a slight breeze
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**
20:14	Pip 45	7	Y	Heard not seen (HNS) foraging
20:19	Pip 45	1	Y	HNS foraging
20:28	Pip 45	1	Y	HNS foraging

21:29	Pip 45	1	Y	HNS foraging

Tree 242 – Dusk – 13 September 2018

SEPTEMBER					
Project Name	M42 Junction 6	Surveyors		JW	
Survey Location	O	Rain (0-5)		0	
Date	13/09/2018	Wind (0-7)		2-3	
Start	19:12	Cloud Cover (0-5)		4	
Sunrise	19:27	Temperature		19°C	
Finish	20:57	Weather description		Dry	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Description of behaviour**	
19:53	Pip 55	1	N	Commute	

SEPTEMBER					
Project Name	M42 Junction 6	Surveyors		TC	
Survey Location	P	Rain (0-5)		0	
Date	13/09/2018	Wind (0-7)		2-3	
Start	19:12	Cloud Cover (0-5)		4	
Sunrise	19:27	Temperature		19°C	
Finish	20:57	Weather description		Dry	
Time	**Species**	**No. of passes**	**Recording (Y/N)**	**Ref. number**	**Description of behaviour**
19:23	Pip 55	1	Y	12	Heard and seen (H&S) emerged from tree and went south
19:23 – 19:25	Pip 55	19	Y		H&S foraging around tree
19:44	Pip 45	1	Y		Heard not seen (HNS) very brief pass
19:55	Pip 55	1	Y		Heard not seen (HNS) very brief pass

Annex H: Transect results

Month	Survey date	Weather conditions
May	30/05/2018 DUSK	Dry, misty and overcast with a light air, 15°C
June	15/06/2018 DAWN	Dry, warm with a gentle breeze and overcast. 18°C
July	10/07/2018 DUSK	Warm, dry with a gentle air with wispy clouds 19°C.
	11/07/2018 DAWN	Warm, dry, light air with wispy clouds, 15°C

MAY-Transect 1 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 1	Rain (0-5)		
Date		30/05/2018	Wind (0-7)		
Start		20:51	Cloud Cover (0-5)		
Sunrise			Temperature		
Finish		23:05	Weather description		
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
3	21:32 – 21:37	Noctule	1	Heard not seen (HNS)	Foraging single pass
3 – 4	21:36	Common pipistrelle	1	HNS	Brief pass
4	21:38	Noctule	1	HNS	Foraging single pass
4	21:38	Common pipistrelle	1	HNS	Foraging single pass
4	21:39	Common pipistrelle	1	HNS	Foraging single pass
4 – 5	21:43	Common pipistrelle	1	HNS	Brief faint pass
4 – 5	21:45	Noctule	1	HNS	Brief faint pass
6 – 7	21:55 – 22:00	Common pipistrelle	2	Heard and seen (H&S)	Continuous foraging
6 – 7	22:01 – 22:08	Noctule	1	HNS	Foraging single pass
8	22:12	Common pipistrelle	1	HNS	Brief faint pass
8 – 9	22:23	Common pipistrelle	1	HNS	Brief pass
9	22:27	Common pipistrelle	1	H&S	Single pass
9	22:32 – 22:35	Common pipistrelle	1	HNS	Foraging activity sporadic for 3 minutes
9 – 10	22:35	Common	1	H&S	Single pass

		pipistrelle			
9 – 10	22:36	Long-eared bat	1	HNS	Brief single pass
9 – 10	22:37	Common pipistrelle	1	HNS	Brief single pass
10 – 11	22:44	Common pipistrelle	1	HNS	Brief single pass
10 – 11	22:44	Soprano pipistrelle	1	HNS	Brief single pass
11 – 12	22:49 – 22:57	Common pipistrelle	1	HNS	Continuous foraging activity
12	22:57 – 23:05	Common pipistrelle	2	HNS	Continuous foraging activity

No access available for June Transect

JULY-Transect 1 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 1	Rain (0-5)		0
Date		10/07/18	Wind (0-7)		1
Start		21:21	Cloud Cover (0-5)		1
Sunrise			Temperature		19°C - 18°C
Finish		22:59	Weather description		Warm, dry with a gentle air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
	22:03 – 22:05	Common pipistrelle	1	HNS	Continuous foraging
	22:07	Common pipistrelle	1	HNS	Brief single pass
	22:09	Common pipistrelle	1	HNS	Brief single pass
	22:11	Common pipistrelle	1	HNS	Brief single pass
	22:13 – 22:15	Common pipistrelle	1	HNS	Sporadic foraging activity
	22:32 – 22:35	Common pipistrelle	1	H&S	Sporadic foraging activity
	22:35 – 22:39	Common pipistrelle	2	H&S	Continuous foraging activity
	22:42	Common pipistrelle	1	HNS	Brief single pass
	22:50	Common pipistrelle	1	H&S	Brief single pass

JULY-Transect 1 DAWN					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 1	Rain (0-5)		0
Date		11/07/18	Wind (0-7)		1
Start		02:50	Cloud Cover (0-5)		1
Sunrise			Temperature		15°C
Finish		04:34	Weather description		Warm, dry, light air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
12 – 11	02:52	Common pipistrelle	1	HNS	Brief single pass
9	03:17	Common pipistrelle	1	HNS	Brief single pass
8	03:29	Common pipistrelle	1	HNS	Brief single pass
8 – 7	03:32	Common pipistrelle	1	HNS	Brief single pass
8 – 7	03:34 – 03:35	Common pipistrelle	1	HNS	Foraging activity multiple passes
7	03:37 – 03:38	Common pipistrelle	1	HNS	Foraging activity multiple passes
7 – 6	03:42 – 03:44	Common pipistrelle	1	HNS	Foraging activity multiple passes
6	03:46	Common pipistrelle	1	H&S	Brief single pass
6	03:47	Common pipistrelle	1	HNS	Faint brief pass
6 – 5	03:49	Common pipistrelle	1	HNS	Foraging activity multiple passes
9	03:56	Common pipistrelle	1	HNS	Brief pass
4	04:02	Common pipistrelle	1	H&S	Foraging activity observed
4	04:03	Common pipistrelle	1	HNS	Foraging pass
4 – 3	04:09 – 04:11	Common pipistrelle	2	HNS	Foraging activity multiple passes
4 – 3	04:13	Common pipistrelle	1	HNS	Foraging pass
3	04:14	Common pipistrelle	1	HNS	Brief pass

MAY-Transect 2 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 2	Rain (0-5)		
Date		30/05/18	Wind (0-7)		
Start		21:16	Cloud Cover (0-5)		
Sunset		21:16	Temperature		
Finish		23:05	Weather description		
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
2	21:31	Noctule	1	Heard not seen (HNS)	Commuting single pass
2	21:35	Noctule	1	HNS	Foraging single pass
2	21:36 - 21:37	Noctule	1	HNS	Foraging activity
2	21:36 - 21:37	Common pipistrelle	1	HNS	Foraging activity
2	21:39	Common pipistrelle	1	HNS	Foraging pass
2 – 3	21:42	Common pipistrelle	1	HNS	Foraging pass
3	21:44	Common pipistrelle	2	HNS	Foraging activity noted in corner of field multiple passes detected by two bats
3	21:45	Noctule	1	HNS	Foraging pass
3	21:51	Common pipistrelle	3	HNS	Multiple foraging passes by three bats
2 – 3	21:53	Common pipistrelle	2	Heard and seen (H&S)	Foraging activity observed around club house of sports facility
2 – 3	21:55 - 22:00	Common pipistrelle	1	H&S	Foraging along hedge line
3 – 4	22:01 - 22:02	Noctule	1	H&S	Foraging activity
6	22:07 - 22:08	Noctule	1	HNS	Foraging activity in corner of field
5 – 6	22:11	Common pipistrelle	1	HNS	Continuous foraging activity along hedge line
3 – 4	22:22	Common pipistrelle	1	HNS	Brief single pass
4	22:23	Common pipistrelle	2	HNS	Continuous foraging activity at spot count
4	22:27	Common pipistrelle	1	HNS	Commuting single pass
4 – 5	22:28	Common pipistrelle	1	HNS	Single brief pass
4 – 5	22:30	Common pipistrelle	2	HNS	Multiple foraging passes
5	22:33	Common pipistrelle	2	H&S	Multiple foraging passes

5 – 6	22:37	Long-eared	1	HNS	Foraging single pass
5 – 6	22:37	Common pipistrelle	1	HNS	Foraging multiple passes
6	22:40	Common pipistrelle	2	HNS	Foraging multiple passes by two bats
6	22:42	Common pipistrelle	1	HNS	Continuous forging activity during spot count
7	22:49	Common pipistrelle	2	HNS	Continuous forging activity during spot count
7 – 8	22:51	Common pipistrelle	1	HNS	Foraging pass
7 – 8	22:52	Common pipistrelle	1	HNS	Multiple foraging passes
8	22:54 - 22:56	Common pipistrelle	2	HNS	Continuous foraging activity during spot count
8	22:58	Common pipistrelle	1	H&S	Foraging single pass
8	22:59	Common pipistrelle	2	HNS	Foraging multiple passes along leylandii hedgerow
8 – 9	23:01	Common pipistrelle	1	HNS	Multiple foraging passes
9	23:03 - 23:05	Common pipistrelle	1	H&S	Continuous foraging activity

JUNE-Transect 2					
Project Name		M42 J6	Surveyors		JC and GG
Survey Location		Transect 2	Rain (0-5)		0
Date		11/06/18	Wind (0-7)		3
Start		21:28	Cloud Cover (0-5)		5
Sunset		21:28	Temperature		18°C
Finish		23:05	Weather description		Dry, warm with a gentle breeze and overcast.
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
10 – 9	21:38	Noctule	1	HNS	Faint foraging call
9	21:42	Noctule	1	HNS	Very faint foraging pass
3	21:50	Noctule	1	HNS	Foraging pass
3	21:51	Noctule	1	HNS	Foraging pass
3 – 4	21:53	Noctule	1	HNS	Foraging pass
3 – 4	21:55	Noctule	2	H&S	Two bats flew south and then circled round hedge foraging
4	21:58 - 22:01	Noctule	3	H&S	Foraging along the hedgerow
4 – 5	22:02	Common pipistrelle	1	H&S	Brief commuting pass
4 – 5	22:03	Noctule	1	H&S	Brief commuting pass

4 – 5	22:07	Common pipistrelle	1	H&S	Brief pass
4 – 5	22:09	Nyctalus species	1	H&S	Observed foraging circling overhead, multiple passes
4 – 5	22:10	Noctule	1	HNS	Foraging
5	22:12 - 22:14	Noctule	1	H&S	Observed foraging circling around hedgerow
5 – 6	22:16	Soprano pipistrelle	1	HNS	Brief pass
6	22:16	Nyctalus species	1	HNS	Brief pass
6	22:17	Noctule	1	HNS	Foraging pass
6	22:18	Common pipistrelle	2	H&S	Observed foraging by two bats
6	22:19	Nyctalus	1	HNS	Foraging pass
6	22:20	Common pipistrelle	1	HNS	Foraging pass
6 – 7	22:22	Noctule	2	H&S	Foraging pass
6 – 7	22:23 - 22:24	Common pipistrelle	2	H&S	Observed foraging along hedgerow
6 – 7	22:25	Common pipistrelle	2	H&S	Foraging pass
6 – 7	22:25	Noctule	1	HNS	Foraging pass
6 – 7	22:26	Common pipistrelle	1	HNS	Foraging pass
6 – 7	22:27	Noctule	1	HNS	Foraging pass
7	22:28 - 22:30	Common pipistrelle	4	H&S	Constant foraging activity along hedgerow
7 – 8	22:31 - 22:33	Common pipistrelle	1	H&S	Constant foraging activity along hedgerow
8	22:34 - 22:35	Noctule	1	H&S	Constant foraging activity along hedgerow
7 – 8	22:37 - 22:38	Common pipistrelle	3	H&S	Constant foraging activity observed
8 – 9	22:40 - 22:41	Common pipistrelle	1	HNS	Constant foraging activity
9	22:43	Common pipistrelle	1	HNS	Foraging pass
9 – 10	22:46 - 22:47	Common pipistrelle	1	HNS	Constant foraging activity

JULY-Transect 2 DUSK			
Project Name	M42 J6	Surveyors	SR and TC
Survey Location	Transect 2	Rain (0-5)	0
Date	10/07/18	Wind (0-7)	1
Start	21:21	Cloud Cover (0-5)	1
Sunset	21:26	Temperature	19°C - 18°C
Finish	22:59	Weather description	Warm, dry with a gentle air with wispy clouds

Spot Count	Time	Species	No. of bats	Observation	Description of behaviour
	22:17	Nyctalus	1	HNS	Very faint brief pass
	22:18 – 22:19	Common pipistrelle	1	HNS	Brief pass
	22:23 – 22:24	Common pipistrelle	1	HNS	Foraging activity
	22:25 – 22:28	Common pipistrelle	2	H&S	Foraging activity observed around hedgerow
	22:27 – 22:31	Common pipistrelle	2	H&S	Foraging activity multiple passes
	22:31	Common pipistrelle	3	H&S	Constant foraging activity
	22:36 – 22:37	Common pipistrelle	3	H&S	Foraging activity
	22:39	Noctule	1	HNS	Foraging pass
	22:41 – 22:42	Common pipistrelle	1	HNS	Foraging activity
	22:42 – 22:43	Common pipistrelle	1	HNS	Foraging activity in corner or site
	22:43 – 22:47	Common pipistrelle	1	H&S	Foraging activity
	22:49	Soprano pipistrelle	1	H&S	Foraging activity
	22:51	Common pipistrelle	1	H&S	Two foraging passes
	22:53	Common pipistrelle	1	H&S	Foraging pass
	22:57	Common pipistrelle	1	HNS	Foraging pass
	22:58 – 22:59	Common pipistrelle	1	HNS	Foraging activity
	23:01 – 23:03	Common pipistrelle	1	H&S	Two foraging passes
	22:10	Common pipistrelle	1	H&S	Foraging pass
	23:10	Myotis species	1	HNS	Single foraging pass
	23:11	Common pipistrelle	1	HNS	Foraging pass
	23:12 – 23:17	Common pipistrelle	1	HNS	Occasional foraging passes
	23:23	Common pipistrelle	1	HNS	Two foraging passes adjacent to road
	23:26	Common pipistrelle	1	HNS	Foraging pass
	23:31	Common pipistrelle	1	HNS	Brief pass
	23:37	Common pipistrelle	1	HNS	Foraging pass
	23:38 –	Common	1	HNS	Occasional foraging passes

	23:39	pipistrelle			

JULY-Transect 2 DAWN					
Project Name		M42 J6	Surveyors		SR and TC
Survey Location		Transect 2	Rain (0-5)		0
Date		11/07/18	Wind (0-7)		1
Start		02:48	Cloud Cover (0-5)		1
Sunrise		04:49	Temperature		15°C
Finish		04:49	Weather description		Warm, dry, light air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
10	02:57:00	Pipistrellus species	1	HNS	Brief pass
10	02:59:19	Pipistrellus species	1	HNS	Brief pass
9 – 8	03:11 – 03:14	Common pipistrelle	1	HNS	Foraging activity noted in corner of site, multiple passes.
8	03:18	Common pipistrelle	1	H&S	Foraging activity around hedgerow
8	03:21	Common pipistrelle	2	H&S	Foraging activity noted by two bats
7	03:30	Common pipistrelle	1	HNS	Foraging activity
7	03:33-03:34	Common pipistrelle	1	H&S	Brief pass
7 – 6	03:38	Common pipistrelle	2	H&S	Foraging activity
7 – 6	03:40	Common pipistrelle	1	HNS	Foraging activity
6	03:44	Common pipistrelle	1	HNS	Forging activity two passes observed
5	03:51	Common pipistrelle	1	HNS	Faint foraging activity detected
5	03:53 – 03:56	Common pipistrelle	1	HNS	Constant foraging activity
5 – 4	03:59	Common pipistrelle	1	HNS	Foraging pass
5 – 4	04:00	Soprano pipistrelle	1	HNS	Faint call single pass
5 – 4	04:02	Noctule	1	HNS	Commuting pass
4	04:06 – 04:08	Soprano pipistrelle	1	HNS	Foraging activity

MAY-Transect 4 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 4	Rain (0-5)		
Date		30/05/18	Wind (0-7)		
Start		21:16	Cloud Cover (0-5)		
Sunset		21:16	Temperature		
Finish		23:27	Weather description		
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
2	21:21	Soprano pipistrelle	1	HNS	Brief pass
2	21:23	Soprano pipistrelle	1	HNS	Brief pass
2	21:24	Common pipistrelle	1	HNS	Brief pass
2	21:27	Soprano pipistrelle	1	HNS	Brief pass
2	21:27	Common pipistrelle	1	HNS	Brief pass
2 – 3	21:30 – 21:32	Common pipistrelle	1	HNS	Foraging activity
2 – 3	21:32 – 21:33	Common pipistrelle	1	(H&S	Foraging pass
4	21:40	Soprano pipistrelle	1	HNS	Brief pass
4	21:43 – 21:44	Common pipistrelle	1	HNS	Foraging activity
4	21:44	Soprano pipistrelle	1	HNS	Brief pass
4	21:45	Noctule	1	HNS	Brief pass
4	21:45 – 21:49	Common pipistrelle	2	H&S	Foraging activity
4 – 5	21:50 – 21:52	Common pipistrelle	3	H&S	Foraging activity
4 – 5	21:50	Soprano pipistrelle	1	HNS	Brief pass
4 – 5	21:51	Soprano pipistrelle	1	HNS	Brief pass
8	22:23	Myotis species	1	HNS	Brief pass
9	22:28	Common pipistrelle	1	HNS	Foraging pass
9 – 10	22:32	Common pipistrelle	1	HNS	Brief pass
9 – 10	22:34	Common pipistrelle	1	HNS	Brief pass
12 – 1	22:52	Common pipistrelle	1	HNS	Brief pass
12 – 1	22:57 – 22:58	Pipistrellus species	1	HNS	Brief pass

12	23:26	Common pipistrelle	1	HNS	Brief pass

JUNE-Transect 4					
Project Name		M42 J6	Surveyors		CC and TC
Survey Location		Transect 4	Rain (0-5)		0
Date		11/06/18	Wind (0-7)		3
Start		21:05	Cloud Cover (0-5)		5
Sunset		21:28	Temperature		18°C
Finish		23:01	Weather description		Dry, warm with a gentle breeze and overcast.
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
1 – 2	21:17	Soprano pipistrelle	1	H&S	Commuting brief pass
2	21:19	Soprano pipistrelle	1	HNS	Faint pass
2	21:22	Soprano pipistrelle	1	HNS	Multiple foraging passes
2	21:24	Common pipistrelle	1	HNS	Multiple foraging passes
2	21:25 - 21:27	Common pipistrelle	1	HNS	Multiple foraging passes
2	21:25 - 21:26	Soprano pipistrelle	1	H&S	Circling foraging overhead, multiple passes
2 – 3	21:28	Soprano pipistrelle	1	HNS	Foraging pass
2 – 3	21:28 - 21:34	Common pipistrelle	1	H&S	Constant foraging activity
2 – 3	21:30- 21:31	Common pipistrelle	1	H&S	Foraging activity observed
2 – 3	21:32	Soprano pipistrelle	1	HNS	Foraging pass
2 – 3	21:34	Soprano pipistrelle	1	HNS	Foraging pass
4	21:35	Common pipistrelle	1	HNS	Brief pass
4 – 5	21:41	Soprano pipistrelle	1	HNS	Brief pass
5	21:42	Common pipistrelle	1	HNS	Brief pass
5	21:44	Common pipistrelle	1	HNS	Brief pass
5 – 6	21:46	Common pipistrelle	1	HNS	Foraging multiple passes
5	21:48	Pipistrellus species	1	H&S	Foraging pass
6	21:49 -	Common	1	HNS	Foraging passes

	21:51	pipistrelle			
8	22:05	Common pipistrelle	1	HNS	Two foraging passes
8	22:06	Common pipistrelle	1	HNS	Multiple foraging passes
9 – 10	22:16	Noctule	1	HNS	Brief pass
10	22:17	Common pipistrelle	1	HNS	Multiple forging passes
10	22:20 - 22:21	Common pipistrelle	1	HNS	Foraging activity
10	22:23	Common pipistrelle	1	HNS	Brief pass
10 – 11	22:25	Common pipistrelle	1	HNS	Multiple passes
11	22:27	Common pipistrelle	1	HNS	Foraging pass
12 – 1	22:30	Common pipistrelle	1	HNS	Foraging pass
12 – 1	22:36	Nyctalus species	1	HNS	Brief pass
12 – 1	22:47	Common pipistrelle	1	HNS	Brief pass
12 – 1	22:50	Common pipistrelle	1	HNS	Brief pass

JULY-Transect 4 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 4	Rain (0-5)		0
Date		10/07/18	Wind (0-7)		1
Start		21:26	Cloud Cover (0-5)		1
Sunset		21:26	Temperature		19°C - 18°C
Finish		22:53	Weather description		Warm, dry with a gentle air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
	22:03	Common pipistrelle	1	HNS	Foraging brief passes
	22:12	Soprano pipistrelle	1	HNS	Brief pass
	22:24	Common pipistrelle	1	H&S	Brief pass
	22:29	Soprano pipistrelle	1	HNS	Brief pass
	22:38	Common pipistrelle	1	HNS	Brief pass

