

Land off the A363 White Horse Business Park, Trowbridge - Ecological Impact Assessment

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1.0 Introduction

- 1.1.1 This document has been prepared by Nicholas Pearson Associates (NPA) on behalf of Castlewood Properties Limited who propose to submit a planning application for development of up to 100 dwellings, a care home, public open space and associated works, on land off the A363 White Horse Business Park, Trowbridge (central OS grid reference ST 857557) hereafter referred to as "Site".
- 1.1.2 The site is approximately 8.37 ha comprising 5 fields which are lightly grazed by cattle and bounded by hedgerows, woodland or fencing. The area considered by this assessment includes the land within the red line boundary, as shown in the Extended Phase 1 Habitat Map.
- 1.1.3 An initial desk study and Extended Phase I Habitat survey were undertaken in June 2018. In addition, the following Phase II survey work was subsequently conducted on-site:
- Bat activity (July 2018 – June 2019);
 - Breeding Bird (May – June 2019);
 - Dormice (April – December 2019); and
 - Reptile (September – October 2018).
- 1.1.4 This assessment sets out the results of the surveys undertaken to establish the existing baseline conditions and aims to:
- identify and evaluate important ecological features;
 - determine the potential impacts of the proposed development on important ecological features
 - identify and describe all potentially significant effects associated with the proposed development;
 - set out measures to avoid and mitigate any significant effects to ensure compliance with relevant legislation and planning policy;
 - assess residual impacts and their significance;
 - identify appropriate enhancement measures and delivery of biodiversity net gain;
 - set out requirements for post construction monitoring.
- 1.1.5 The proposals upon which this assessment are made are shown on the following plans; CASR3002 4001 01E Illustrative Layout Sketch Overlay; CASR3002 5000D Land Budget & Access Plan and D-Proposed Access 002 Rev A; and Green Infrastructure Parameters Plan (NPA 11020 301).
- 1.1.6 This assessment has been prepared by an experienced ecologist from NPA who is a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). It has been determined

with due consideration for the best practice guidance as set out in the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment (CIEEM, 2018).

2.0 Legislation and Policy

2.1 Legislation and Best Practice Guidelines

2.1.1 In carrying out this ecological impact assessment relevant legislation, planning policies, development plans, national and local Biodiversity Action Plans (UKBAP and LBAPs respectively) and best practice guidelines were consulted. These included:

- Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way (CROW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006;
- Protection of Badgers Act 1992;
- National Planning Policy Framework (NPPF) 2020;
- BS 42020:2013 Biodiversity: Code of practice for planning and development;
- Trowbridge Bat Mitigation Strategy SPD 2019;
- UK Biodiversity Action Plan;
- Local Biodiversity Action Plan.

2.2 National Planning Policy Framework

2.2.1 National planning policy on biodiversity and conservation is set out in the National Planning Policy Framework (NPPF). This emphasises that the planning system should seek to minimise impacts on biodiversity and provide net gains in biodiversity wherever possible as part of the Government's commitment to halting declines in biodiversity and establishing coherent and resilient ecological networks. Chapter 15: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity.

2.2.2 Relevant policies are set out below:

Paragraph 174: "To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local

partnerships for habitat management, enhancement, restoration or creation; and b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity...”

2.3 Government Circular 06/2005

2.3.1 The Government Circular 06/2005, which is referred to by the NPPF, provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

2.4 BS 42020 - Biodiversity. Code of Practice for Planning and Development

2.4.1 BS 42020 aims to promote, clarify and provide consistency in the quality and appropriateness of ecological information submitted with planning applications. The standard provides:

- Guidance on how to produce clear and concise ecological information to accompany planning applications;
- Recommendations on professional ethics, conduct, competence and judgement to give confidence that proposals for biodiversity conservation, and consequent decisions/actions taken, are sound and appropriate;
- Direction on effective decision-making in biodiversity management;
- A framework to demonstrate how biodiversity has been managed during the development process to minimize impact.

2.5 UK Biodiversity Action Plan - UK Post-2010 Biodiversity Framework

2.5.1 In July 2012, the UK government responded to a change in strategic thinking, following the United Nations 2010 Convention on Biological Diversity (CBD), by the development of the 'UK Post-2010 Biodiversity Framework' and the instigation of the EU Biodiversity Strategy. The Framework supersedes the UK BAP. The Framework includes five internationally agreed strategic goals and 20 new global 'Aichi' targets to be achieved by 2020.

2.5.2 It set a broad enabling programme that includes a 'shared vision' and priorities for UK scale activities, to involve all four UK countries, to help deliver the Aichi targets and the EU Biodiversity Strategy. Although the UK BAP partnership no longer operates following the publication of the Framework, the principles of the UK BAP still remain of use, for example the background information on UK BAP priority

habitats and species which still form the basis of much biodiversity work at country level. The habitats and species listed as having principle importance within the NERC Act 2006 continue to be regarded as conservation priorities in the new Framework and these are the species and habitats requiring action under the UK BAP. As such, the species list on the UK BAP and LBAP list will still be taken into consideration.