JULY-Transect 4 DAWN					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 4	Rain (0-5)		0
Date		11/07/18	Wind (0-7)		1
Start		02:55	Cloud Cover (0-5)		1
Sunrise		04:49	Temperature		15°C
Finish		04:58	Weather description		Warm, dry, light air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
12 – 1	02:53	Soprano pipistrelle	1	HNS	Foraging pass
1	02:59	Noctule	1	HNS	Brief pass
1 – 2	03:03	Pipistrellus species	1	HNS	Brief pass
1 – 2	03:06 – 03:10	Common pipistrelle	1	HNS	Foraging activity multiple passes
1 – 2	03:29 – 03:32	Common pipistrelle	2	HNS	Foraging activity by two bats, multiple passes
4	03:37	Common pipistrelle	1	HNS	Foraging activity
4	03:42	Common pipistrelle	2	HNS	Foraging activity
4	03:44	Common pipistrelle	1	HNS	Brief pass
4 – 3	03:45 – 03:46	Common pipistrelle	1	HNS	Brief pass
4 – 3	03:45	Myotis species	1	HNS	Brief pass
3	03:48	Common pipistrelle	1	HNS	Brief pass
4 – 3	03:58 – 04:04	Common pipistrelle	1	HNS	Foraging pass
4 – 5	04:05	Common pipistrelle	1	HNS	Foraging pass
4 – 5	04:05 – 04:06	Soprano pipistrelle	1	HNS	Foraging pass
4 – 5	04:08	Common pipistrelle	1	HNS	Foraging pass
4 – 5	04:09	Long-eared	1	HNS	Brief pass
4 – 5	04:09	Common pipistrelle	1	HNS	Brief pass
5	04:12	Common pipistrelle	1	HNS	Foraging pass
6 – 7	04:25	Common pipistrelle	1	HNS	Brief Pass

MAY-Transect 5 DUSK					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 5	Rain (0-5)		
Date		30/05/18	Wind (0-7)		
Start		21:16	Cloud Cover (0-5)		
Sunset		21:16	Temperature		
Finish		23:06	Weather description		
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
4 – 5	21:39 – 21:40	Soprano pipistrelle	1	HNS	Forging pass
4 – 5	21:45 – 21:47	Common pipistrelle	1	HNS	Multiple foraging passes
4 – 5	21:47	Common pipistrelle	1	H&S	Foraging pass
5	21:48	Noctule	1	HNS	Brief single pass
5	21:52 – 21:56	Common pipistrelle	1	HNS	Forging activity multiple passes
6	21:57 – 21:59	Common pipistrelle	1	H&S	Foraging activity observed multiple passes
8	22:14	Common pipistrelle	1	H&S	Commuting pass
10	22:22	Common pipistrelle	1	HNS	Brief pass
10	22:23	Myotis species	1	HNS	Brief pass
12 – 13	22:43	Common pipistrelle	1	HNS	Brief pass along hedgerow
13	22:46	Common pipistrelle	1	HNS	Brief pass
14	22:50	Common pipistrelle	1	HNS	Brief pass
15	22:58 – 22:59	Common pipistrelle	1	HNS	Multiple foraging passes
15	23:04 – 23:05	Common pipistrelle	1	HNS	Multiple foraging passes

JUNE-Transect 5					
Project Name		M42 J6	Surveyors		
Survey Location		Transect 5	Rain (0-5)		0
Date		11/06/18	Wind (0-7)		3
Start		21:05	Cloud Cover (0-5)		5
Sunset		21:28	Temperature		18°C
Finish		23:01	Weather description		Dry, warm with a gentle breeze and overcast.
Spot	**Time**	**Species**	**No.**	**Observation**	**Description of behaviour**

Count			of bats		
4	21:50	Noctule	1	HNS	Brief pass
5	21:58	Noctule	1	H&S	Commuting along hedgerows towards woodlands
8	22:18 – 22:20	Noctule	1	HNS	Brief faint pass
8 – 9	22:24 - 22:33	Common pipistrelle	4	H&S	Continuous woodland edge foraging
8 – 9	22:25	Myotis species	1	H&S	Foraging along woodland edge
8 – 9	22:27	Soprano pipistrelle	2	H&S	Foraging along woodland edge
9	22:35 - 22:36	Common pipistrelle	2	H&S	Foraging along woodland edge
9 – 10	22:39 - 22:42	Common pipistrelle	1	HNS	Foraging
11 – 12	22:57 - 22:04	Common pipistrelle	2	H&S	Forging along hedgerows
12	23:05 - 23:06	Common pipistrelle	2	HNS	Continuous foraging
12 – 13	23:08 - 23:11	Common pipistrelle	1	HNS	Forging along hedgerow in arable field
12 – 13	23:11	Soprano pipistrelle	1	HNS	Single pass
13	23:12 - 23:14	Common pipistrelle	2	HNS	Foraging along hedgerow
14	23:15	Common pipistrelle	1	H&S	Foraging observed
14 – 15	23:16 - 23:23	Common pipistrelle	1	H&S	Foraging along hedgerow
14 – 15	23:20	Soprano pipistrelle	1	HNS	Foraging along hedgerow
15 – 1	23:27	Common pipistrelle	1	HNS	Faint pass

JULY-Transect 5 DUSK					
Project Name		M42 J6	Surveyors		DH and LS
Survey Location		Transect 5	Rain (0-5)		0
Date		10/07/18	Wind (0-7)		1
Start		21:22	Cloud Cover (0-5)		1
Sunset		21:26	Temperature		19°C - 18°C
Finish		23:12	Weather description		Warm, dry with a gentle air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**

	22.04	Soprano pipistrelle	1	HNS	Single foraging pass
	22:20 – 22:22	Common pipistrelle	1	H&S	Constant foraging activity
	22:26	Common pipistrelle	1	H&S	Forging pass
	22.51	Soprano pipistrelle	1	HNS	Communising along hedgerow
	22:55 – 22:57	Common pipistrelle	1	HNS	Constant foraging activity
	23:02 – 23:05	Common pipistrelle	1	HNS	Constant foraging activity
	23.04	Soprano pipistrelle	1	HNS	Foraging activity
	23:08 – 23:09	Common pipistrelle	1	HNS	Foraging activity
	23:11	Common pipistrelle	1	HNS	Foraging activity
	23:11	Soprano pipistrelle	1	HNS	Foraging activity

JULY-Transect 5 DAWN					
Project Name	M42 J6		Surveyors		DH and LS
Survey Location	Transect 5		Rain (0-5)		0
Date	11/07/18		Wind (0-7)		1
Start	02:49		Cloud Cover (0-5)		1
Sunrise	04:49		Temperature		15°C
Finish	04:58		Weather description		Warm, dry, light air with wispy clouds
Spot Count	**Time**	**Species**	**No. of bats**	**Observation**	**Description of behaviour**
1	02:49-02:51	Common pipistrelle	1	HNS	Foraging along hedgerow
1	02:58 – 03:00	Common pipistrelle	1	HNS	Foraging along hedgerow
1 – 2	03:05	Common pipistrelle	1	HNS	Brief pass along hedgerow
4	03:21	Long-eared	1	HNS	Brief pass
4	03:21	Common pipistrelle	1	HNS	Brief pass
8	03:52 – 03:55	Common pipistrelle	1	HNS	Foraging along woodland edge
8 – 9	03:55	Soprano pipistrelle	1	HNS	Brief pass
8 – 9	03:55 – 03:58	Common pipistrelle	1	HNS	Foraging along woodland edge
9	03:58	Common pipistrelle	2	HNS	Foraging along woodland edge

Annex I: Automated static monitoring results

Static location 1

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45	23:21			8	2					00:00	04:51	10	11	
			PipSp				1								1		
31/05/2018	21:18	16.3 - 18.9			No bats were detected									04:51	0	0	
01/06/2018	21:20	17.4 - 20.1	Pip45						2				01:47	04:50	2	4	0.45
			Pip55	22:36		1									1		
			PipSp			1									1		
02/06/2018	21:20	13.8 - 19.6	Pip45						1				01:45	04:50	1	2	
			PipSp	00:24				1							1		
03/06/2018	21:21	15.6 - 20.8			No bats were detected									04:48	0	0	

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45				4	3	15		2			04:44	24	45	2.06
			Pip55			9									9		
			PipSp				5	1	2		3		03:43		11		
			Myotis sp.	22:09		1									1		
20/06/2018	21:33	11.5 - 15.0			No bats were detected									04:44	0	0	
21/06/2018	21:33	10.8 - 14.5	Pip55	22:52		4	9						23:24	04:44	13	13	
22/06/2018	21:33	11.8 - 18.1	Pip45						1					04:45	1	5	
			Pip55	23:14			3				1		03:17		4		
23/06/2018	21:33	11.2 - 17.6	Pip45					2						04:45	2	9	
			Pip55	23:17			6				1		03:15		7		

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45				13	24						04:58	37	43	8.51
			Pip55	23:39			1			2	2				5		
			Noctule									1	04:43		1		
11/07/2018	21:26	14.8 - 20.4	Pip45	23:57			1		19	23	9			04:59	52	61	
			Pip55							8	1		03:37		9		
12/07/2018	21:25	16.0 - 20.6	Pip45	00:05				8	25	30	6			05:00	69	75	
			Pip55					1	2	1	2		03:53		6		
13/07/2018	21:24	15.0 - 20.3	Pip45	23:14			4	1	9	33	18		03:24	05:01	65	66	
			Pip55							1					1		
14/07/2018	21:23	14.0 - 24.1	Pip45	22:57		1		1	17	44	10		03:50	05:02	73	74	
			Pip55							1					1		

Static Location 2

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45		3	6		1	8		2	4		04:51	24	53	6.27
			Noctule	21:34	3	2					7	16	04:30		28		
			Nyctalus sp.									1			1		
31/05/2018	21:18	16.3 - 18.9	Pip45						2		5	62		04:51	69	87	
			Noctule	21:39	2	1	1		1		5	4	04:25		14		
			Nyctalus sp.								3	1			4		
01/06/2018	21:20	17.4 - 20.1	Pip45								1	1		04:50	2	45	
			Noctule	21:52	1	1					8	15	04:21		25		
			Nyctalus sp.			1	1				3	13			18		
02/06/2018	21:20	13.8 - 19.6	Pip45								6			04:50	6	50	
			Noctule	22:01		3					9	10	04:11		22		
			Nyctalus sp.			2					18	2			22		
03/06/2018	21:21	15.6 - 20.8			No bat were detected									04:48	0	0	

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45					1	2		1		03:16	04:44	4	12	1.2
			PipSp					1							1		
			Noctule	21:49	4	3									7		
20/06/2018	21:33	11.5 - 15.0	Pip45	23:45			1						23:45	04:44	1	1	
21/06/2018	21:33	10.8 - 14.5	Pip45	22:45		1							22:45	04:44	1	1	
22/06/2018	21:33	11.8 - 18.1	Pip45	03:11							1		03:11	04:45	1	1	
23/06/2018	21:33	11.2 - 17.6	Pip45						1		25		03:57	04:45	26	27	
			Pip55	22:17		1									1		

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45	22:34		3	5		7	1	2	2	04:09	04:58	20	23	5.47
			Pip55			1									1		
			PipSp				1				1				2		
11/07/2018	21:26	14.8 - 20.4	Pip45	23:55		3	3	5	5		5		03:17	04:59	21	23	
			PipSp					1	1						2		
12/07/2018	21:25	16.0 - 20.6	Pip45	23:19		1	1		2		5	5	04:23	05:00	14	25	
			Pip55							4	2				6		
			PipSp				1	1	2	1					5		
13/07/2018	21:24	15.0 - 20.3	Pip45			13	24	3	5	8	5			05:01	58	93	
			Pip55			2				1					3		
			PipSp	21:59	1		16	5	1	3	6		03:55		32		
14/07/2018	21:23	14.0 - 24.1	Pip45	22:00		12	10	4	1	3	3	3		05:02	36	41	
			Pip55			1	1								2		
			PipSp			2						1	04:09		3		

Static Location 3

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45			36	2		1		1		12	04:22	04:51	52	56	3.52
			Pip55	21:39		4										4		
31/05/2018	21:18	16.3 - 18.9	Pip45			4							1	04:13	04:51	5	6	
			Pip55	21:49		1										1		
01/06/2018	21:20	17.4 - 20.1	Pip45			2	28	2			1	1	4	04:20	04:50	38	40	
			PipSp	20:52	1	1										2		
02/06/2018	21:20	13.8 - 19.6	Pip45	22:06			5				1	3	8		04:50	17	20	
			Pip55										1	04:10		1		
			PipSp										2			2		
03/06/2018	21:21	15.6 - 20.8	Pip45				2					5	1	04:01	04:48	8	10	
			PipSp	20:23	1							1				2		

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45										1	04:00	04:44	1	5	0.2
			Noctule	20:52	1	2	1									4		
20/06/2018	21:33	115. - 15.0			No bats were detected										04:44	0	0	
21/06/2018	21:33	10.8 - 14.5			No bats were detected										04:44	0	0	
22/06/2018	21:33	11.8 - 18.1	Noctule	22:17			1								04:45	1	2	
			Nyctalus sp.					1						23:17		1		
23/06/2018	21:33	11.2 - 17.6			No bats were detected										04:45	0	0	

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45						3	1	1	2	04:10	04:58	7	12	
			PipSp	22:36		1					1	3			5		
11/07/2018	21:26	14.8 - 20.4	Pip45	00:17				1		3		1	04:12	04:59	5	7	
			PipSp							2					2		
12/07/2018	21:25	16.0 - 20.6	Pip45	22:39		1						4	04:29	0	5	5	2.67
13/07/2018	21:24	15.0 - 20.3	Pip45	00:29				1	5	22	4	21	04:24	05:01	53	55	
			PipSp						1			1			2		
14/07/2018	21:23	14.0 - 24.1	Pip45	22:01		4			1	6	7	2		05:02	20	21	
			PipSp									1	04:18		1		

Static Location 4

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45		5		1	1	2	16	24				04:51	49	65	6.75
			Noctule	20:34	4					1	1	9		03:28		15		
			Nyctalus sp.									1				1		
31/05/2018	21:18	16.3 - 18.9	Pip45		13	6		1	1	4	4	1			04:51	30	66	
			Noctule	20:37	5	4		1			9	16		03:26		35		
			Nyctalus sp.		1											1		
01/06/2018	21:20	17.4 - 20.1	Pip45	20:58	5	4									04:50	9	35	
			Noctule		1	5	1				3	14		03:31		24		
			Nyctalus sp.									1				1		
			Myotis sp.				1									1		
02/06/2018	21:20	13.8 - 19.6	Pip45			2					1				04:50	3	37	
			Noctule	20:40	11	4					8	10		03:13		33		
			Nyctalus sp.								1					1		

Day	Sunset	Min - max temp. °C	Species	First bat pass	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
03/06/2018	21:21	15.6 - 20.8	Pip45			2									04:48	2	50	
			Pip55				1									1		
			Noctule	20:48	7	9					12	14		03:15		42		
			Nyctalus sp.			2					1					3		
			Myotis sp.			2										2		

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45	22:11		30	4	5	4	4	25		03:55	04:44	72	81	5.2
			PipSp			5	1	2	1						9		
20/06/2018	21:33	11.5 - 15.0	Pip45	22:06		63	5	6			6	1	04:00	04:44	81	101	
			Pip55			5									5		
			PipSp			10		2	3						15		
21/06/2018	21:33	10.8 - 14.5			No bats were detected									04:44	0	0	
22/06/2018	21:33	11.8 - 18.1			No bats were detected									04:45	0	0	
23/06/2018	21:33	11.2 - 17.6			No bats were detected									04:45	0	0	

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45	22:08		21	60	40	42	15	31	11	04:10	04:58	220	252	35.79
			Pip55					1	4						5		
			PipSp			1	1	5	14		1	5			27		
11/07/2018	21:26	14.8 - 20.4	Pip45	22:12		13	6	26	129	229	83	38		04:59	524	571	
			Pip55						2	1		1			4		
			PipSp			1		3	1	1	2	35	04:16		43		
12/07/2018	21:25	16.0 - 20.6	Pip45	22:06		24	15	11	27	24	57	29		05:00	187	221	
			Pip55								2	3			5		
			PipSp				1	2	7		9	10	04:24		29		
13/07/2018	21:24	15.0 - 20.3	Pip45	22:02		22	3	20	29	1	32	8	04:05	05:01	115	153	
			Pip55			1			1		1				3		
			PipSp			12			1		22				35		
14/07/2018	21:23	14.0 - 24.1	Pip45	22:07		60	3	4	28	10	21	4	04:09	05:02	130	145	
			Pip55			2									2		
			PipSp			2	4	3	3	1					13		

Static Location 5

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45	21:35	10	2	33	88	129	95	76	3	04:16	04:51	436	443	32.27
			Pip55						1	1					2		
			Myotis sp.			3					2				5		
31/05/2018	21:18	16.3 - 18.9	Pip45	21:44	8	27	37	12	53	30	51		03:48	04:51	218	221	
			Pip55			1			1	1					3		
01/06/2018	21:20	17.4 - 20.1	Pip45	21:43	3	25	60	22	2	33	37		03:50	04:50	182	184	
			Pip55			1				1					2		
02/06/2018	21:20	13.8 - 19.6	Pip45	21:46	8	3	2	27	35	39	26	1	04:09	04:50	141	144	
			Pip55			1	1								2		
			PipSp						1						1		
03/06/2018	21:21	15.6 - 20.8	Pip45			8	55	46	50	33	20		03:54	04:48	212	218	
			Pip55	21:51	1	1					1				3		
			PipSp							2					2		
			Myotis sp.						1						1		

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45		14	47	77	89	128	77	71	23	04:10	04:44	526	595	56.11
			PipSp			1	1			2		1			5		
			Noctule	21:39	3	2									5		
			Nyctalussp.			4									4		
			Bigbat			44						11			55		
20/06/2018	21:33	11.5 - 15.0	Pip45	21:55	18	163	230	240	198	207	187	1	04:02	04:44	1244	1261	
			Pip55							1					1		
			PipSp			12	2			1	1				16		
21/06/2018	21:33	10.8 - 14.5	Pip45	22:01		12	5	3	6	9	11		03:40	04:44	46	46	
22/06/2018	21:33	11.8 - 18.1	Pip45	22:22		3	1	6	10	6	8			04:45	34	35	
			Pip55									1	04:00		1		
23/06/2018	21:33	11.2 - 17.6	Pip45	21:51	3	7	4	3	2	2	1			04:45	22	27	
			PipSp					1			4		03:40		5		

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45			7		1			1		03:58	04:58	9	11	
			Pip55	21:55	1	1									2		
11/07/2018	21:26	14.8 - 20.4	Pip45	21:05	5	30		1	1	2			02:33	04:59	39	41	
			Noctule				2								2		
12/07/2018	21:25	16.0 - 20.6	Pip45	21:52	9	2	2		1		2		03:39	05:00	16	16	4.8
13/07/2018	21:24	15.0 - 20.3	Pip45	21:45	4	5	2			1	3	1	04:02	05:01	16	16	
14/07/2018	21:23	14.0 - 24.1	Pip45	21:46	25	60	1		2	1	1			05:02	90	96	
			Pip55		1	1						2	04:28		4		
			PipSp			1		1							2		

Static Location 6

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45					1			1		03:07	04:51	2	15	
			Noctule	21:32	10	3									13		
31/05/2018	21:18	16.3 - 18.9	Pip45					1	1		1			04:51	3	9	
			Noctule	21:46	1					1					2		
			Nyctalus sp.		1							1	04:30		2		
			Myotis sp.					1			1				2		
01/06/2018	21:20	17.4 - 20.1	Noctule	22:08		1						1	04:10	04:50	2		1.17
			Nyctalus sp.						1						1		
			Myotis sp.							1					1		
02/06/2018	21:20	13.8 - 19.6	Pip45	21:57	1		1		1	4				04:50	7	9	
			Noctule			1						1	04:10		2		
03/06/2018	21:21	15.6 - 20.8	Pip45	22:29		1	1	1		1				04:48	4	7	
			Leisler				1								1		
			Myotis sp.					1		1			02:58		2		

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45				1	1						04:44	2	8	0.46
			Noctule	22:07		2			1			1	04:00		4		
			Bigbat					2							2		
20/06/2018	21:33	11.5 - 15.0	Pip45	23:46			1						23:46	04:44	1	1	
21/06/2018	21:33	10.8 - 14.5			No bats were detected									04:44	0	0	
22/06/2018	21:33	11.8 - 18.1	Pip45			1	1						23:49	04:45	2	4	
			PipSp	22:09		2									2		
23/06/2018	21:33	11.2 - 17.6	Pip45	23:22			2			1			02:47	04:45	3	3	

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45				4	8	3	6	45			02:50	04:58	66	71	3.6
			Myotis sp.	21:20		1		1	1	1	1					5		
11/07/2018	21:26	14.8 - 20.4	Pip45					4	4	10	2			02:48	04:59	20	30	
			Pip55							1						1		
			PipSp							1						1		
			Noctule								1					1		
			Nyc/Epi					1			1					2		
			Myotis sp.	21:10		1		1	2	1						5		
12/07/2018	21:25	16.0 - 20.6	Pip45	20:50	1										05:00	1	7	
			Pip55						1							1		
			Noctule			1							1	04:39		2		
			Nyc/Epi				1				1					2		
			Myotis sp.				1									1		
13/07/2018	21:24	15.0 - 20.3	Pip45						1		3			02:52	05:01	4	14	
			Noctule			4			2							6		
			Nyc/Epi	21:17		1										1		
			Myotis sp.						2		1					3		
14/07/2018	21:23	14.0 - 24.1	Pip45						3	1	4			02:51	05:02	8	13	
			PipSp	20:54	1											1		
			Noctule			1										1		
			Nyctalus sp.				1									1		
			Myotis sp.					1		1						2		

Static Location 7

May

No bats recorded

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45			96	57	24	34	11	61	3	04:02	04:44	286	296	15.74
			Pip55	22:12		1	1	1							3		
			PipSp				2	1			1				4		
			Myotis sp.				1	2							3		
20/06/2018	21:33	11.5 - 15.0	Pip45	22:10		28	21	7	1					04:44	57	59	
			PipSp						1				01:16		1		
			Nyc/Epi			1									1		
21/06/2018	21:33	10.8 - 14.5	Pip45			1	3			1			02:52	04:44	5	8	
			PipSp			1									1		
			Nyc/Epi	22:12		1									1		
			Myotis sp.			1									1		
22/06/2018	21:33	11.8 - 18.1	Pip45	22:24		14	20	22	8	5	2		03:16	04:45	71	74	
			PipSp			1	1	1							3		
23/06/2018	21:33	11.2 - 17.6	Pip45	22:14		34	51	13	2	7	4		03:43	04:45	111	114	
			Pip55					1							1		
			Myotis sp.				1	1							2		

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45	22:30		7	14	6	9	12	18	1	04:02	04:58	67	72	10.27
			Pip55			1		1							2		
			PipSp							1	2				3		
11/07/2018	21:26	14.8 - 20.4	Pip45	22:30		12	6	6	11	14	6	3	04:05	04:59	58	62	
			Pip55				1								1		
			PipSp						1	2					3		
12/07/2018	21:25	16.0 - 20.6	Pip45	22:11		16	10	7	11	4	8	15	04:15	05:00	71	97	
			Pip55			4				2					6		
			PipSp			13	1				4	2			20		
13/07/2018	21:24	15.0 - 20.3	Pip45			11	21	7	12	11	6	4	04:10	05:01	72	81	
			Pip55	22:04		2					4	1			7		
			PipSp								1	1			2		
14/07/2018	21:23	14.0 - 24.1	Pip45			26	17	9	4	2	3			05:02	61	73	
			Pip55			3									3		
			PipSp	22:22		1		1		4	3		03:58		9		

Static Location 8

May

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
30/05/2018	21:17	14.5 - 15.1	Pip45		1	28	22	15	2		6	1	04:11	04:51	75	97	11.76
			Pip55							8					8		
			Noctule	21:34	5			1	2		1				9		
			Leisler					2							2		
			Myotissp.					3							3		
31/05/2018	21:18	16.3 - 18.9	Pip45	22:36		19	16	12	19	2	2			04:51	70	85	
			Pip55						3						3		
			Leisler					1				1	04:03		2		
			Myotissp.			6	4								10		
01/06/2018	21:20	17.4 - 20.1	Pip45	21:48	1	66	21	9	5	2	1			04:50	105	128	
			Pip55			1	1	2	3	2	2				11		
			PipSp						1	1					2		
			Noctule									1	04:07		1		
			Nyctalus sp.			3				3					6		
			Myotissp.						1		2				3		
02/06/2018	21:20	13.8 - 19.6	Pip45	22:02		19	5	2		2				04:50	28	39	
			Pip55			3	1								4		
			Noctule				1				1				2		
			Nyctalus sp.					1			1		03:41		2		
			Myotissp.					1	2						3		

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
03/06/2018	21:21	15.6 - 20.8	Pip45			14	38	19	10	2	1		03:11	04:48	84	92	
			Pip55			3									3		
			PipSp				1								1		
			Noctule	21:52	1										1		
			Myotissp.				3								3		

June

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
19/06/2018	21:32	17.3 - 20.3	Pip45	22:18		24	21	33	3	6	11		03:34	04:44	98	98	
20/06/2018	21:33	11.5 - 15.0			No bats were detected									04:44	0	0	
21/06/2018	21:33	10.8 - 14.5			No bats were detected									04:44	0	0	3.11
22/06/2018	21:33	11.8 - 18.1	Pip45	22:54		2							22:57	04:45	2	2	
23/06/2018	21:33	11.2 - 17.6	Pip45	23:55			1	1			7		03:47	04:45	9	9	

July

Day	Sunset	Min - max temp. °C	Species	First bat pass	21:00 - 22:00	22:00 - 23:00	23:00 - 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	Last bat pass	Sunrise	Species Total (per night)	Bat Total (per night)	BAI per hour
10/07/2018	21:27	12.5 - 21.6	Pip45	22:22		11	35	140	116	39	20	2		04:58	363	418	64.13
			Pip55							1					1		
			PipSp						4						4		
			Noctule									1	04:06		1		
			Nyctalus sp.				1								1		
			Nyc/Epi					17	15	14	1	1			48		
11/07/2018	21:26	14.8 - 20.4	Pip45	22:35		17	99	170	68	51	1			04:58	406	498	
			Noctule									3	04:10		3		
			Leisler					1							1		
			Serotine						1	1					2		
			Nyc/Epi			1	2	7	38	12	26				86		
12/07/2018	21:25	16.0 - 20.6	Pip45	22:27		1	35	160	216	90	22	8		05:00	532	557	
			PipSp						2						2		
			Noctule									1	04:59		1		
			Nyc/Epi			4		2		1	15				22		
13/07/2018	21:24	15.0 - 20.3	Pip45	22:08		39	17	112	46	31	41	20	04:07	05:01	306	315	
			Pip55			1									1		
			Noctule				1								1		
			Nyctalus sp.			1		1	1						3		
			Nyc/Epi			2	1	1							4		
14/07/2018	21:23	14.0 - 24.1	Pip45	22:23		76	133	80	110	143	56	18		05:02	616	617	
			Noctule									1	04:07		1		

Annex J. Associated Bat Reports

HIGHWAYS ENGLAND

M42 JUNCTION 6 IMPROVEMENT

PRELIMINARY BAT ASSESSMENT

MAY 08, 2017

CONFIDENTIAL

M42 JUNCTION 6 IMPROVEMENT

PRELIMINARY BAT ASSESSMENT

FINAL
CONFIDENTIAL

PROJECT NO.: 62241010
DATE: MAY 2017

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QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks				
Date	08.05.17			
Prepared by	Sarah Rochelle			
Signature	[redacted]			
Checked by	Lucy Elliott			
Signature	[redacted]			
Authorised by	Andy Bascombe			
Signature	[redacted]			
Project number	62241010			
Report number				
File reference				

SIGNATURES

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TABLE OF CONTENTS

TABLES

1 INTRODUCTION

1.1 BACKGROUND

WSP (formally Mouchel) was commissioned by Highways England to undertake a preliminary assessment of land within and adjacent to the proposed M42 Junction 6 Improvement Scheme to determine if the habitats present are likely to be used by bats.

This report presents the results of the preliminary assessment undertaken in April 2017 and makes recommendations for further survey work as appropriate.

1.2 SCHEME LOCATION

At the time of writing, three possible route options (Options 1, 2 and 3) are being considered. All three options are predominantly located to the south west of Junction 6 close to the village of Bickenhill, although all route options also include improvements to the junction itself. The land within the proposed scheme is predominantly used for agriculture and pasture grazing, although the scheme is also close to the National Exhibition Centre (NEC), Birmingham International Railway Station and Birmingham Airport as well as proposed developments including High Speed 2 (HS2) route and terminal, a Motorway Service Area (MSA) and UK Central development.

1.3 STUDY AREA

A study area extending up to 1km from the proposed route was defined, with field surveys focussing on the proposed routes and immediately adjacent habitats. Given the large number of trees within the study area, only those which are likely to be directly affected as a result of the proposed scheme were surveyed for their suitability for roosting bats at this stage.

1.4 STUDY AIMS AND OBJECTIVES

The study sought to determine whether features suitable for roosting and/or foraging and commuting bats are present within or adjacent to the proposed scheme. To achieve this, field surveys were undertaken across the study area to identify possible roosting, foraging and commuting features.

The results of the surveys will be used to inform the need for any future surveys which may be required in order to fully assess the impact of the scheme on bats.

2 METHODOLOGY

2.1 PRELIMINARY ASSESSMENT

2.1.1 ROOSTS

An assessment of the suitability of structures and trees within the study area to support roosting bats was carried out in April 2017. Given the large number of trees within the study area, only those likely to be directly affected as a result of either of the three route options were assessed at this stage.

The methodology for the assessment of structures and trees for their suitability to support bat roosts follows the Bat Conservation Trust's (BCT) Good Practice Guidelines. Surveyors assessed each structure and tree from the ground, using binoculars as required. The location of the structure or tree, along with any potential roosting features (PRFs) were recorded and the structure or tree was described as being of either negligible, low, moderate or high suitability for roosting bats. A summary of each of these categories is provided in Table 1.

Table 2.1 Categories of suitability of structures and trees for bat roosts, summarised from Table 4.1 of the BCT's Good Practice Guidelines.

SUITABILITY	DESCRIPTION
Negligible	Negligible features likely to be used by roosting bats.
Low	A structure or tree with limited roosting potential that could be used by individual bats opportunistically; or a tree of a size and age where PRFs may be present, but have not been observed from the ground. Unlikely to be used regularly or by large numbers of bats
Moderate	A structure or tree with one or more PRFs which may be used regularly by bats, but are unlikely to support roosts of high conservation status.
High	A structure or tree with multiple PRFs suitable for large numbers of bats on a regular basis for longer periods of time.

2.1.2 COMMUTING AND FORAGING HABITATS

An assessment of the suitability of habitats located within the study area for foraging and commuting bats was also carried out in April 2017. Again, the methodology for the assessment of habitats followed BCT's Good Practice Guidelines. Any likely foraging and/or commuting habitats were recorded and described as being of either negligible, low, moderate or high suitability for foraging and commuting bats. A summary of each of these categories is provided in Table 2.

Table 2.2 Categories of suitability of habitats for foraging and commuting bats, summarised from Table 4.1 of the BCT's Good Practice Guidelines.

SUITABILITY	DESCRIPTION
Negligible	Negligible features likely to be used by commuting or foraging bats.

Low	Habitats which may be used by small numbers of foraging and commuting bats, but poorly connected within the wider landscape.
Moderate	Continuous habitat connected to the wider landscape that could be used by foraging and commuting bats.
High	Continuous, high quality habitat that is well connected and likely to be used regularly by foraging and commuting bats. Close to and connected to known roosts.

2.2 LIMITATIONS

At the time of survey, access was not available to all land within the study area. An assessment of the habitats present was undertaken from adjacent land where possible to determine the likelihood of suitable habitat for bats being present, although a detailed assessment could not be undertaken at this stage. Surveys of areas unable to be accessed will be undertaken at a later date once access becomes available to ensure that an assessment of the whole study area has been undertaken.

3 RESULTS

3.1 ROOSTS

3.1.1 TREES

Trees in proximity to each of the proposed route options were assessed for their suitability to support roosting bats. Only trees likely to be directly affected as a result of each route option were surveyed at this stage. 92 trees/small groups of trees and 3 areas of woodland were found to have features suitable for roosting bats. These are described in Appendix A and shown in Figure 1. 16 of these are of high suitability, 41 of these are of moderate suitability and 32 are of low suitability for roosting bats. 3 trees could not be directly assessed due to access restrictions.

3.1.2 STRUCTURES

In addition to the trees listed above, both residential and commercial buildings are present within the study area, some of which are located adjacent to the proposed routes. In addition, two variants of Option 1 will likely result in the loss of two residential properties on Catherine De Barnes Lane. Both properties are of a construction type which appear to offer opportunities for roosting bats.

3.2 COMMUTING AND FORAGING HABITATS

A summary of the habitats present within the study area and an assessment of their suitability for foraging and commuting bats is provided below:

3.2.1 LAND SOUTH OF M42 JUNCTION 6

The land to the west of Catherine De Barnes Lane comprises arable and grassland fields which are connected to the wider area by a network of treelines and hedgerows. These features provide a continuous corridor of vegetation which may be used by commuting bats, with grassland and woodland habitats offering opportunities for foraging. Accordingly, this area is of moderate suitability for foraging and commuting bats.

The land to the east of Catherine De Barnes Lane and to the west of the M42 also comprises arable and grassland habitats. An area of ancient woodland is present at the junction of Catherine De Barnes Lane and Solihull Road and this is connected to smaller parcels of woodland by hedgerows and treelines. Two watercourses are also present. The mosaic of habitats within Bickenhill Meadows Site of Special Scientific Interest (SSSI) including neutral and marshy grassland, woodland and a pond is also likely to be used by foraging bats. This area is of moderate suitability for foraging and commuting bats.

The land to the east of the M42 is similar to the wider area, comprising improved grassland and arable habitats with hedgerows, treelines and waterbodies. Accordingly, these habitats are of moderate suitability for foraging and commuting bats.

3.2.2 LAND NORTH OF M42 JUNCTION 6

Habitats located to the north-east of Junction 6 include improved grassland, arable fields and waterbodies which provide opportunities for foraging bats. These habitats are connected by hedgerows and treelines providing suitable commuting routes for bats. These habitats are of moderate suitability for foraging and commuting bats.

Habitats to the north-west of Junction 6 are dominated by buildings and hard-standing associated with the NEC and Birmingham International railway station. These habitats are of negligible suitability for foraging and commuting bats.

4 RECOMMENDATIONS

4.1 BAT ROOSTING OPPORTUNITIES

Trees, woodlands and structures with features suitable for roosting bats have been recorded within the study area. In order to determine if these features are being used by bats, it is recommended that further survey work is undertaken. Table 3 shows the recommended timings and minimum number of survey visits for presence/absence surveys to give confidence in a negative result when surveying structures. The same is also recommended when surveying trees, however this survey effort is unlikely to give confidence in a negative result. This is due to a number of limitations when undertaking emergence/re-entry surveys of trees, including quiet echolocation calls of some tree-dwelling species and difficulty in observing features which may be high off the ground or obscured by foliage. It is therefore also recommended that where possible, climbed inspection surveys are undertaken in conjunction with emergence/re-entry surveys.

Table 4.1 Recommended minimum number of survey visits for emergence/re-entry surveys to give confidence in a negative result – taken from Tables 7.1 and 7.3 of the BCT's Good Practice Guidelines.

SUITABILITY	SURVEY TIMINGS	SURVEY EFFORT
Low	Structures: May to August Trees: No further surveys required*	Structures: One dusk emergence or one dawn re-entry survey Trees: No further surveys required*
Moderate	May to September with at least one of the surveys between May and August.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.
High	May to September with at least two of the surveys between May and August.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be dusk or dawn.

(as confidence in a negative result is not possible for trees due to limitations outlined above)*

This assessment has focussed on roosting features which are likely to be directly lost as a result of the proposed route options. It is recommended that consideration is also given to the possible presence of roosts within adjacent habitats. It is recommended that walked transect surveys are undertaken (see below) to determine how bats are using the landscape. If suitable, these surveys can be combined with back-tracking surveys, the aim of which is to locate likely roost locations by observing the time and direction of flight of commuting bats at sunset and sunrise. Should these surveys record roosting bats within the close vicinity of either proposed route option, an assessment of the likely impacts of the scheme on these bats and their roosts can be made.

4.2 BAT FORAGING AND WIDER CONTEXT

Suitable foraging and commuting habitat is present across the study area. It is recommended that further survey work, including walked transects and/or static detector surveys are undertaken to record levels of bat activity and determine how bats are using the habitats within the study area so that the effects of the proposals on foraging and commuting bats can be assessed. Table 4 shows the recommended timings and number of surveys to achieve a reasonable survey effort.

Table 4.2 Recommended number of activity surveys to achieve a reasonable survey effort in relation to habitat suitability – taken from Table 8.3 of the BCT's Good Practice Guidelines.

SUITABILITY	SURVEY EFFORT	
	TRANSECT SURVEYS	STATIC DETECTOR SURVEYS
Low	One survey visit per season** in appropriate weather conditions. Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat alone.	One location per transect, data to be collected on five consecutive nights per season** in appropriate weather conditions for bats.
Moderate	One survey visit per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk-dawn) within one 24-hour period.	Two locations per transect, data to be collected on five consecutive nights per month (April to October) in appropriate weather conditions for bats.
High	Up to two survey visits per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk ad pre-dawn (or dusk-dawn) within one 24-hour period.	Three locations per transect, data to be collected on five consecutive nights per month (April to October) in appropriate weather conditions for bats.

(** *spring* – April/May, summer – June/July/August, autumn – September/October)

BIBLIOGRAPHY

— Collins, J.(ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) The Bat Conservation Trust, London

5 FIGURES

5.1 FIGURE 1: PRELIMINARY BAT ASSESSMENT RESULTS

APPENDIX

A TREES WITH POTENTIAL ROOSTING FEATURES

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
1	Oak	419143	280692	Knot holes, missing bark, cracks, broken branches	High
2	Oak	419260	280932	Broken branches, missing bark, knot holes in dead branches	Moderate
3	Oak	419320	280887	Knot holes in both living and dead branches	Moderate
4	Ash	419369	280882	Knot hole	Low
5	Oak	419334	280827	Missing bark, small knot holes, cracks	Moderate
6	Oak	419039	280827	Missing branch	Moderate
7	Ash	418939	280480	Knot holes and missing limb	Moderate
8	Ash	418961	280467	Knot hole and missing limbs	High
9	Oak	418901	280209	Missing bark	Moderate
10	Oak	418901	280209	Split in stem, missing bark	Moderate
11	Oak	418882	280863	Knot holes, peeling and lifted bark, split in stem	Moderate
12	Oak	418787	280763	Rotten branch	Low
13	Oak	419762	280889	Knot hole	Moderate

APPENDIX

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
14	Oak	418775	280892	Split in stem	Moderate
15	Oak	418779	280942	Split in bark	Low
16	Oak	418790	280966	Missing limbs	Moderate
17	Oak	418811	281023	Missing branch	Low
18	Oak	418814	281067	Missing branches	Low
19	Oak	418817	281080	Missing branches	Low
20	Oak	418779	281153	Knot hole	Low
21	Ash	418743	281097	Dead branch with hole	Moderate
22	Oak	418743	281097	Hole	Moderate
23	Oak	418745	281074	Knots in limbs	Low
24	2 Poplar and 2 Ash	418749	281042	Stem splits	Moderate, High
25	7 Oak	418749	282044	Multiple	Moderate
26	Oak	418690	280947	Three knot holes and missing branch	Moderate
27	Oak	418672	280932	Small holes and crack	Low
28	Oak	418689	280900	Hole and dead branch	Low
29	Oak	419015	282567	Cavities, splits and dead wood	High
30	Oak	419069	282540	Splits, cavities, missing limbs	Moderate
31	2 Ash	419001	282537	Knot hole, split	Moderate

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
32	Oak	419028	282513	Knot hole	Low
33	Oak	419914	282502	Knot holes	High
34	Horse Chestnut	419099	282546	Cavity	High
35	Ash	419106	282567	Woodpecker holes, cavities	High
36	Ash	419117	282559	Knot holes and large cavities	High
37	Oak	419252	282634	Split in branch	Low
38	Ash	419192	282579	Woodpecker holes	Moderate
39	Oak	419146	282575	Splits	Moderate
40	Oak	419131	282556	Cavity	High
41	2 Ash	419122	282561	Knot holes and cavities	Moderate, High
42	Oak	418156	282287	Split	Low
43	Oak	418156	282300	Five tear outs, dead wood	High
44	Oak	418172	282332	Woodpecker hole	Low
45	Ash	419226	281200	Knot hole	Low
46	Oak	419207	281198	Missing bark, missing limbs, splits in limbs	Moderate
47	Ash	419190	281203	Stem split and missing limb	High
48	Oak	419107	281216	Splits in limb	Moderate
49	Ash	419053	281249	Cavity in stem	Moderate
50	Oak	418915	281296	Knot holes, lifted bark,	Moderate, High