2.6 Local Planning Policy

- 2.6.1 Within Wiltshire, local plans were produced by the former district councils and are still in use as the primary basis for deciding planning applications. These documents set out policies which guide how and where development should take place and adapt to changing local priorities. The Wiltshire Core Strategy was adopted in January 2015 and replaces the South Wiltshire Core policy.
- 2.6.2 Core Strategy policy 50, within the Wiltshire Core Strategy, headed Biodiversity and Geodiversity, states that *"Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term"* and that *"All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development"*
- 2.6.3 The Trowbridge Bat Mitigation Strategy (TBMS) SPD (Feb 2020) sets out the approach to establishing mitigation measures in the Trowbridge area to protect the bat species associated with the Bath and Bradford on Avon Bats Special Area of Conservation (SAC) from recreational pressure and/or loss of core habitat. It has been prepared to support the implementation of the Wiltshire Core Strategy (WCS) and the allocations set out in the Wiltshire Housing Site Allocations Plan (WHSAP) and thereby helps support the planned delivery of housing established in Core Policy 29 of the WCS.

2.7 Local Biodiversity Action Plan

- 2.7.1 The Wiltshire Biodiversity Action Plan (BAP) contains action plans for Woodland; Wood-pasture, Parkland and Ancient Trees; Ancient and Species Rich Hedgerows; Rivers, Streams and Associated Habitats; Standing open water; Farmland Habitats; calcareous Grassland; Unimproved Neutral Grassland; Built Environment; Bats; and Traditional orchards.

2.8 Species Protection

2.8.1 In addition to more general protection afforded through UK legislation, further protection is provided to a small group of species, commonly referred to as 'European Protected Species' under the Conservation of Habitats and Species 2017, as amended (also known as the Habitats Regulations). With regards to European Protected Species listed under Schedule 2 of the Act, it is an offence to:

- Intentionally or deliberately capture or kill, or intentionally injure the animal;
- Deliberately disturb the animal or intentionally or recklessly disturb them in a place used for shelter or protection;
- Damage or destroy a breeding site or resting place;
- Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection.

3.0 Methods

3.1 Impact Assessment

3.1.1 This assessment provides an evaluation of the likely effects of the proposed development (including during construction and operation) on the ecological features. It is based on a combination of desk-based consultation, ecological habitat surveys and species-specific surveys as outlined in Sections 3.4-3.9.

3.1.2 Assessment of the potential ecological impacts is based on estimates of the likely magnitude of impacts and the value of the ecological receptors identified within and in the vicinity of the Development.

Zone of Influence

3.1.3 The Zone of Influence (ZoI) is an area over which ecological features may be subject to significant effects as a result of the Development and associated activities. The ZoI can differ depending on the sensitivity of the ecological feature. The effects can be those which may occur as a result of habitat loss and those which may occur through disturbance such as an increase in recreational pressure and/or lighting.

3.1.4 The ZoI was determined through:

- A review of existing baseline conditions in comparison with that proposed by the development;
- Consideration of the proposed activities (during all phases);

- Desk study information;
- Planning policies and consultation responses;
- Findings of the survey work; and
- Through liaison with other specialists involved in assessing the effects in other interrelated disciplines.

Temporal Scope

- 3.1.5 Potential impacts on ecological features have been assessed in the context of how the predicted baseline conditions within the ZoI might change between the surveys and the start of construction.

3.2 Desk Study

- 3.2.1 Records of protected species and nature conservation designations within 2km of the Site were retrieved from Wiltshire & Swindon Biological Records Centre (WSBRC).
- 3.2.2 Records of biological Sites of Special Scientific Interest (SSSI), National Nature Reserves (i.e. sites of national importance) within 5km, and records of Special Areas of Conservation (SAC) and Special Protection Areas (SPA) and Ramsar Sites (i.e. sites of international importance) within a 10km buffer of the Site were retrieved from Natural England's Nature on the Map website¹.
- 3.2.3 Additional contextual information was gained by searching OS mapping and aerial photography. This included a search for ponds which could support Great Crested Newts *Triturus cristatus* within 250m of the Site.
- 3.2.4 The information to support nearby applications was also used to help place the Site in an ecological context.

3.3 Extended Phase 1 Habitat Survey

- 3.3.1 The Site was surveyed by an experienced ecologist on the 28 June 2018. Habitats and obvious features within the Site were mapped following the Joint Nature Conservation Committee's Phase I Habitat Survey Method (JNCC, 2010). The scope of the Phase I Habitat Survey was further extended to assess the likely presence of protected or priority species in accordance with the methodology provided by the Institute of Environmental Assessment (IEA, 1995). This involved a search for evidence of Badgers and an assessment of the potential of the trees to support roosting bats.

¹ <http://www.natureonthemap.naturalengland.org.uk/> [Last accessed 17th February 2020]

3.3.2 The Extended Phase I Habitat Survey identified the need for Phase II species specific surveys including:

- Bats
- Breeding birds
- Dormice
- Great crested newt eDNA;
- Reptiles

3.3.3 The survey methodology for each species is provided in the following sections.

3.4 Badgers

3.4.1 During the Extended Phase 1 Habitat Survey a thorough search for evidence of Badgers on/adjacent to the Site was carried out. Signs of Badgers typically include the following:

- Badger setts;
- Evidence of feeding
- Dung pits/latrines; (snuffle marks and feeding scrapes);
- Pathways through vegetation; • Snagged hairs under fence lines.

3.4.2 Where possible, setts were classified as either main, annexe, subsidiary or outlier based on their size, activity level and connections between them.

3.5 Bats

Preliminary Assessment of Habitat Suitability and Potential Roosting Features

3.5.1 During the Extended Phase 1 Habitat Survey an assessment from the ground was made of the potential for trees to support roosting bats. The Site was also assessed for its overall suitability for foraging and commuting bats, in line with best practice guidelines (Collins, 2016) and the Trowbridge Bat Mitigation Strategy (TBMS).