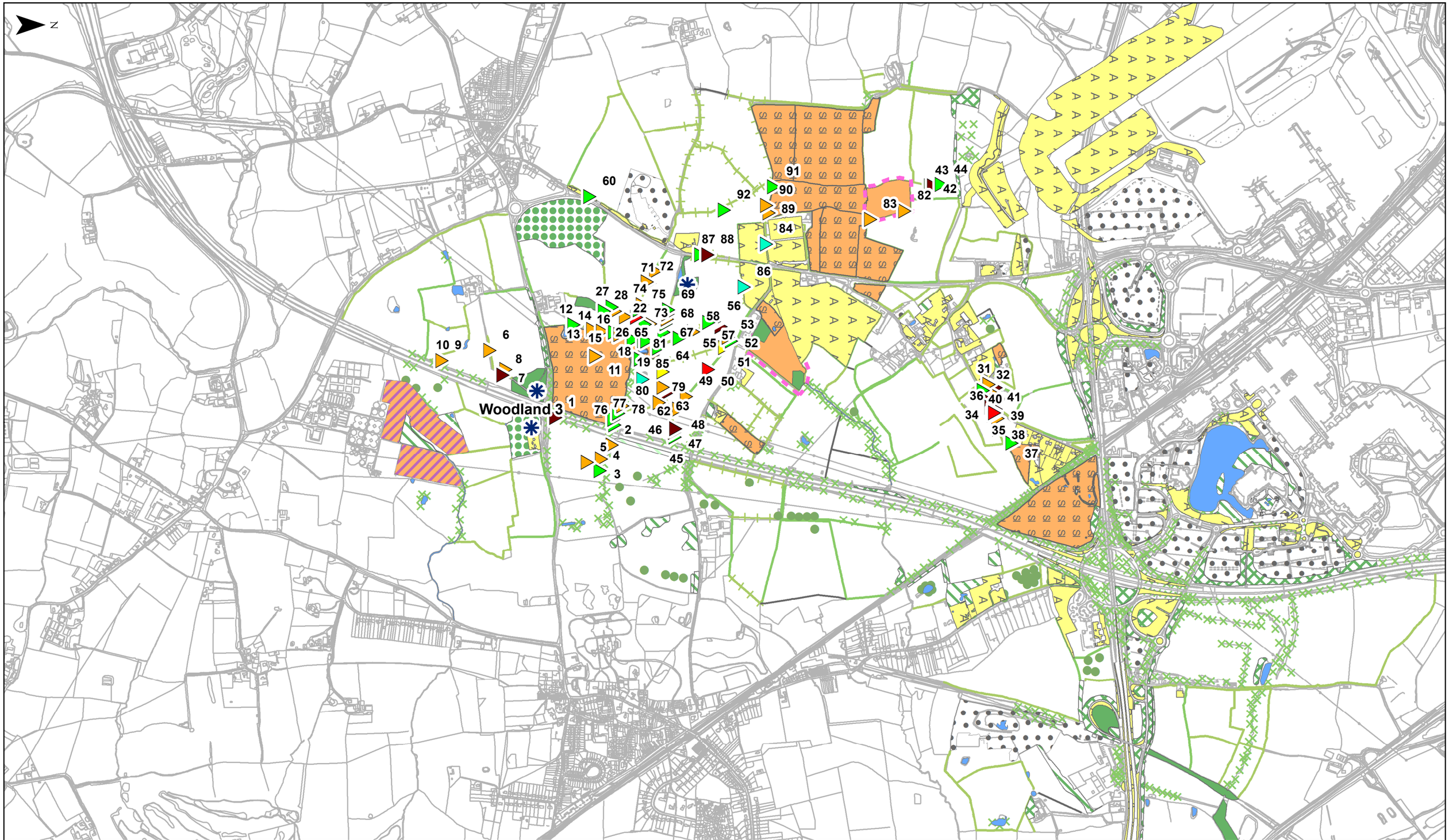
APPENDIX

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
51	2 Ash, 1 Oak	418844	281411	Knot holes, missing limbs, lifted bark	Low, Moderate
52	Oak	418817	281441	Broken limbs	Low
53	2 Oak	418801	281426	Limbs, split limb, knot hole	Moderate
54	Oak	418756	281396	Knot holes, split limbs	High
55	Oak	418736	281376	Knot hole, split branch, lifting bark, missing limb	Moderate
56	2 Oak	418733	281367	Dead branch	Low
57	Oak	418738	281344	Knot holes, lifted bark	Low
58	Oak	418709	281254	Split in limb	Moderate
59	Oak	418805	281218	Knot hole	Low
60	Ash	418202	280837	Knot hole	Low
61	Oak	419036	281167	Knot holes, cavities	High
62	Oak	419024	281150	Tear out	Low
63	Oak	409013	281150	Split bark, knot hole	Moderate
64	Oak	418947	281150	Woodpecker hole on western tree - eastern tree dead branches with overlap	Low, Moderate

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
65	Oak	418846	281131	Branches grown into each other	Low
66	Oak	418744	281162	Knot hole	Low
67	Oak	418728	281270	Dead wood and gaps	Moderate
69	Ash	418699	281273	Cavity	Moderate
69	Oak	418685	281172	Dead wood	Low
70	Oak	418519	281118	Four woodpecker holes	Moderate
71	Ash	418571	281092	Knot holes and cavities	Moderate
72	Oak	418565	281082	Knot holes and cavities	Moderate
73	Ash	418655	281059	Missing limb	Moderate
74	Poplar	418661	281061	Missing limbs and branches	Moderate
75	Oak	418683	281048	Dead wood and missing branches	Low
76	Oak	419175	280944	Dead wood	Low
77	Oak	419149	280940	Dead wood	Low
78	Oak and Ash	419124	280961	Dead wood	Low
79	Ash	419079	281133	Cavities knot holes	Moderate
80	Ash	419094	280978	Knot holes and broken branches	Moderate
81	3 Oak	418894	281053	Knot holes deadwood missing branches	Low
82	Oak	418290	482180	Woodpecker hole, dead branch and lifted bark	Moderate

APPENDIX

TREE NUMBER	SPECIES	LOCATION		POTENTIAL ROOST FEATURES (PRFS)	BAT ROOST POTENTIAL
		N	E		
83	Oak	418330	482040	Woodpecker holes, splits in bark and cavity	Moderate
84	Oak	418404	281589	Unknown	Unknown
85	Unknown	418980	281063	Unknown	Unknown
86	Unknown	418587	281495	Unknown	Unknown
87	Oak	418450	281310	Knothole and deadwood	Low
88	Oak	418450	281340	Split trunk	High
89	Ash	418270	281600	Woodpecker hole	Moderate
90	Ash	418240	281590	Woodpecker hole	Moderate
91	Oak	418160	281620	Ivy, possibly obscuring features	Low
92	Oak and Alder	418260	281410	Multiple	Low



Key

Trees with Bat Roosting Potential (BCT catergories)

- High
- Low
- Low, Moderate
- Moderate
- Moderate, High
- Unknown
- Woodlands with potential bat roosting features

Habitat Type

- (A)rable/(I)mproved
- Amenity
- Bare Ground
- Broad-leaved Plantation Woodland
- Broad-leaved Semi-natural Woodland
- Site of Special Scientific Interest
- Coniferous Plantation Woodland
- Dense Scrub
- Marshy Grassland
- Mixed Semi-natural Woodland
- Semi-improved Neutral Grassland
- Standing Water
- Unimproved Neutral Grassland
- Fence
- Species Poor Defunct Hedge
- Species Poor Hedge and Trees
- Speices Poor Intact Hedge
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Version	Amendment	Drawing Date	Review Date	Approved Date
A	First Issue	12/04/17 SR	10/05/17 LE	12/05/17 AB

Client: Highways England

Project: M42 J6 Ecology Surveys

Drawing Title: Bat Scoping Map

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Purpose of Issue: Information

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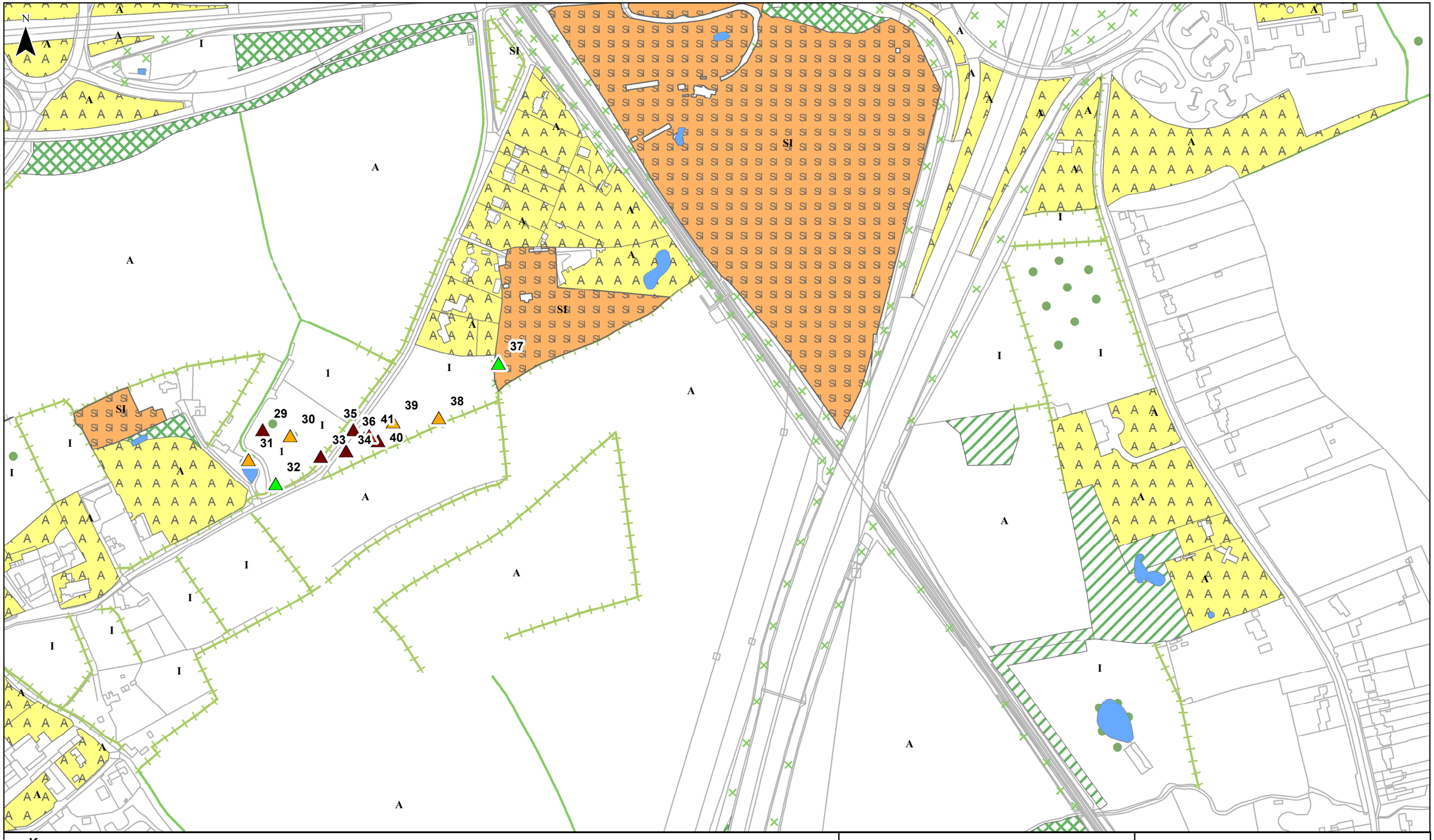

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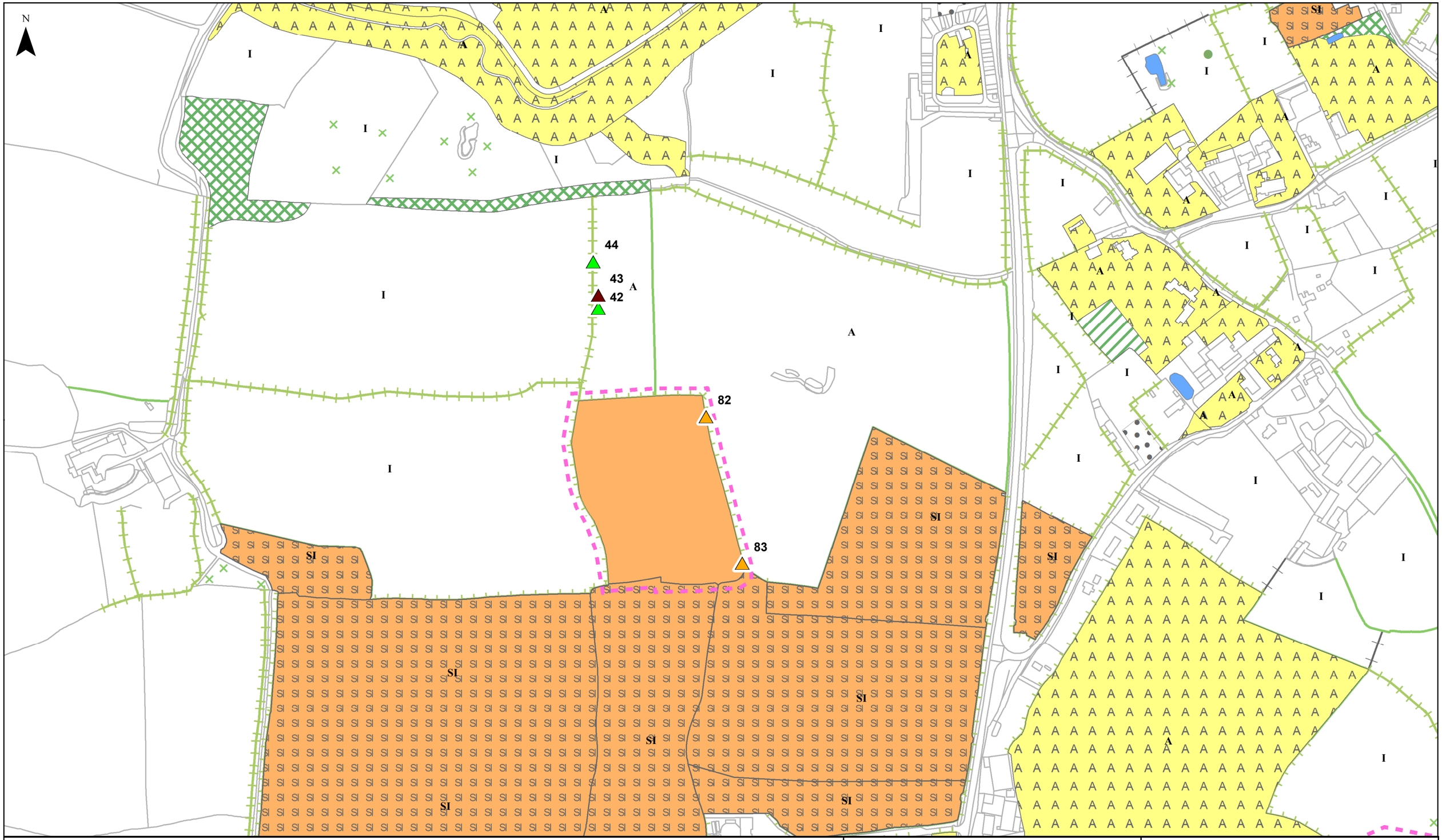

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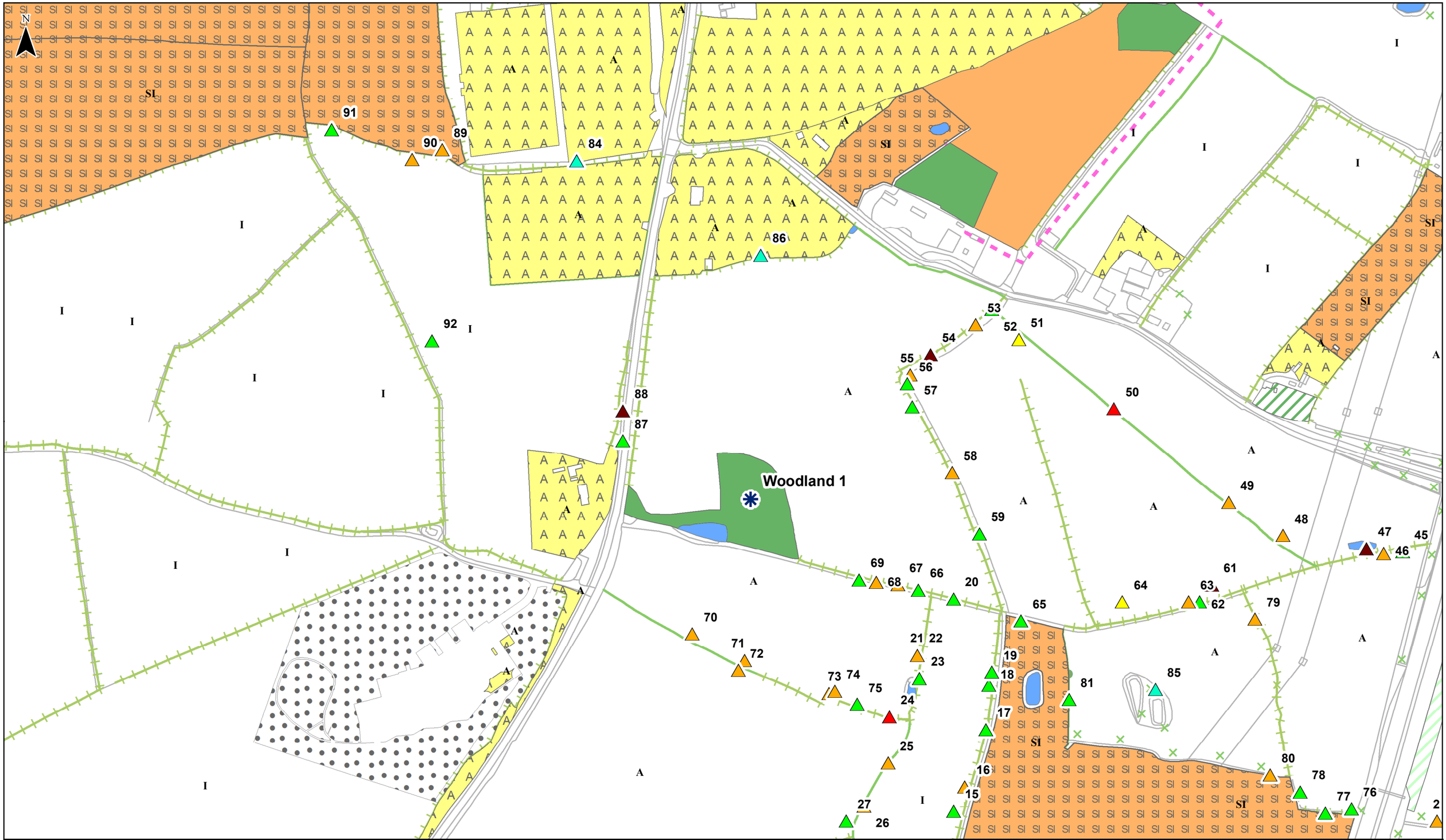

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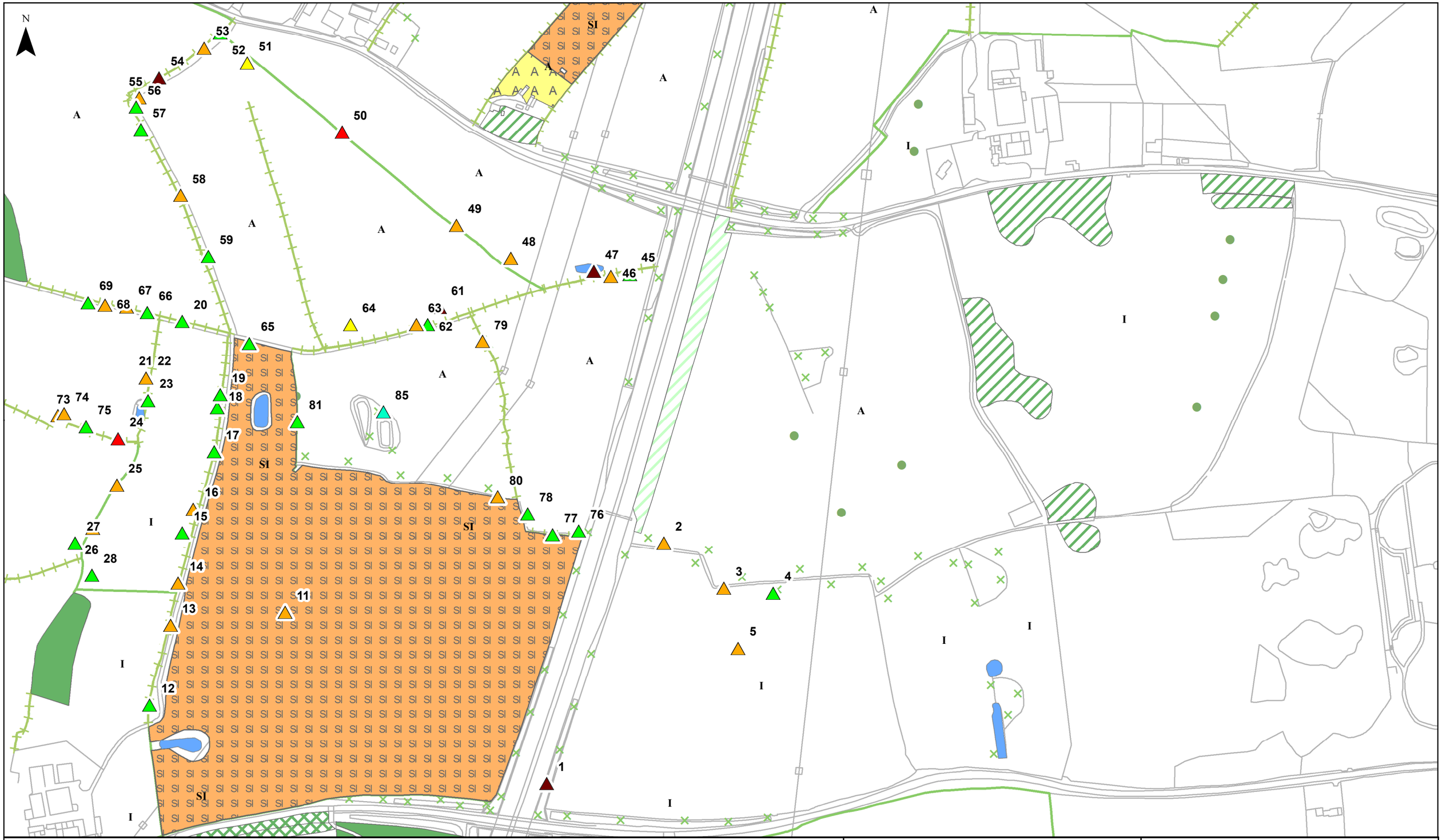

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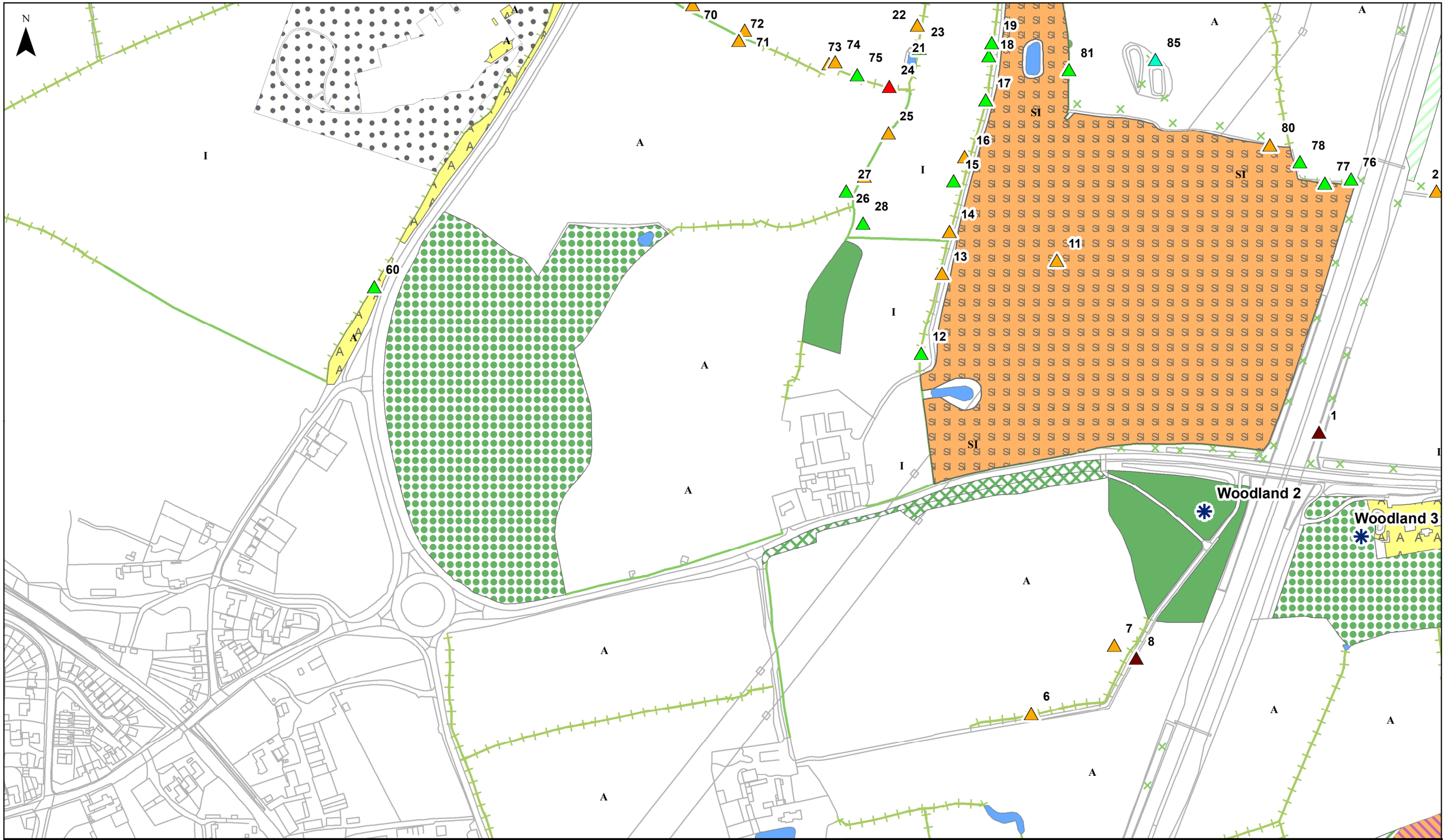

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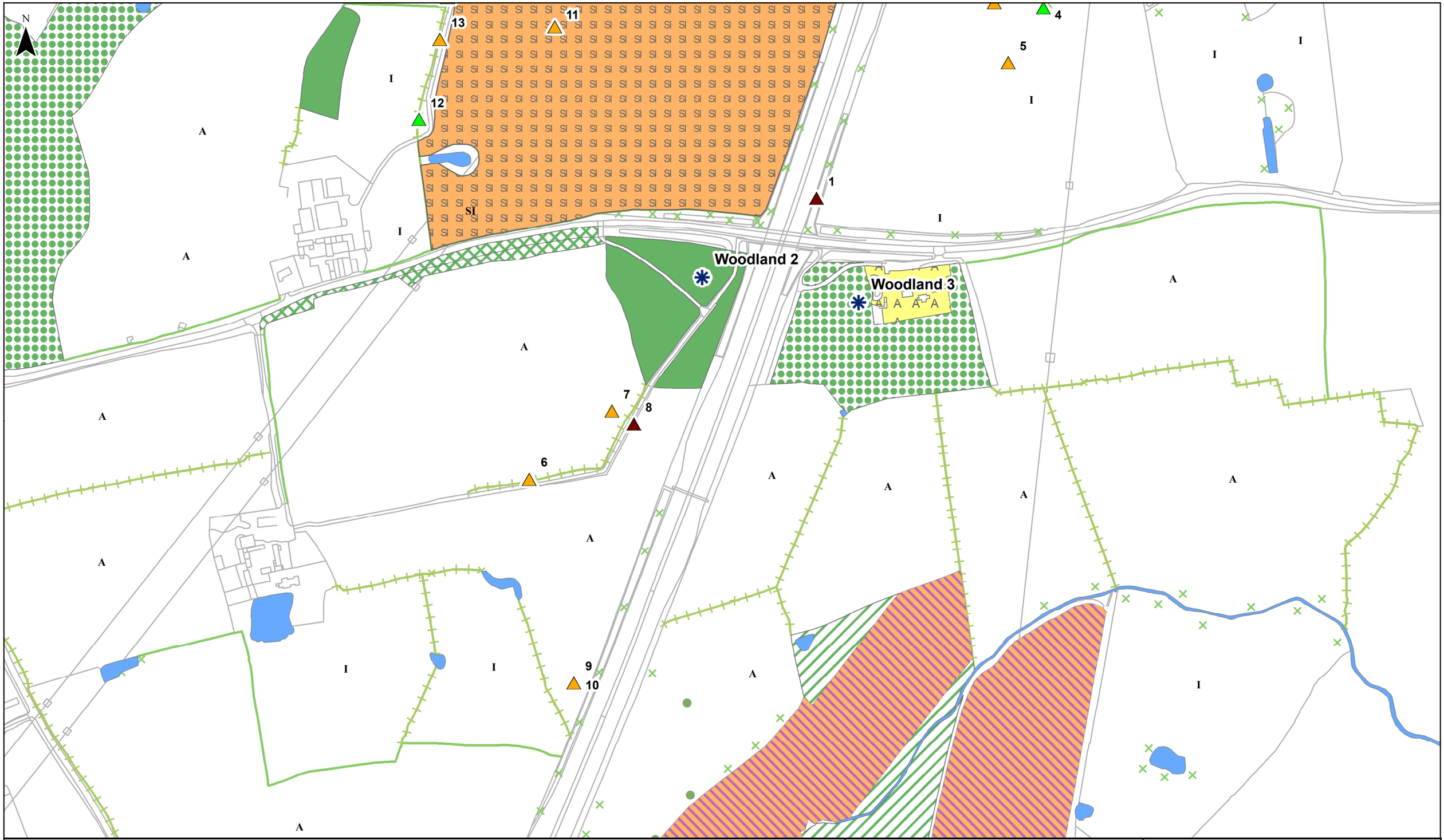

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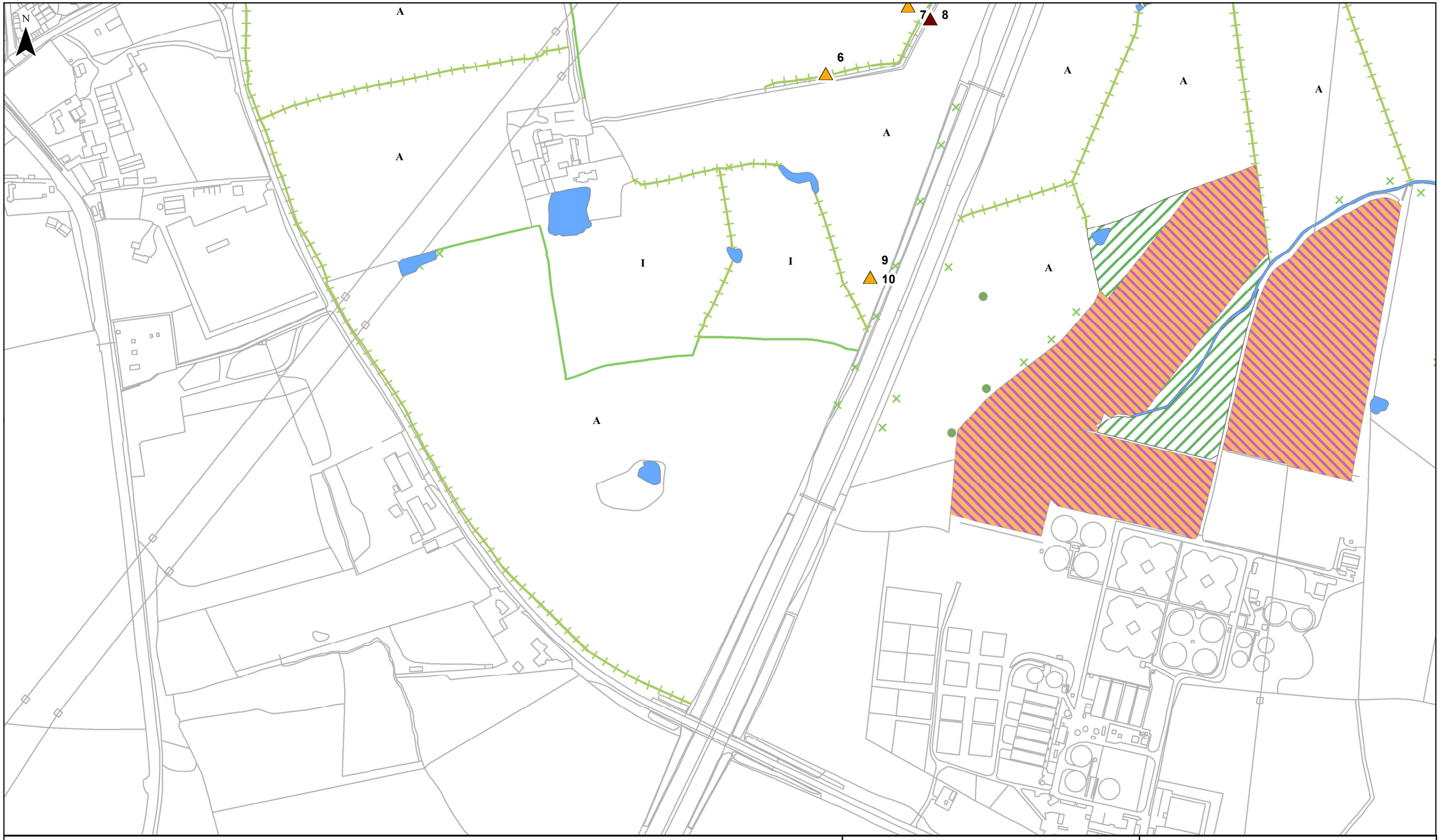

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Tel: 020 7822 2497

Drawing Number: Page 8 of 8

Annex K: Figures

N

S1
S2
S3
S4
S5
S10
S12

B5
B6
B7
B8
B9
B10
B12A
B12B
B12C

SEE SHEET 2

0 50 100 200 300 400 Metres

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

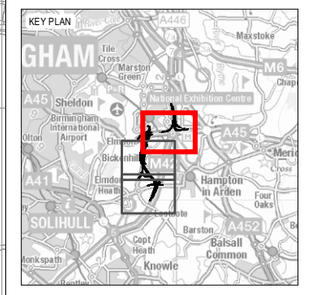
LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- 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

- CONFIRMED ROOST
- MODERATE
- LOW POTENTIAL
- NEGLIGIBLE
- NEGLIGIBLE (PARTIAL ACCESS)
- UNKNOWN\ NO ACCESS
- NO ACCESS

KEY PLAN



FIRST ISSUE	GB / JG	13/12/18	P01
Revison Details	By / Check	Date	Suffix

Purpose of Issue: DCO SUBMISSION

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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 9.5A STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS SHEET 1 OF 3

Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:7,500	Zone: M42

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B12C
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B4C
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S6
S7

SEE SHEET 1
SEE SHEET 3

0 50 100 200 300 400 Metres

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

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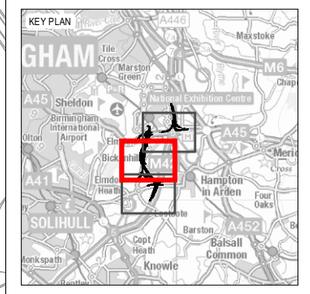
BUILDING OR STRUCTURE WITH POTENTIAL FOR ROOSTING BATS

- CONFIRMED ROOST
- MODERATE
- LOW POTENTIAL
- NEGLIGIBLE
- NEGLIGIBLE (PARTIAL ACCESS)
- UNKNOWN\ NO ACCESS
- NO ACCESS

KEY PLAN



FIRST ISSUE	GB / JG	13/12/18	P01
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 9.5A STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS SHEET 2 OF 3

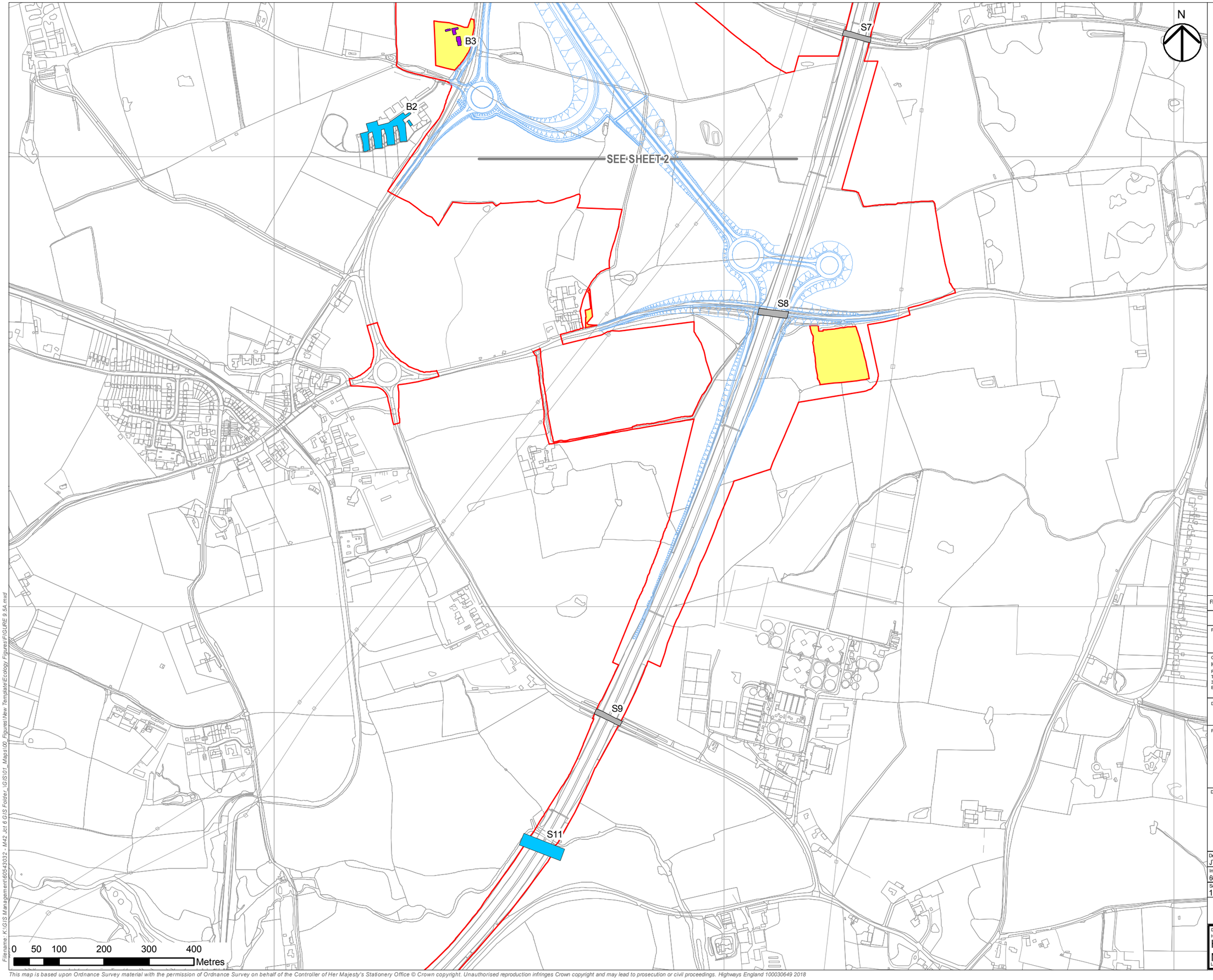
Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:7,500	Zone: M42

Drawing Number: Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
M42_SW_ZZ_ZZ -DR-DC-0041
Location | Type | Role | Number

Rev: P01

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5A.mxd



NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

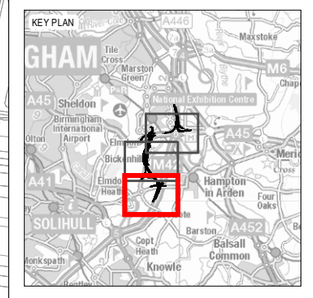
LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- 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

- CONFIRMED ROOST
- MODERATE
- LOW POTENTIAL
- NEGLIGIBLE
- NEGLIGIBLE (PARTIAL ACCESS)
- UNKNOWN\ NO ACCESS
- NO ACCESS

KEY PLAN



FIRST ISSUE	GB / JG	13/12/18	P01
Revison 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 9.5A
STRUCTURES AND BUILDINGS WITH POTENTIAL FOR ROOSTING BATS
SHEET 3 OF 3

Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

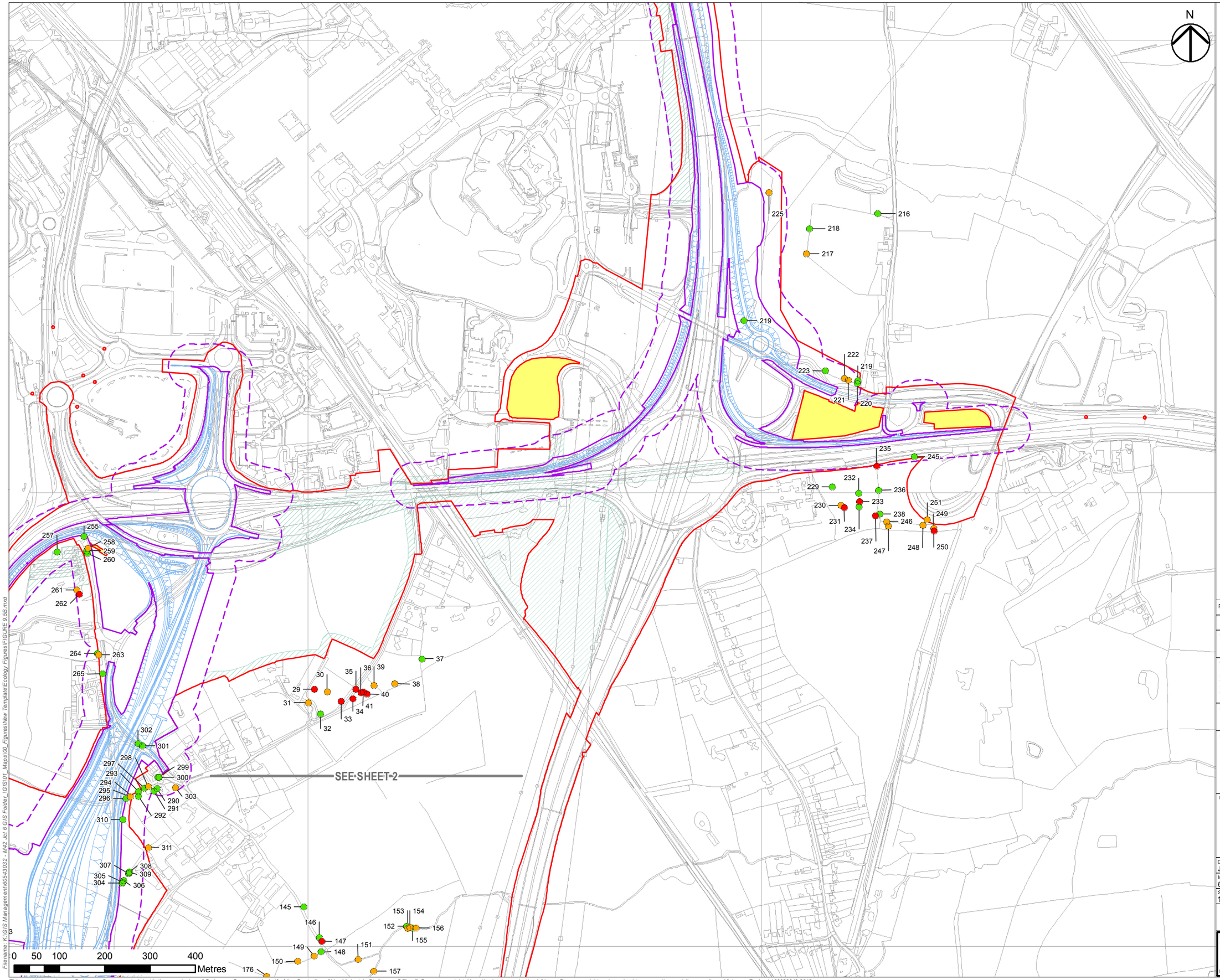
Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:7,500	M42