Activity Surveys

3.5.2 A series of activity surveys for bats were conducted to assess the use of the Site by bats. The surveys consisted of manual activity surveys and deployment of automated bat detectors over a series of nights.

3.5.3 All activity surveys were undertaken in accordance with best practice guidelines and the TBMS, in suitable weather conditions (no or little rain, no strong wind above Beaufort 4, and moderate temperature, typically not below 10°C). During manual surveys temperature (°C), cloud cover (%), wind (Beaufort) and intensity of any rain were recorded at hourly intervals. Whilst the automated detectors

recorded temperature, additional weather information was taken from a weather station² based in Bowerhill, approximately 8km north east: of the Site.

Manual Activity Surveys

- 3.5.4 The habitat was assessed of being of high quality for bats, given the woodland edge and hedgerow connectivity. Therefore, two transect surveys were undertaken every month, in line with best practice guidance at the time (Collins 2016).
- 3.5.5 The Site was split into two transects which were walked by experienced ecologists. Transect surveys were undertaken on 14 occasions (surveys commenced in July to Oct 2018 and April to June 2019). This include a dusk followed by pre-dawn transect in August (*i.e.* counted as one survey). Survey details are provided in Table 3.1.
- 3.5.6 Each transect had a number of point counts distributed along the route, both on hedgerows and within the centre of the fields. Each point count lasted for 5 minutes. The bat survey plan map illustrates the transect routes and the approximate locations of the point counts. The most south westerly field of the Site had to be omitted from the transect surveys as a bull began to be kept within this field from July.
- 3.5.7 Transect surveys commenced at least 15 minutes prior to sunset and continued for up to three hours thereafter. An additional dawn survey was undertaken in August, immediately following one of the dusk transects. This survey commenced 3 hours prior to dawn and continued until sunrise. Surveyors were equipped with full spectrum detectors. The bat species, direction of travel and behaviour were noted by surveyors where possible.
- 3.5.8 Sound recordings of the bats' echolocation was then analysed using bat sound analysis software (Bat Sound). As the calls of *Myotis* bat species are very similar, with most of the variation between their calls attributable to the habitat in which they occur (Russ, 1999), the *Myotis* recordings have not been attributed to a particular species.

² <https://www.metoffice.gov.uk/observations/details/20200218s4jnt611fce6ipwayyb96spyge>

Table 3.1: Bat Survey Weather Data

Date	Sunset/sunrise Start/ finish	Weather conditions
19/07/2018	21:15 21:00/ 00:10	Start/finish temp: 18.8/ 17.4°C Beaufort: 0 Rain: 0 Cloud cover: 10-80%
31/07/2018	20:58 20:43/ 23:48	Start/finish temp: 16.2/ 14.0°C Beaufort: 0-1 Rain: 0 Cloud cover: 10-80%
13/08/2018	20:35 20:20/ 23:25	Start/finish temp: 19.0/ 15.3°C Beaufort: 0-2 Rain: 0 Cloud cover: 0-25%
30/08/2018	20:00 19:45/ 22:52	Start/finish temp: 14.8/ 9.2°C Beaufort: 0-1 Rain: 0 Cloud cover: 30-60%
31/08/2018	06:19 03:19/ 06:20	Start/finish temp: 8.4/ 7.0°C Beaufort: 0 Rain: 0 Cloud cover: 10-40%
12/09/2018	19:31 19:16/ 22:18	Start/finish temp: 15.8/ 9.1°C Beaufort: 0 Rain: 0 Cloud cover: 0%
26/09/2018	18:59 18:44/ 21:54	Start/finish temp: 17.3/ 12.1°C Beaufort: 0 Rain: 0 Cloud cover: 0%
09/10/2018	18:30 18:15/ 21:20	Start/finish temp: 16.6/ 10.5°C Beaufort: 0 Rain: 0 Cloud cover: 0%
23/10/2018	17:46 18:01/ 20:50	Start/finish temp: 13.8/ 12.5°C Beaufort: 0-1

Date	Sunset/sunrise Start/ finish	Weather conditions
		Rain: 0 Cloud cover: 60-80%
11/04/2019	19:58 19:43/21:22	Start/finish temp: 11.9/ 4.7°C Beaufort: 0-1 Rain: 0 Cloud cover: 0-5%
24/04/2019	20:19 20:04/23:07	Start/finish temp: 12.8/ 9.8°C Beaufort: 0-1 Rain: intermittent light rain in first hour, then dry. Cloud cover: 40-100%
09/05/2019	20:51 20:36/23:36	Start/finish temp: 16.1/ 10.2°C Beaufort: 0-1 Rain: 0 Cloud cover: 0-15%
28/05/2019	21:11 20:56/23:56	Start/finish temp: 14.8/ 10.5°C Beaufort: 0-1 Rain: 0 Cloud cover: 0-40%
19/06/2019	21:28 21:28/23:45	Start/finish temp: 14/ 12°C Beaufort: 0-1 Rain: 0 Cloud cover: 0-40%
26/06/2019	21:29 21:20/23:45	Start/finish temp: 18/ 13°C Beaufort: 1-3 Rain: 0 Cloud cover: 100%

Automated Activity Surveys

- 3.5.9 Six static detectors (AnaBat Express) were deployed at hedgerows and along the woodland edge (see Bat Survey Plan map for locations). They were deployed for at least a working week in each month (April to October inclusive – split between 2018 & 2019) when the weather was forecast to be suitable, with the aim of recording a total of at least 50 nights worth of data at each location. The detectors were programmed to come on at least 15 minutes before sunset and turn off no earlier than 15 minutes after sunrise.