Drawing Number

Highways England Pin	Originator	Volume	Rev
HE551485	-ACM	-EGN-	P01

Location: M42_SW_ZZ_ZZ | Type: -DR-DC- | Role | Number: -0042

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5A.mxd



NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

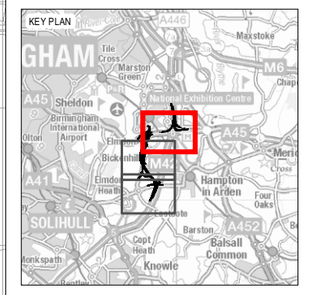
LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- GENERAL ARRANGEMENT BOUNDARY
- GENERAL ARRANGEMENT BOUNDARY 50M BUFFER
- AREAS OF LAND NOT ACCESSED

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

KEY PLAN



FIRST ISSUE	GB / JG	13/12/18	P01
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 9.5B
PRF ASSESMENT OF TREES
SHEET 1 OF 3

Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:7,500	M42

Drawing Number

Highways England Pin	Originator	Volume			Rev
HE551485	-ACM	-EGN-			P01
Location		Type	Role	Number	
M42_SW_ZZ_ZZ		-DR	-DC	-0043	

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5B.mxd

N

SEE SHEET 1

SEE SHEET 3

0 50 100 200 300 400 Metres

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

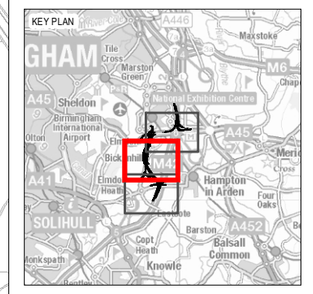
LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- GENERAL ARRANGEMENT BOUNDARY
- GENERAL ARRANGEMENT BOUNDARY 50M BUFFER
- AREAS OF LAND NOT ACCESSED

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

KEY PLAN



FIRST ISSUE	GB / JG	13/12/18	P01
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 9.5B PRF ASSESMENT OF TREES SHEET 2 OF 3

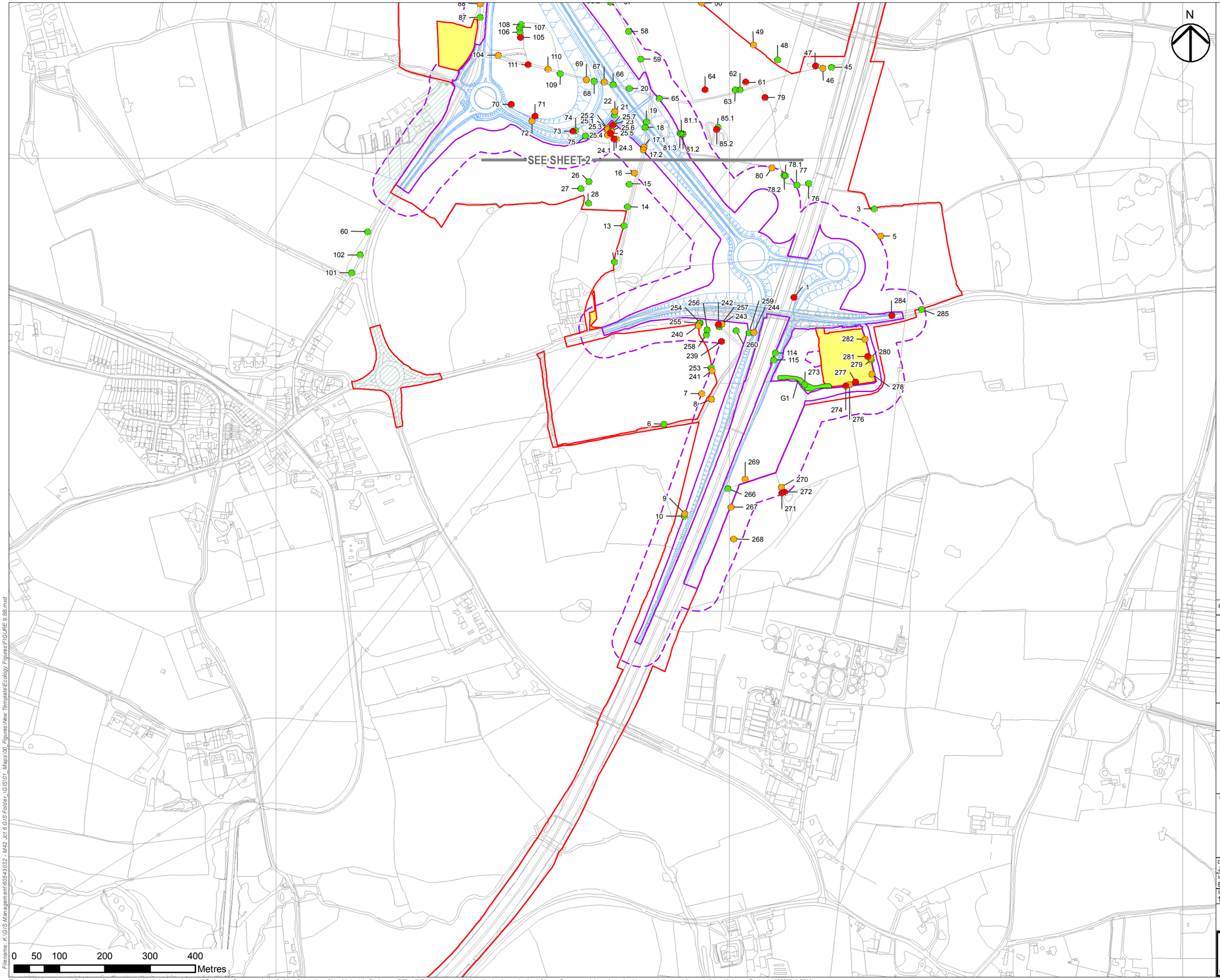
Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:7,500	Zone: M42

Drawing Number: Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
Location: M42_SW_ZZ_ZZ | Type | Role | Number: -DR-DC-0044

Rev: P01

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5B.mxd



NOTES

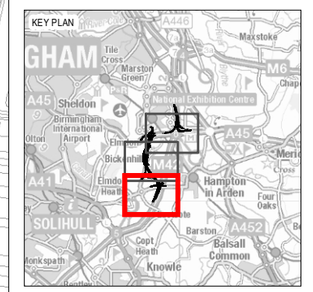
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- GENERAL ARRANGEMENT BOUNDARY
- GENERAL ARRANGEMENT BOUNDARY 50M BUFFER
- AREAS OF LAND NOT ACCESSED

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	GB / JG	13/12/18	P01
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

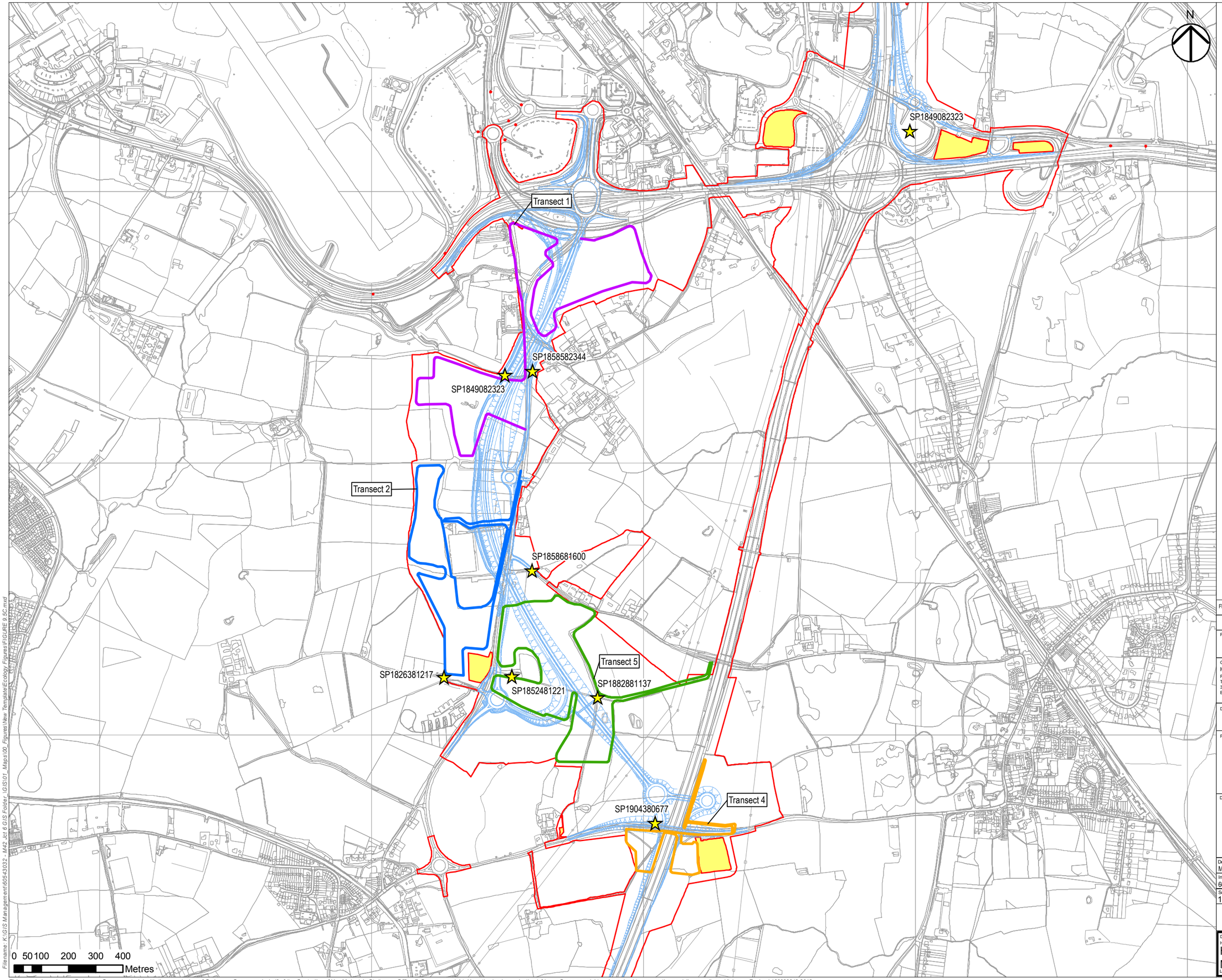
Drawing Title: FIGURE 9.5B PRF ASSESMENT OF TREES SHEET 3 OF 3

Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	13/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:7,500	Zone: M42

Drawing Number: Highways England Pin HE551485 | Originator -ACM | Volume -EGN- | Location M42_SW_ZZ_ZZ | Type | Role | Number -DR-DC-0045 | Rev P01

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5B.mxd



NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- TRANSECT 1
- TRANSECT 2
- TRANSECT 4
- TRANSECT 5
- STATIC LOCATION

FIRST ISSUE	AAC / JG	12/12/18	P01
Revison 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 9.5C BAT TRANSECTS AND STATIC LOCATIONS

Designed	Drawn	Checked	Approved	Date
MWH	AAC	MWH	JG	12/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:12,500	Zone: M42

Drawing Number: Highways England Pin HE551485 | Originator -ACM | Volume -EGN- | Location M42_SW_ZZ_ZZ | Type -DR- | Role DC- | Number 0242 | Rev P01

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5C.mxd

N

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARILY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- LAND NOT INCLUDED WITHIN THE ORDER LIMITS
- AREAS OF LAND NOT ACCESSED

0 250 500 1,000 1,500 2,000 Metres

FIRST ISSUE	GB / JG	10/12/18	P01	
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 9.5D AREAS OF LAND NOT ACCESSIBLE

Designed	Drawn	Checked	Approved	Date
JT	GB	MWH	JG	10/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:25,000	Zone: M42

Drawing Number: Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
M42_SW_ZZ_ZZ -DR-DC-0167
Location | Type | Role | Number

Rev: P01

Filename: K:\GIS Management\60543032 - M42 Jct 6 GIS Folder_\GIS\01_Maps\00_Figures\New Template\Ecology Figures\FIGURE 9.5D.mxd

N

21:55 - 22:00 2x CP

22:01 - 22:08 1xNoc

Start

21:32 - 21:37 1xNoc

21:36 1xCP

21:45 1xNoc

21:43 1xCP

21:39 1xCP

21:38 1xNoc

21:38 1xCP

22:27 1x CP

22:32 - 22:35 1xCP

22:23 1xCP

22:35 1xCP

22:36 1xLE

22:37 1xCP

22:12 1xCP

End

22:49 - 22:57 1xCP

22:57 - 23:05 2xCP

22:44 1xCP

22:44 1xSP

0 25 50 100 150 200 250 Metres

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

SOPRANO PIPISTRELLE SP

COMMON PIPISTRELLE CP

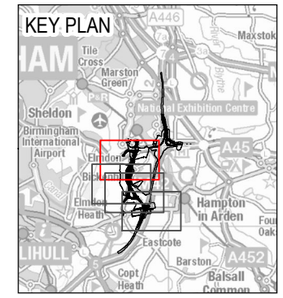
NOCTULE NOC

LONG-EARED LE

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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 9.5E (1)
BAT SURVEY
TRANSECT 1
DUSK 30/05/2018
SHEET 1 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:4,000	M42

Drawing Number
Highways England Pin | Originator | Volume | Location | Type | Role | Number | Rev
HE551485 | -ACM | -EGN- | M42_SW_ZZ_ZZ | -DR-DC-0140 | P01

Filename: \\Ukids2pfpsw001\UKLDS2PFPSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig1_M42_Bat_Activity_T1_20180530_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0140.mxd

N

Start
End
1
2
3
4
5
6
7
8
9
10
11

22:22 1xCP
22:27 1xCP
22:23 2xCP
22:28 1xCP
22:07 1xNoc
22:01 1xNoc
21:51 3xCP
21:55 1xCP
21:31 1xNoc
21:44 2xCP
21:35 1xNoc
22:30 2xCP
21:45 1xNoc
21:39 1xCP
21:36 - 21:37 1xNoc
21:53 2xCP
21:42 1xCP
21:36 - 21:37 1xCP
22:33 - 22:36 1xCP
22:11 1xCP
22:37 1xLE
22:37 1xCP
22:40 2xCP
22:42 1xSP
23:03 - 23:05 1xCP
22:49 2xCP
22:51 1xCP
22:52 1xCP
23:01 1xCP
22:59 2xCP
22:58 1xCP
22:54 - 22:56 2xCP

0 25 50 100 150 200 250 Metres

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

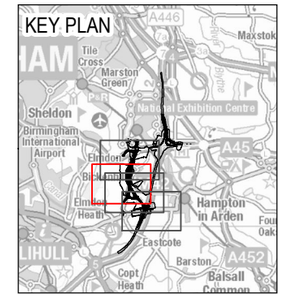
BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

SOPRANO PIPISTRELLE SP
COMMON PIPISTRELLE CP
NOCTULE NOC
LONG-EARED LE

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP
NOCTULE NOC

KEY PLAN



FIRST ISSUE	CAA / MW	13/12/18	P01	
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 9.5E (2)
BAT SURVEY
TRANSECT 2
DUSK 30/05/2018
SHEET 2 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	13/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:3,500	M42

Drawing Number
Highways England Pin | Originator | Volume | Location | Type | Role | Number | Rev
HE551485 -ACM -EGN- M42_SW_ZZ_ZZ -DR-DC-0141 P01

Filename: \\UKbi3pfpsw001\UKLDS2PFPSW001-V1\EIENV\RONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig2_M42_Bat_Activity_T2_20180530_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0141.mxd

N

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

SOPRANO PIPISTRELLE SP

COMMON PIPISTRELLE CP

PIPISTRELLE SPECIES PIP. SP

NOCTULE NOC

MYOTIS MY

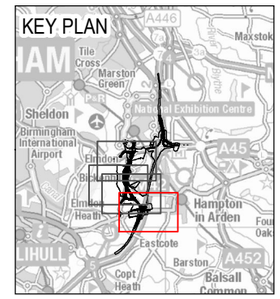
BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP

Start
End
1
2
3
4
5
6
7
8
9
10
12
21:21 1xSP
21:23 1xSP
21:27 1xSP
21:24 1xCP
21:27 1xCP
21:32 1xCP
21:30 - 21:32 1xCP
21:45 2xCP
21:45 1xNoc
21:43 - 21:44 1xCP
21:44 1xSP
21:40 1xSP
21:50 3xCP
21:50 1xSP
21:51 1xSP
23:26 1xCP
22:52 1x CP
22:57 - 22:58 1xPip. sp
22:34 1xCP
22:32 1xCP
22:28 1xCP
22:23 1xMY

0 25 50 100 150 200 Metres

KEY PLAN



FIRST ISSUE	CAA / MW	13/12/18	P01
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 9.5E (3)
BAT SURVEY
TRANSECT 4
DUSK 30/05/18
SHEET 3 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	13/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:2,000	M42

Drawing Number
Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
M42_SW_ZZ_ZZ -DR-DC-0142
Location | Type | Role | Number

Rev P01

Filename: \\UKbs2pfpsw001\UKLDS2PFPSW001-V1\EIENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig3_M42_Bat_Activity_T4_20180530_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0142.mxd

N

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

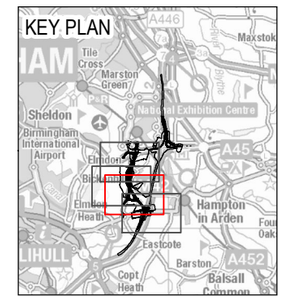
BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- NOCTULE NOC
- *MYOTIS* MY

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP

1 End – Start
2 23:04 - 23:05 1xCP
3 22:58 - 22:59 1xCP
4
5 21:48 1xNoc
6 21:57 - 21:59 1xCP
7 22:14 1xCP
8
9
10 22:23 1xMY
11 22:22 1xCP
12
13 22:43 1xCP
14 22:46 1xCP
15 22:50 1xCP
21:52 - 22:56 1xCP
21:47 1xCP
21:46 - 21:47 1xCP
21:39 - 21:40 1xSP

0 25 50 100 150 200 250 Metres

KEY PLAN



FIRST ISSUE	CAA	MW	14/12/18	P01
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 9.5E (4) BAT SURVEY TRANSECT 5 DUSK 30/05/18 SHEET 4 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	14/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:3,000	Zone: M42

Drawing Number: Highways England Pin	Originator	Volume	Rev
HE551485	-ACM	-EGN-	P01
Location: M42_SW_ZZ_ZZ	Type: -DR-	Role: DC-	Number: 0143

Filename: \\UKIds2pfpsw001\UKLDS2PFPSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_29118\Fig4_M42_Bat_Activity_T5_20180530_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0143.mxd

N

21:58 - 22:01 3xNoc

Start

End

21:55 2xNoc

22:03 1xNoc

22:10 1xNoc

22:07 1xCP

21:53 1xNoc

22:09 1xNY

22:02 1xCP

22:09 1xNY

21:51 1xNoc

21:50 1xNoc

22:12 1xNoc

21:38 1xNoc

22:20 1xCP

22:16 1xSP

22:17 1xNoc

22:19 1xNY

22:16 1xNY

22:22 1xNoc

22:22 2xNoc

22:18 2xCP

22:25 1xNoc

22:46 - 22:47 1xCP

22:23 - 22:24 1xCP

22:26 1xCP

22:25 2xCP

22:27 1xNoc

21:42 1xNoc

22:43 1xCP

22:28 - 22:30 4xCP

22:31 1xCP

22:31 - 22:33 1xCP

22:40 - 22:41 1xCP

22:37 - 22:38 3xCP

22:34 - 22:35 1xNoc

0 25 50 100 150 200 250 Metres

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

SOPRANO PIPISTRELLE SP

COMMON PIPISTRELLE CP

NOCTULE NOC

NYCTALUS NY

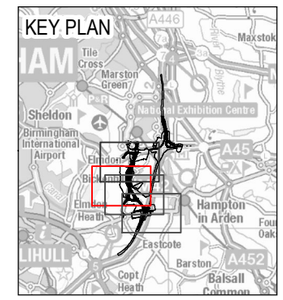
BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP

NOCTULE NOC

NYCTALUS NY

KEY PLAN



FIRST ISSUE	CAA	MW	14/12/18	P01
Revision Details	By	Check	Date	Suffix

Purpose of Issue: DCO SUBMISSION

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

highways england

Development Consent Order Number: TR010027

Project Title: M42 JUNCTION 6 IMPROVEMENT

Drawing Title: FIGURE 9.5E (5)
BAT SURVEY
TRANSECT 2
DUSK 18/06/18
SHEET 5 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	14/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:3,500	Zone: M42

Drawing Number: Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
Location: M42_SW_ZZ_ZZ | Type | Role | Number: -DR-DC-0144

Rev: P01

Filename: \\Ukds2pfpsw001\UKLDS2PFPSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig5_M42_Bat_Activity_T2_20180618_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0144_V2.mxd

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NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

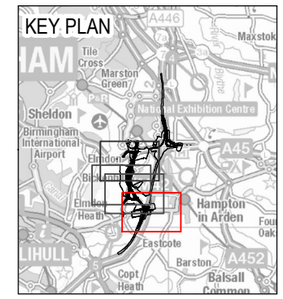
BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- NOCTULE NOC
- *NYCTALUS* NY

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP

Start
End
1
2
3
4
5
6
7
8
9
10
12
21:19 1xSP
21:17 1x SP
21:21 1xCP
21:24 1xSP
21:25 1xSP
21:25 0xCP
21:28 1xCP
21:32 1xSP
21:34 1xSP
21:35 1xCP
21:28 - 21:34 1xCP
21:30 - 21:31 1xCP
21:41 1xCP
21:42 1xCP
21:44 1xCP
21:46 1xCP
21:48 1xCP
21:54 1xCP
22:47 1xCP
22:50 1xCP
22:30 1xCP
22:36 1xNoc
22:27 1xCP
22:25 1xCP
22:23 1xCP
22:20 - 22:21 1xCP
22:17 1xCP
22:14 1xNoc
22:05 1xCP
22:06 1xCP

0 25 50 100 150 200 Metres

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01	
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 9.5E (6) BAT SURVEY TRANSECT 4 DUSK 18/06/18 SHEET 6 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:2,000	Zone: M42

Drawing Number

Highways England Pin	Originator	Volume			Rev
HE551485	-ACM	-EGN-			P01
Location: M42_SW_ZZ_ZZ		-DR-DC-0145	Type	Role / Number	

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N

22:39 - 22:42 1xCP

22:35 - 22:36 2xCP

22:27 2xSP

22:24 - 22:33 4xCP

22:25 1xMY

22:18 - 22:20 1xNoc

22:57 - 23:04 1xCP

23:05 - 23:06 2xCP

23:08 - 23:11 1xCP

23:11 1xSP

23:12 - 23:14 2xCP

23:15 1xCP

21:58 1xNoc

21:50 1xNoc

End – Start

23:27 1xCP

23:16 - 23:23 1xCP

23:20 1xSP

0 25 50 100 150 200 250 Metres

NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

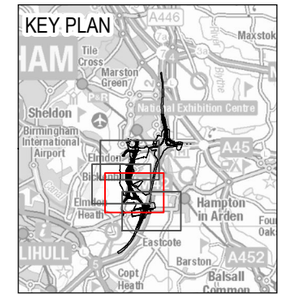
LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- NOCTULE NOC

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- NOCTULE NOC
- *MYOTIS* MY

KEY PLAN



FIRST ISSUE	CAA / MW	14/12/18	P01
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 9.5E (7)
BAT SURVEY
TRANSECT 5
DUSK18/06/18
SHEET 7 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	14/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:3,000	Zone: M42

Drawing Number
Highways England Pin | Originator | Volume
HE551485 -ACM -EGN-
Location | Type | Role | Number
M42_SW_ZZ_ZZ -DR-DC-0146
Rev: P01

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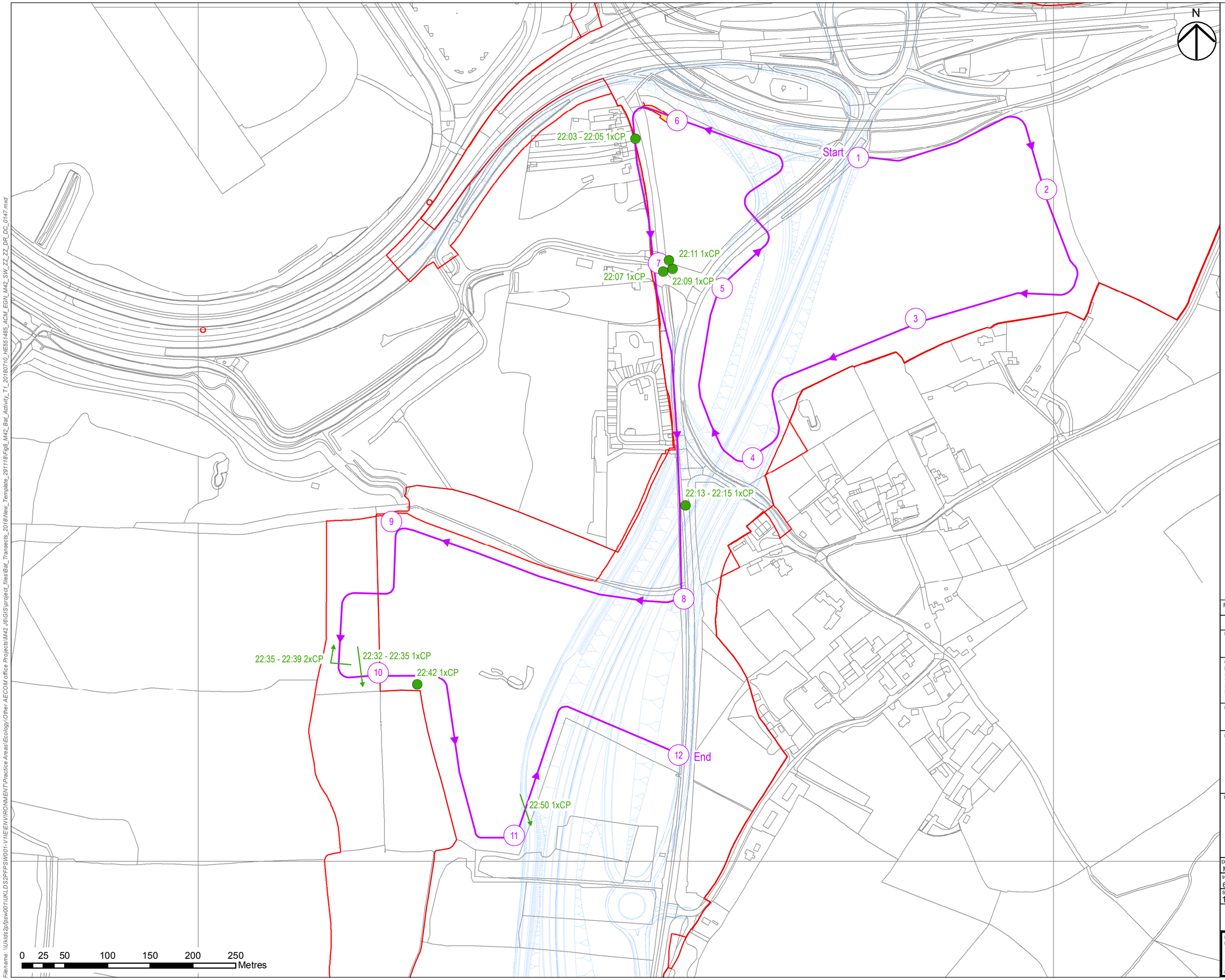


NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

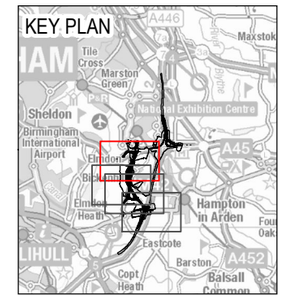
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	14/12/18	P01
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 9.5E (8)
BAT SURVEY
TRANSECT 1
DUSK 10/07/2018
SHEET 8 OF 15

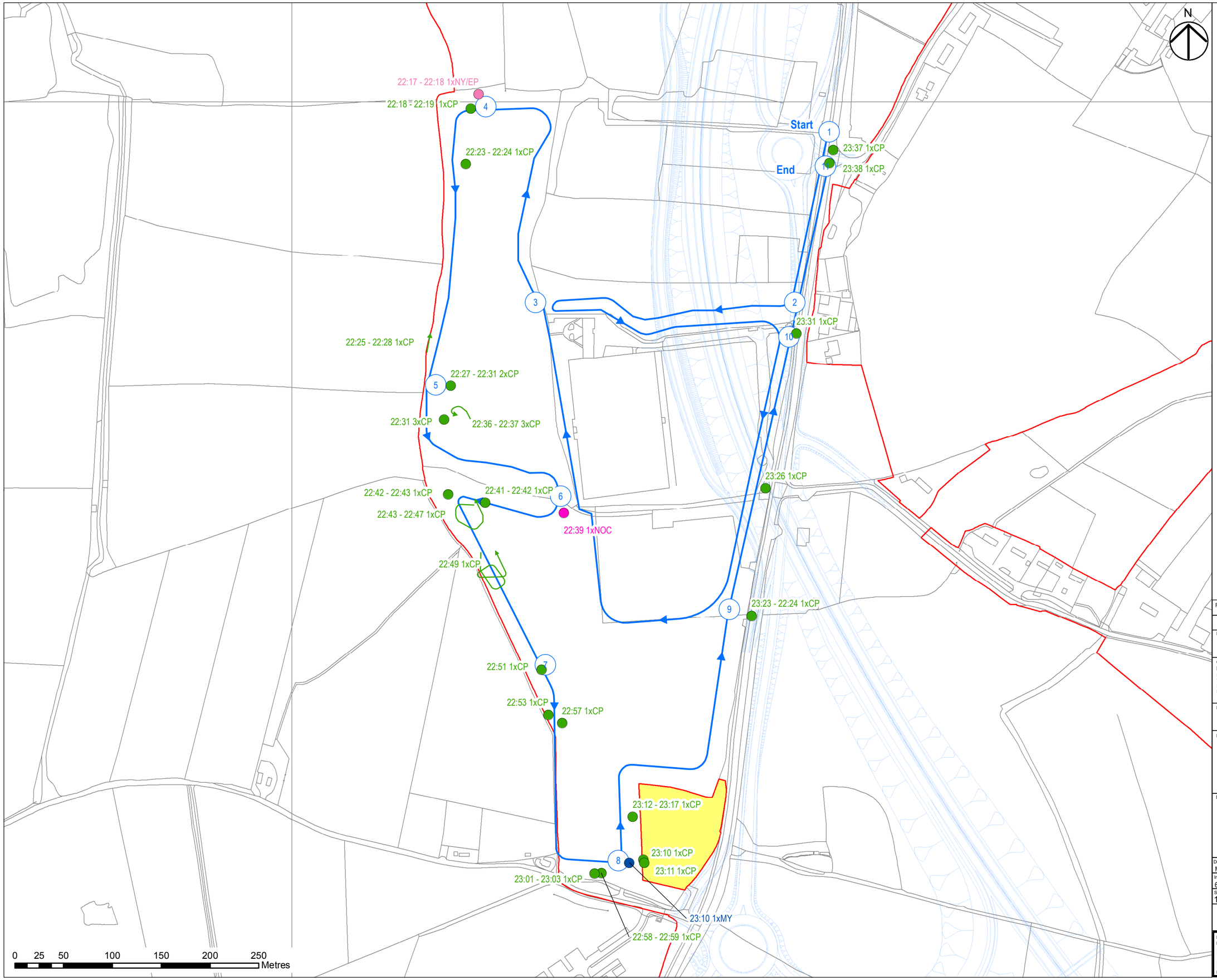
Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	14/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:4,000	M42

Drawing Number

Highways England Pin	Originator	Volume	Rev
HE551485	-ACM	-EGN-	P01
Location		Type | Role | Number	
M42_SW_ZZ_ZZ		-DR-DC-0147	

Filename: \\Wlds2ppsw001\UKLDS2PPSW001-V1\IEENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\projed_files\Bat_Transects_2018\New_Template_291118\Fig8_M42_Bat_Activity_T1_20180710_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0147.mxd



NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

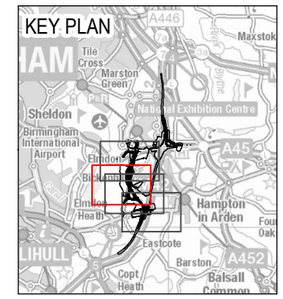
LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP
- NOCTULE NOC
- NYCTALUS/EPTESICUS SP. NY/EP
- *MYOTIS* MY

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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

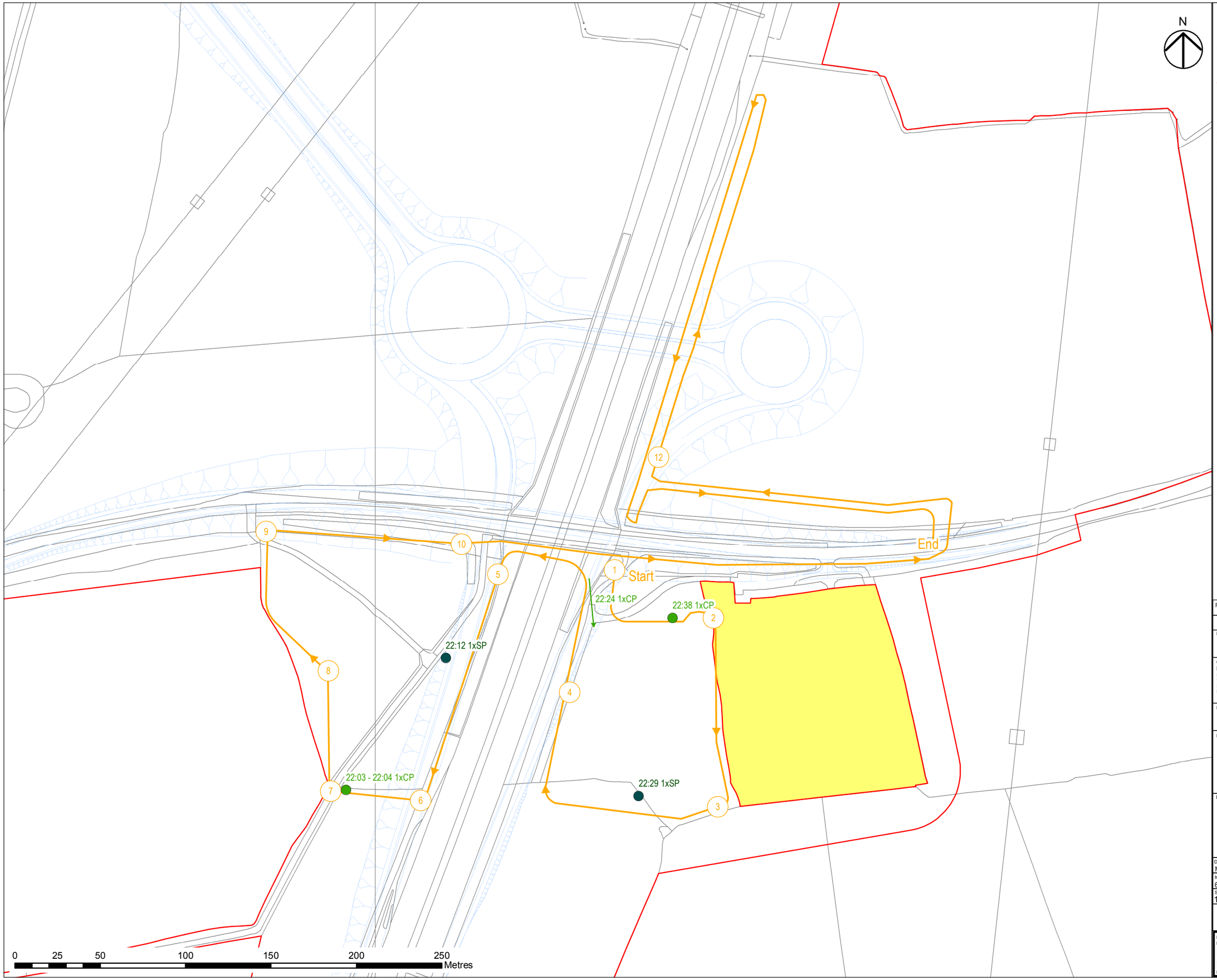
Drawing Title
FIGURE 9.5E (9)
BAT SURVEY
TRANSECT 2
DUSK 10/07/2018
SHEET 9 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:3,500	Zone: M42

Drawing Number
Highways England Pin: HE551485 | Originator: -ACM | Volume: -EGN- | Location: M42_SW_ZZ_ZZ | Type | Role | Number: -DR-DC-0148
Rev: P01

Filename: \\Ukds2pfpsw001\UKLDS2PFFSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig9_M42_Bat_Activity_T2_20180710_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0148.mxd



NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

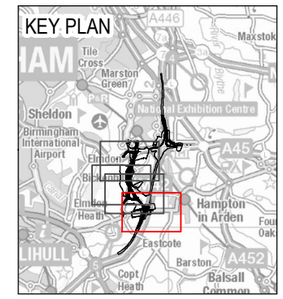
SOPRANO PIPISTRELLE SP

COMMON PIPISTRELLE CP

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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 9.5E (10) BAT SURVEY TRANSECT 4 DUSK 10/07/18 SHEET 10 OF 15

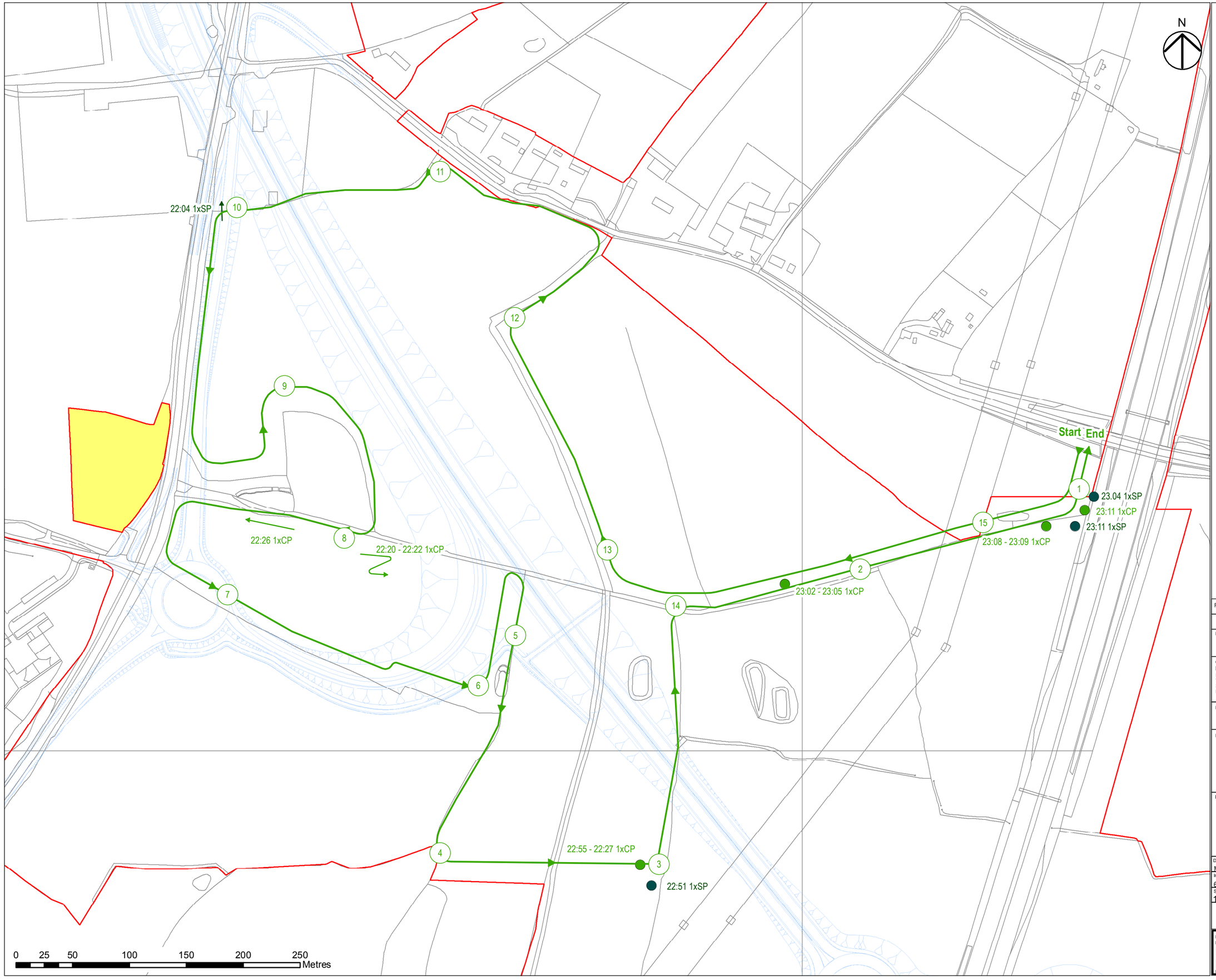
Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:2,000	Zone: M42