3.5.10 Recorded echolocation calls were run through filters for both horseshoe bat species within AnaLookW to identify likely horseshoe bat calls (see Table 3.2 below for filter parameters). These were then analysed manually to verify if they were attributable to either Lesser *Rhinolophus hipposideros* or Greater *Rhinolophus ferrumequinum* Horseshoe bats.

Table 3.2: Horseshoe Filter Parameters

	Greater Horseshoe Bat	Lesser Horseshoe Bat
Characteristic Frequency (KHz)	75-90	95-120
Call Duration (ms)	0.2-100	0.2-100
Smoothness	100	100
Body Over (microseconds)	1000	1000

3.5.11 Identification of other bat species was gained through use of the automated species identification feature within Kaleidoscope 5.1.9.g. Based on a review of historic data collected on other projects using AnaBat Expresses, the automated species identification works well for certain species (*e.g.* Pipistrelles) but is less accurate for others (*e.g.* identification to a particular *Myotis* species). As such the following protocols were followed.

- *Myotis* or Long-eared bats were not attributed to species;
- the larger bat species Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri* and Serotine *Eptesicus serotinus* (NLS) were grouped together;
- Files labelled as Barbastelle *Barbastella barbastellus* were manually analysed;
- Files labelled as *Myotis* were manually analysed;
- Files labelled as No ID (*i.e.* what Kaleidoscope thinks is a bat, but is unsure of what species) were manually analysed; and,
- Files labelled as Noise (*i.e.* what Kaleidoscope thinks is not a bat) but that passed a scan for bat calls within AnaLookW, based on the two filter parameters shown in table 3.3 below, were manually analysed.

Table 3.3: Higher and Lower Frequency Filter Parameters

	HF20	LF (Fc Max 35)
Characteristic Frequency (KHz)	29-150	16-35
Call Duration (ms)	1-100	3-70
Smoothness	20	20
Body Over (microseconds)	1000	1000

3.6 Birds

- 3.6.1 The breeding bird surveys (BBS) were completed during the bird breeding season in 2019 using survey methods based on the Common Bird Census (CBC) devised by the British Trust for Ornithology (BTO). This technique records the species, their breeding status and estimates the number of individual territories of the birds within the Site or survey area.
- 3.6.2 The locations of birds which were seen or heard (song and calls) during the survey and their breeding signs were recorded. The method comprised four surveys at the Site during the breeding season May to June between the hours of 05:30 and 09:00 when the birds are most active and one evening visit to survey for any crepuscular or nocturnal species.
- 3.6.3 A predetermined transect was taken following a pre-survey Site investigation, to maximize the opportunity of all habitat types present within the route incorporating or passing within 50m of each habitat type. The transect was walked at a slow and constant pace with frequent stops to determine evidence of breeding.
- 3.6.4 Visits were undertaken on 16 May, 30 May, 20 June (evening) and 27 June, with timings and weather conditions shown in Table 3.4 below, with locations and activity shown in the breeding bird survey maps (Visits 1-4).

Table 3.4: Breeding Bird Survey Timings and Weather Conditions

Date	Start Time	End Time	Start Temp [C]	Start Cloud Cover	Start Wind [mph]	End Temp [C]	End Cloud Cover	End Wind [mph]
16/5/19	05:45	08:30	4	0	Still	11	1/8	E 10
30/5/19	05:35	08:35	12	3/8	SW 5	15	4/8	SW 10
20/6/19	19:30	22:20	14	6/8	SW 10	12	1/8	SW 7
27/6/19	05:35	07:55	12	8/8	NE 16	14	4/8	NE 16

3.7 Dormouse

- 3.7.1 Presence/absence surveys for Dormouse *Muscardinus avellanarius* were carried out in accordance with best practice guidelines by deploying 40 nest tubes within the hedgerows and woodland-edge on/adjacent to Site. The Tubes were deployed in April 2019 and collected back in in December 2019. Tubes were checked at least every other month for evidence of Dormouse use (*e.g.* Dormice themselves, nests).

3.8 Great Crested Newts

- 3.8.1 Whilst there are no ponds on Site, access was requested to survey off-site ponds within 250m of Site, to determine their suitability to support Great Crested Newts (GCN). Where access allowed, ponds were subject to an environmental DNA (eDNA) survey. This involved taking a water sample in accordance with the methods given Appendix 5 of DEFRA research project WC1067 (DEFRA 2014) and sending it for laboratory analysis to determine the presence/absence of GCN.

3.9 Reptiles

- 3.9.1 Reptile surveys were undertaken in September and October 2018. This involved the deployment of artificial refuges which reptiles use for shelter and basking. 0.5m x 0.5m squares of roofing felt were placed around the Site in suitable reptile habitat adjacent to hedgerows and woodland edge.
- 3.9.2 A total of 60 refugia were deployed in late August to allow them to "bed-in" and create favourable conditions underneath. Refugia were then checked on seven subsequent visits, with dates, timings and weather conditions shown below in Table 3.5.