Drawing Number: Highways England Pin HE551485 | Originator -ACM | Volume -EGN- | Location M42_SW_ZZ_ZZ | Type -DR- | Role -DC- | Number -0149

Rev: P01

Filename: \\Uk\ds2pfpsw001\UKLDS2PFPSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig10_M42_Bat_Activity_T4_20180710_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0149.mxd



NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

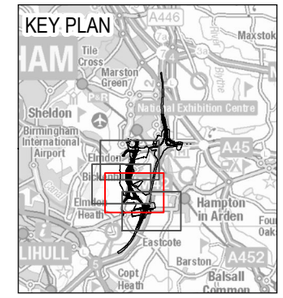
LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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 9.5E (11)
BAT SURVEY
TRANSECT 5
DUSK10/07/18
SHEET 11 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:3,000	M42

Drawing Number				Rev
Highways England Pin	Originator	Volume		
HE551485	-ACM	-EGN-		P01
Location	Type	Role	Number	
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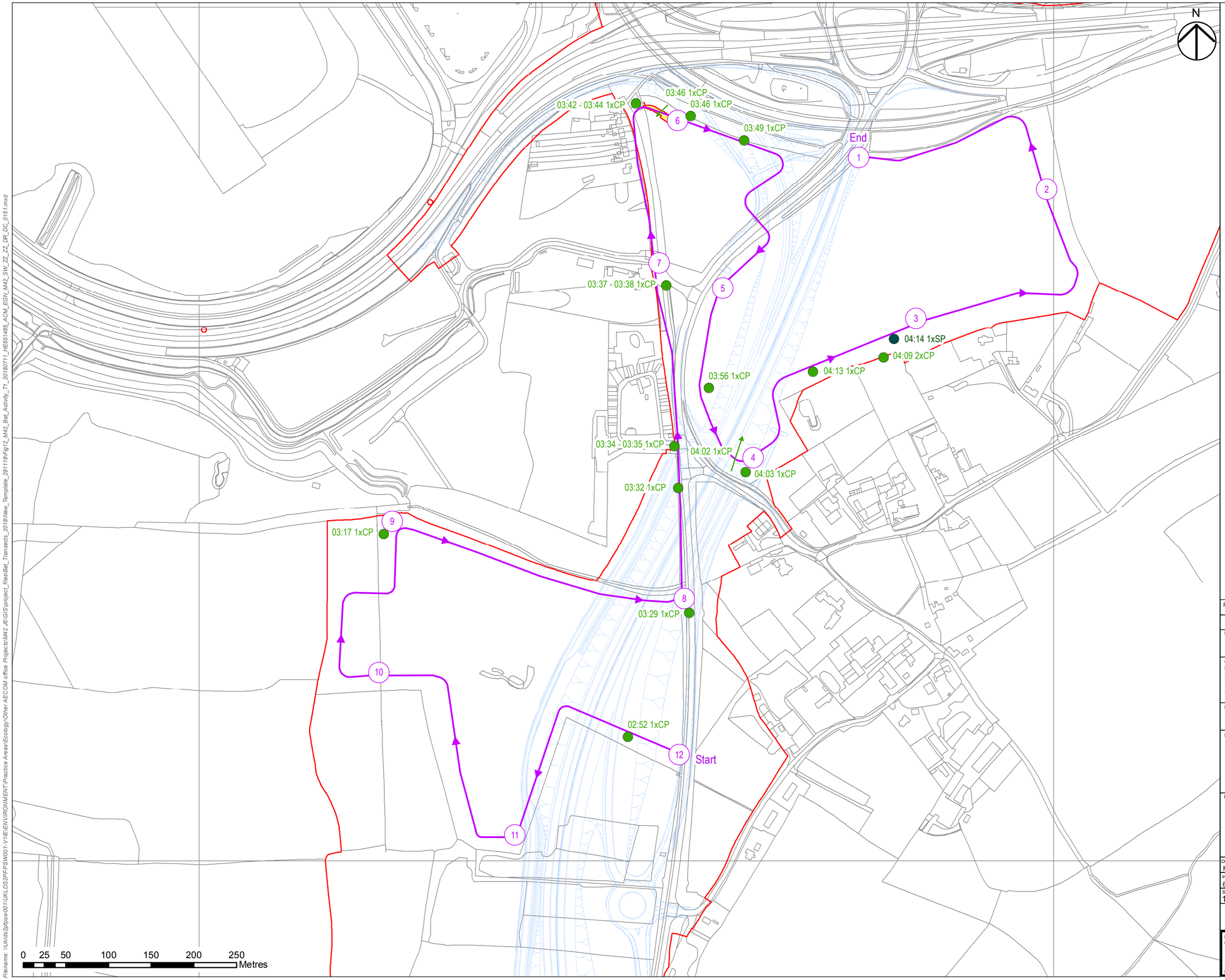


NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

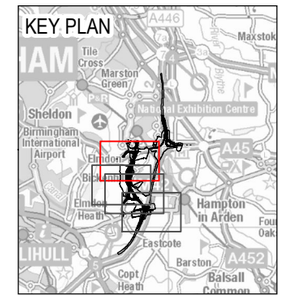
LEGEND
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE
- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)
- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)
- COMMON PIPISTRELLE CP

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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 9.5E (12)
BAT SURVEY
TRANSECT 1
DAWN 11/07/2018
SHEET 12 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:4,000	M42

Drawing Number

Highways England Pin	Originator	Volume	Rev
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Location		Type / Role / Number	
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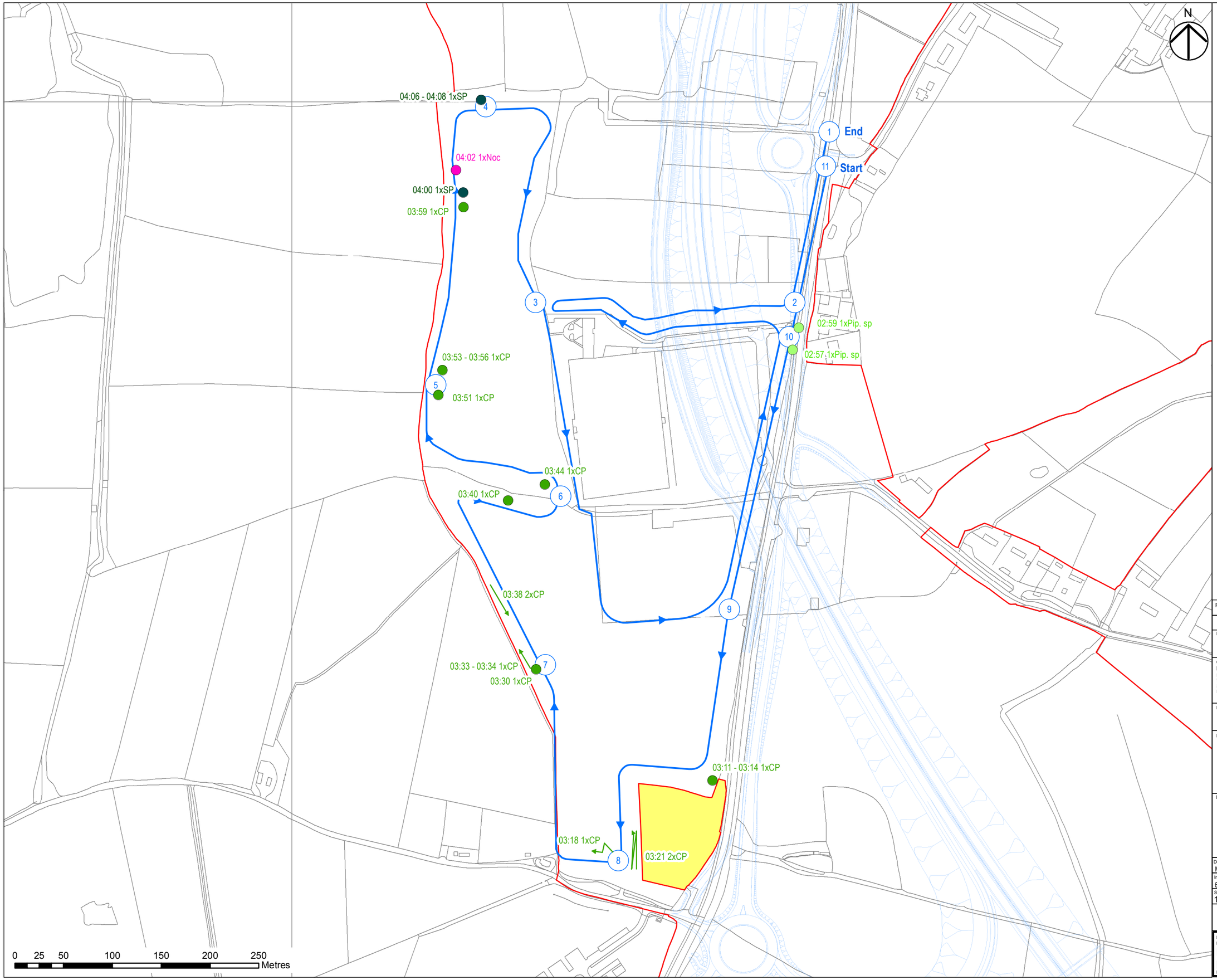


NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

SOPRANO PIPISTRELLE SP

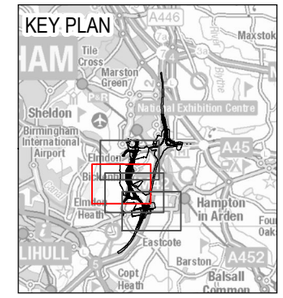
COMMON PIPISTRELLE CP

PIPISTRELLE SPECIES PIP. SP

NOCTULE NOC

BAT FLIGHT (WITH SPECIES, RECORD TIME AND NUMBER OF BATS)

COMMON PIPISTRELLE CP



FIRST ISSUE	CAA / MW	17/12/18	P01
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

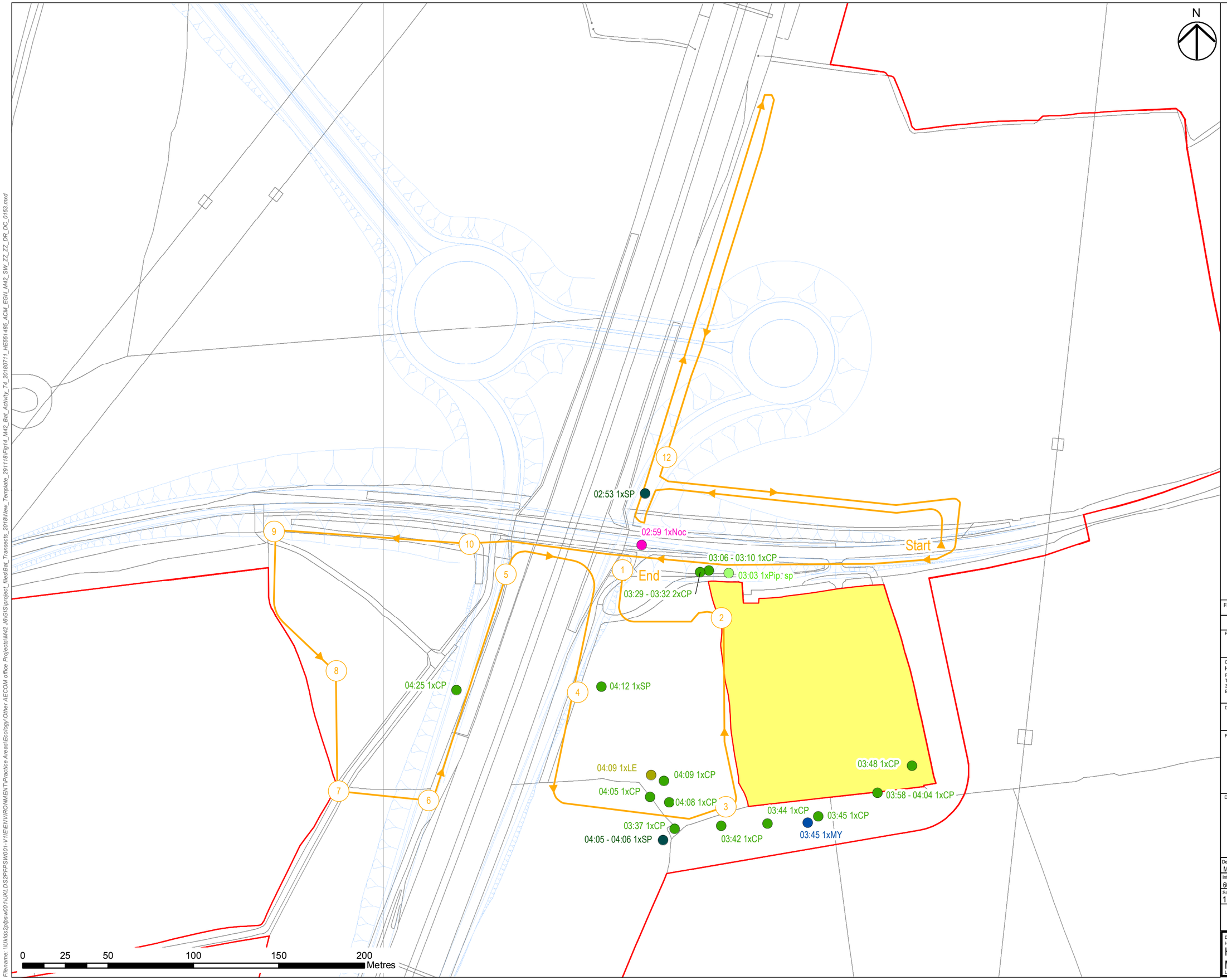
Drawing Title
FIGURE 9.5E (13)
BAT SURVEY
TRANSECT 2
DAWN 11/07/18
SHEET 13 OF 25

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:3,500	M42

Drawing Number				Rev
Highways England Pin	Originator	Volume		
HE551485	-ACM	-EGN-		P01
Location	Type	Role	Number	
M42_SW_ZZ_ZZ		-DR-DC-	0152	

Filename: \\UKIds2pfpsw001\UKLDS2PFPSW001-V1\IE\ENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig13_M42_Bat_ActivIty_T2_20180711_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0152.mxd



NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

THE SCHEME

LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)

AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

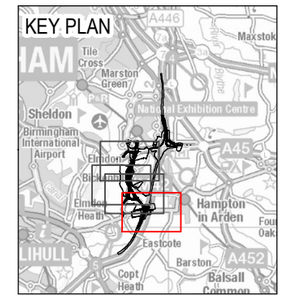
TRANSECT

STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- PIPISTRELLE SPECIES PIP. SP
- NOCTULE NOC
- *MYOTIS* MY
- LONG-EARED LE

KEY PLAN



FIRST ISSUE	CAA / MW	17/12/18	P01
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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 9.5E (14)
BAT SURVEY
TRANSECT 4
DAWN 11/07/18
SHEET 14 OF 15

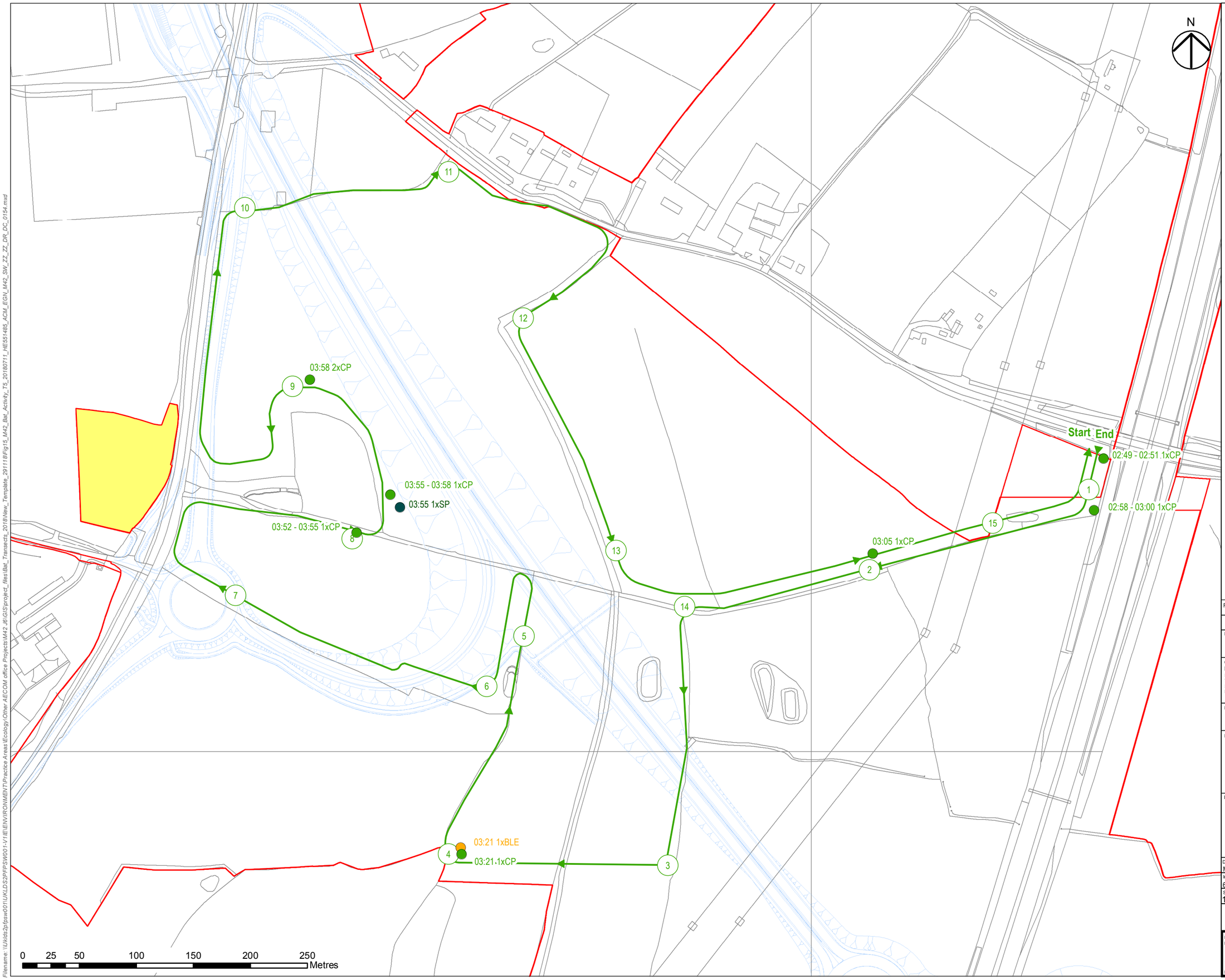
Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No	Suitability
60543032	D7
Scale @ A3	Zone
1:2,000	M42

Drawing Number
Highways England Pin | Originator | Volume | Location | Type | Role | Number
HE551485 -ACM -EGN- M42_SW_ZZ_ZZ -DR-DC-0153

Rev P01

Filename: \\UKbds2pfpsw001\UKLDS2PFPSW001-V1\EENVIRONMENT\Practice Areas\Ecology\Other AECOM office Projects\M42 J6\GIS\project_files\Bat_Transects_2018\New_Template_291118\Fig14_M42_Bat_Activity_T4_20180711_HE551485_ACM_EGN_M42_SW_ZZ_ZZ_DR_DC_0153.mxd



NOTES
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

LEGEND

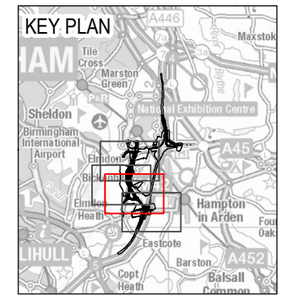
- THE SCHEME
- LIMITS OF LAND TO BE ACQUIRED OR USED PERMANENTLY OR TEMPORARY (THE ORDER LIMITS)
- AREA NOT INCLUDED WITHIN THE ORDER LIMITS

BAT TRANSECT ROUTE

- TRANSECT
- STOP POINT

BAT SPECIES (WITH RECORD TIME AND NUMBER OF BATS)

- SOPRANO PIPISTRELLE SP
- COMMON PIPISTRELLE CP
- BROWN LONG-EARED BLE



FIRST ISSUE	CAA / MW	17/12/18	P01
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 9.5E (15)
BAT SURVEY
TRANSECT 5
DUSK11/07/18
SHEET 15 OF 15

Designed	Drawn	Checked	Approved	Date
MWH	CAA	MWH	JG	17/12/18

Internal Project No: 60543032	Suitability: D7
Scale @ A3: 1:3,000	Zone: M42

Drawing Number
Highways England Pin | Originator | Volume | Location | Type | Role | Number
HE551485 -ACM -EGN- M42_SW_ZZ_ZZ -DR-DC-0201

Rev: P01

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