Table 3.5: Reptile Survey Timings and Weather Conditions

Date		11/09	14/09	21/09	24/09	28/09	01/10	05/10
Time		08:30	10:00	10:00	10:50	11:30	10:00	10:00
Temperature (°C)		17	14	9-13	12-13	12	12	15
Weather Conditions	Rain	Dry	Dry	Dry	Dry	Drizzle beforehand	Dry	Dry
	Wind (Beaufort)	2-3	0-1	2-3	0-1	1-2	0-1	0-1
	Cloud Cover (%)	75	80	30	15	60	20	80

- 3.9.3 The presence of any herpetofauna beneath the refugia was recorded. Where possible, sex and age class were also recorded. The Froglife survey guidelines were then used to categorise the reptile population on Site into a size class.

3.10 Evaluation

- 3.10.1 The evaluation of ecological resources and characterisation of potential effects was undertaken in general accordance with the CIEEM's Guidelines on Ecological Impact Assessment (EcIA). These guidelines have been endorsed by many statutory and non-statutory agencies including Natural

England and the Environment Agency. The guidelines advocate an approach to valuing features that involves professional judgement based on available guidance and information.

3.10.2 The value or potential value of all ecological resources and features identified through the baseline surveys was determined within a defined geographical context. The following frame of reference was used:

- International;
- National;
- Regional;
- County;
- District;
- Local; and
- Site.

Designated Sites

3.10.3 Some sites have already been assigned a level of nature conservation value through designation, and the guidelines recommend that the reasons for this designation need to be considered in the assessment. Such designations include:

- Internationally important sites such as SACs, SPAs and Ramsar sites;
- Nationally important sites such as SSSIs and NNRs; and
- Regional/County important sites.

3.10.4 Where a feature has value at more than one designation level, the assessment will consider the impact of the development in respect of each of the features for each of the designations, to distinguish between them in accordance with the respective legislation and policy.

Habitats

3.10.5 The guidelines recommend that the value of areas of habitat and plant communities should be measured against published selection criteria where available. Habitat types of European (International) conservation importance are listed on Annex 1 of the Habitats Directive. Habitat types that are considered priorities for conservation in England and Wales are listed as habitats of principal importance under sections 41/42 of the NERC Act 2006.

- 3.10.6 Locally important habitats may be listed in local Biodiversity Action Plans. For habitats that do not meet the necessary criteria for designation at a specific level, the guidelines recommend that the ecologist may consider the local context, if appropriate.

Species

- 3.10.7 The guidance deals with species that need to be assessed because they are of biodiversity value, rather than because they are legally protected (although some species may fit in both categories).
- 3.10.8 In assigning value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. The valuation of populations should make use of any relevant published evaluation criteria. Species that are considered priorities for conservation in England and Wales are listed as species of principal importance under sections 41/42 of the NERC Act 2006.
- 3.10.9 Species may be listed on the UK BAP list and/or locally important species may also be listed in local Biodiversity Action Plans.

Assessment of Potential Impacts

- 3.10.10 In accordance with the CIEEM guidelines, the next step is to characterise the likely impacts of predicted biophysical changes on ecological resources as far as possible. This process entails consideration of all impact characteristics such as: impact magnitude, extent, duration, reversibility, timing, frequency, in order to determine which impacts are significant in ecological terms (see below).
- 3.10.11 Impacts during the construction and operation phases of the proposed development were assessed and a distinction made as to whether effects were considered to be short, medium or long-term. Similarly, impacts were also separated into those which were directly or indirectly associated with the Development and whether they were of a temporary or permanent nature. Judgement of the magnitude of each potential impact was based on the best available knowledge of the sensitivity, vulnerability, and recoverability of the habitat, species or assemblage being assessed.
- 3.10.12 Mitigation measures are developed iteratively through the assessment and design process to avoid, reduce or remedy any significant negative impacts, as far as possible, throughout the assessment and project design process. It is sometimes difficult to distinguish between pure mitigation measures, and features of the project that mitigate potential negative effects 'through design', also known as 'inherent mitigation'. In this case, the design has been an ongoing iterative process to avoid and minimise negative effects through early consideration of potential impacts allowing for embedded mitigation,

with protection of boundary features and connectivity through the site illustrated within the Green Infrastructure Parameters Plan.

- 3.10.13 Finally, the CIEEM Guidelines recommend that any residual impacts, whether positive or negative, be reviewed against planning policy to determine the implications for action, the acceptability of the proposals and/or the requirements for additional compensation.

Criteria for Assessment

- 3.10.14 Significant effects encompass impacts on structure and function of defined sites and ecosystems. For the purpose of EcIA, a significant effect is:

"An effect that either supports or undermines biodiversity conservation objectives for Important ecological features or for biodiversity in general."

- 3.10.15 The conservation objectives will vary depending on the ecological features. For example, they may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

- 3.10.16 For habitats, conservation status is:

"Determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area."

- 3.10.17 For species, conservation status is:

"Determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area."

- 3.10.18 In order to assess whether the conservation status of any ecological features is likely to be affected by proposed development, potential impacts on all features are given a value that must be fully characterised as described above. On the basis of all of these factors, available scientific knowledge of the feature, and available information on sensitivities to predicted biophysical changes, a professional judgement can then be made as to whether there would be a potential effect on the conservation status of the feature, in other words, whether the impact would be 'significant' in ecological terms. The 'level of significance' can then be defined by stating the value of resource affected or restored/created through the effect e.g. *'a significant negative impact at the County level.*

3.10.19 In addition to determining the significance of an impact on any ecological features, this Chapter also identifies any legal requirements in relation to wildlife.

Biodiversity Net Gain

3.10.20 In line with local and national planning policy, developments should seek to deliver a net gain in biodiversity. The DEFRA Biodiversity Metric 2.0 provides a way of measuring and accounting for biodiversity losses and gains resulting from development or land management change. This metric was used to calculation a preliminary net gain calculation for the proposed development.

4.0 Results

4.1 Desk Study

Designated Sites (Statutory)

4.1.1 There are four statutory sites within the area of search, details of which are provided in Table 4.1 below.

Table 4.1: Statutory Nature Conservation Designations within Area of Search

Site Name	Reasons for designation	Distance from Site.
Pickett and Clanger Wood SSSI	Pickett and Clanger Wood is a floristically-rich ancient woodland supporting an outstanding range of butterfly species. The site also accommodates a diversity of birds characteristic of ancient woodland in southern and western England.	1.1km south east
Salisbury Plain SAC	Annex I habitats that are a primary reason for selection of this site: Juniperus communis formations on heaths or calcareous grasslands; Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) Annex II species that are a primary reason for selection of this site: Marsh fritillary butterfly <i>Euphydryas</i> (<i>Eurodryas</i> , <i>Hypodryas</i>) <i>aurinia</i>	6km south east
Salisbury Plain SPA	Regularly supporting nationally important populations of two Annex 1 species. It supports 10% of the British breeding population of Stone Curlew <i>Burhinus oedipnemus</i> and 1% of Britain's wintering Hen Harrier <i>Circus cyaneus</i> . Other Annex 1 species which occur in small numbers include Merlin <i>Falco columbarius</i> and Short-eared Owl <i>Asio flammeus</i> which winter on the site, and Montagu's Harrier <i>Circus pygargus</i> which has attempted to breed on at least one occasion. Supporting nationally important breeding populations of two regularly occurring migratory species. Approximately 20% of the British population of Quail <i>Coturnix coturnix</i> and 1% of the British population of Hobby <i>Falco Subbuteo</i> breed.	6km south east
Bath and Bradford-on-Avon Bats SAC	Annex II species that are a primary reason for selection of this site: Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	8km north west to the nearest component

Site Name	Reasons for designation	Distance from Site.
	Bechstein's bat <i>Myotis bechsteinii</i> Annex II species present as a qualifying feature, but not a primary reason for site selection: Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	(Winsley Mines SSSI)

4.1.2 Whilst the nearest component of the Bath and Bradford-on-Avon Bat SAC is 8km north, the woodlands to the east and south east of Trowbridge are known to support a large and internationally significant breeding meta-population of Bechstein's Bat, including significant maternity colonies in Biss Wood (1.6km east of Site), Green Lane Wood (2.5km east of Site) and the woods extending to Picket and Clanger Woods (1.1km east of Site).

4.1.3 The meta-population of Bechstein's bats has been shown to be functionally linked to the Bath and Bradford-on-Avon SAC. The landscape surrounding Trowbridge is also known to be important for Greater Horseshoe Bats and Lesser Horseshoe Bats, with roosts of conservation significance recorded in the area. It is highly likely that bat populations associated with local roosts are also associated with the Bath and Bradford on Avon Bat SAC.

4.1.4 Wiltshire Council has prepared the Trowbridge Bat Mitigation Strategy (TBMS) SPD which sets out measures to mitigate the effects on the local bat population from the expected level of housing growth in the Trowbridge area (including that allocated within the Wiltshire Housing Site Allocation Plan). The TBMS has been integral in developing the proposals, with a coherent network of bat habitat linked to the wider green infrastructure network, a wide swathe of core bat habitat and substantial buffers to development and proposed lighting being integrated as fundamental components of the design.

Designated Sites (Non-statutory)

4.1.5 There are six non-statutory sites within 2km, details of which are provided in Table 4.2 below. All are designated as Local Wildlife Sites (LWS) with Biss Wood also being a Wiltshire Wildlife Trust Reserve.

Table 4.2: Non-statutory Nature Conservation Designations within 2km

Site Name	Reasons for designation	Distance from Site.
ST85.008 Biss Wood LWS and Wiltshire Wildlife Trust Reserve	A small ancient semi-natural broadleaved woodland site on flat clay land, managed for conservation, mainly by coppicing.	1.6km east

Site Name	Reasons for designation	Distance from Site.
ST85.031 Biss Meadows Country Park LWS	An area of species-rich fen, grassland and scrub on the floodplain of the River Biss within the suburbs of Trowbridge.	1.5km north east
ST85.009 Woodside Wood LWS	An ancient semi-natural Oak woodland with Oak standards and coppiced stools over Hazel and Bluebells, situated on the sides of a shallow valley with a stream.	1.4km east
ST85.010 Flowers Wood LWS	A small semi-natural wood of coppiced Oak, Hawthorn and Hazel, merging with adjacent gardens.	1.1km east
ST85.011 Kettle Lane Wood LWS	A small woodland of coppiced Oak and Ash with an old, possibly Iron Age, bank and ditch and an old winterbourne bed crossing the wood.	1.5km east
ST85.020 Round Wood, Heywood	Ancient semi-natural broadleaved woodland on flat clay land. Most of the site is a Woodland Trust reserve, with a small area in the south used by a neighbouring equestrian centre.	1.5km south east

Protected and notable species

4.1.6 Records of legally protected or otherwise notable species of flora and fauna within 2km of the Application Site were provided by WSBRC. A summary of the most significant results are given in Table 4.3 below.

Table 4.3: Protected and notable species records returned within 2km of the Site

Species group	Species	Record summary
Amphibians	Great crested newt	47 records were returned for the presence of great crested newts. Most notably, a number of these records correspond to the ponds scattered through the White Horse Business Park on the wider site allocation's north east boundary.
Reptiles	Slow worm <i>Anguis fragilis</i>	36 records were returned for the presence of slow worms. One record corresponds to a garden bordering the south west boundary of the wider site allocation.
	Grass snake <i>Natrix helvetica</i>	An historic (1977) record for two live grass snakes on site was returned alongside 29 other records within the wider 2km radius.
	Adder <i>Vipera berus</i>	Five records were returned for adders within 2km of the site. Two of these were in the last ten years, the others are historic.
	Common Lizard <i>Zootoca vivipara</i>	23 records were returned for the presence of common lizard, the majority of which correspond to either Picket, Clanger or Biss Woods.
Mammals	Badger <i>Meles meles</i>	No records of badger were returned for the site. Records from 2013 suggest that there may be an active sett to the south of the wider site allocation.
	Bats Various	942 records for bats were returned within the 2km search radius. These include a number of protected records for Bechstein's bat, greater horseshoe bat and lesser horseshoe bat confirmed roosts. A number of records are also

Species group	Species	Record summary
		returned for Bechstein's bat activity within proximity to the wider site to the north and north east. Other roost records were also returned for serotine <i>Eptesicus serotinus</i>, Myotis bat <i>Myotis sp.</i>, Brandt's bat <i>M. Brandtii</i>, Daubenton's bat <i>M. daubentonii</i>, whiskered bat <i>M. mystacinus</i>, Natterer's bat <i>M. nattereri</i>, noctule <i>Nyctalus noctula</i>, pipistrelle bat <i>Pipistrellus sp.</i>, common pipistrelle <i>P. pipistrellus</i>, soprano pipistrelle <i>P. pygmaeus</i>, barbastelle <i>Barbastella barbastellus</i>, long-eared bat <i>Plecotus sp.</i> and brown long-eared bat <i>P. auritus</i>. Activity records were returned for all of the above species as well as Lesler's bat <i>N. leisleri</i>, and Nathusius's pipistrelle <i>P. Nathusii</i>.
	Brown hare <i>Lepus europaeus</i>	Three records were returned for brown hare within the last 10 years. Two of these were in the area of Picket and Clanger Wood.
	Hazel dormouse <i>Muscardinus alleanarius</i>	Twelve records were returned for hazel dormouse within the last 10 years. Ten of these records are for the ST85 10km grid square i.e. records could be a significant distance away. Remaining two records are 350m north and 1km east of Site.
	Hedgehog <i>Erinaceus europaeus</i>	Numerous records of hedgehog were recorded, largely associated with the urban area of Trowbridge and suburban parts of the North Bradley village to the west of the site.
	European otter <i>Lutra lutra</i>	Several records were returned for otters using the River Biss, which is approximately 400m east of the site at its closest point.
Birds	Various	A number of protected and notable bird species records were returned within 2km of the wider application site within the last 10 years. These include: W&CA schedule 1 – kingfisher <i>Alcedo atthis</i>, hobby <i>Falco Subbuteo</i>, red kite <i>Milvus milvus</i>, redwing <i>Turdus iliacus</i>, fieldfare <i>T. pilaris</i>, and barn owl <i>Tyto alba</i>. BoCC Red – skylark <i>Alauda arvensis</i>, cuckoo <i>Cuculus canorus</i> (2009), reed bunting <i>Emberiza schoeniclus</i>, herring gull <i>Larus argentatus</i>, linnet <i>Linaria cannabina</i> (2011), house sparrow <i>Passer domesticus</i> (2013), starling <i>Sturnus vulgaris</i> (2011), song thrush <i>Turdus philomelos</i> (2011), mistle thrush <i>T. viscivorus</i>.
Invertebrates	Various	A number of butterfly and moth species were returned for within 2km of the wider application site, largely corresponding to Picket, Clanger and Biss Woods. These include the following NERC s41 and UKBAP species: knot grass <i>Acronicta rumicis</i>, brown-spot pinion <i>Agrochola litura</i>, green-brindled crescent <i>Allophyes oxyacanthae</i>, dusky brocade <i>Apamea remissa</i>, pearl-bordered fritillary <i>Boloria Euphrosyne</i>, mottled rustic <i>Caradrina Morpheus</i>, small heath <i>Coenonympha pamphilus</i>, small square-spot <i>Diarsia rubi</i>, figure of eight <i>Diloba caeruleocephala</i>, small phoenix <i>Ecliptopera silaceata</i>, dusky thorn <i>Ennomos fuscantaria</i>, September thorn <i>E. erosaria</i>, pied grey <i>Eudonia delunella</i>, marsh fritillary <i>Euphydryas aurinia</i>, Duke of Burgundy <i>Hamaeris Lucina</i>, small emerald <i>Hemistola chrysoprasaria</i>, rustic <i>Hoplodrina blanda</i>, wall <i>Lasiommata megera</i>, shoulder-striped wainscot <i>Leucania comma</i>, white admiral <i>Limenitis Camilla</i>, brindled beauty <i>Lycia hirtaria</i>, dot moth <i>Melanchra persicariae</i>, white-letter hairstreak <i>Satyrion w-album</i>, shaded broad-bar <i>Scotopteryx chenopodiata</i>, buff ermine <i>Spilosoma lutea</i>, white ermine <i>S. lubricipeda</i>, blood-vein <i>Timandra comae</i>, cinnabar <i>Tyria jacobaeae</i>, oak

Species group	Species	Record summary
		hook-tip <i>Watsonalla binaria</i> , dark-barred twin-spot carpet <i>xanthorhoe ferrugata</i>
Flora	Various	A number of nationally rare and scarce plants as well as county notable species were returned within 2km of the wider application site. These include: meadow brome <i>Bromus commutatus</i>, violet helleborine <i>Epipactis purpurata</i>, common cudweed <i>Filago vulgaris</i>, fritillary <i>Fritillaria Meleagris</i>, opposite-leaved pondweed <i>Groenlandia densa</i>, great lettuce <i>Lactuca virosa</i>, narrow-leaved pepperwort <i>Lepidium ruderales</i>, spotted medick <i>Medicago arabica</i>, bogbean <i>Menyanthes trifoliata</i>, yellow-juiced poppy <i>Papaver dubium subsp. Lecoqii</i>, buck's-horn plantain <i>Plantago coronopus</i>, greater butterfly orchid <i>Platanthera chlorantha</i>, early meadow-grass <i>Poa infirma</i>, shrubby cinquefoil <i>Potentilla fruticosa</i>, keeled-fruited cornsalad <i>Valerianella carinata</i>, pink water-speedwell <i>Veronica catenata</i>, rat's-tail fescue <i>Vulpia myuros</i>, In addition, the NERC s41 and UKBAP listed species cornflower <i>Centaurea cyanus</i> was recorded 1.5km to the west of the wider application site in Southwick Country Park in 2014.

- 4.1.7 An ecological appraisal that supports a planning application (16/12347/FUL) for a petrol station approximately 350m south east of the Site, includes a figure showing the location of GCN ponds in the area based on surveys from 2017. Additionally, the ecology report that supports the Land at Elm Grove planning application (19/11459/OUT) for residential led scheme approximately 150m north of the Site, includes a figure showing GCN were recorded in a further two ponds. The location of these ponds is shown in the GCN Impact Map of this report.
- 4.1.8 The Elm Grove ecology report also reports that nests that had the appearance of being started by Dormice were recorded on their site.

4.2 Extended Phase 1 Habitat Survey

General Description

- 4.2.1 The Site is located immediately to the south of the southern extent of the town of Trowbridge, Wiltshire (central OS grid reference ST859555).
- 4.2.2 The site is bounded by the A363 on the northern boundary and Woodmarsh Road and dwellings associated with the village of North Bradley to the west. To the east is a woodland belt associated with the White Horse Business Park which lies beyond it. To the south is further field and hedgerow networks associated with the rest of the land allocation along with a low number of dwellings and a cemetery. The wider surrounding landscape includes the village of North Bradley and the outskirts of Trowbridge. Further agricultural land covers the area to the west and to the east beyond the business park with open fields and hedgerows creating links to pockets of woodland further in the landscape.

- 4.2.3 The site is approximately 8.37 ha comprising 5 fields which are lightly grazed by cattle and bounded by hedgerows, woodland or fencing.

Habitats

- 4.2.4 The following descriptions should be read in conjunction with the Extended Phase 1 Habitat map, which illustrates the broad distribution of habitats within the site. The Target Note (TN) descriptions and photographs are provided in Appendix I and II respectively.

- 4.2.5 The site can be divided into the following Phase 1 Habitat types, excluding fences

- Semi-improved grassland; and
- Hedgerows;

Semi-improved grassland

- 4.2.6 The site is dominated by semi-improved grassland which makes up the habitat of the five distinct fields within the site. The grassland is managed through a mid-summer hay cut and then low intensity grazing by highland cattle. At the time of the habitat survey, the fields had not yet been cut and the sward height averaged 30cm across the five fields. Following the cut, field 2 and half of field 1 remained uncut.
- 4.2.7 The fields contained a number of species typical of neutral grassland including Yorkshire fog *Holcus lanatis*, Timothy grass *Phleum pratense*, cock's foot *Dactylis glomerata*, creeping bent *Agrostis stolonifera*, perennial rye grass *Lolium perenne*, Sweet Vernal Grass, Meadow Buttercup, White Clover and Broadleaved Dock.
- 4.2.8 Areas of the fields were noted to be wetter in nature, with clumps of soft rush scattered in these areas. This includes an area that once may have been a drainage pond near to the southern boundary. However, bramble scrub and dense rush growth in this area appears to prevent it from holding significant levels of water outside of times of heavy rainfall.
- 4.2.9 There is frequent scrub encroachment across the site with blackthorn and hawthorn self-seeding from the hedgerows as well as patches of dense brambles along some of the field margins.
- 4.2.10 The poor semi-improved grassland is a widespread and common habitat type, hence it is considered to be site value only.

Hedgerows

- 4.2.11 The fields are, in the most part, divided and bounded by native species hedgerows. These hedgerows show signs of intermittent management to control their lateral growth into the fields but are allowed to grow tall with most being of at least 3m in height. Several of the hedgerows can be considered to contain semi-mature trees where the species have grown out. At some point along their length, each hedgerow had at least one break, allowing connectivity into the adjacent fields. The gaps were typically between 1m and 2m wide with little canopy connectivity across the gap.
- 4.2.12 The hedgerows typically contained a mix of the following species; hawthorn *Crataegus monogyna*, bramble *Rubus fruticosus*, blackthorn *Prunus spinosa*, field maple *Acer campestre*, rose species *Rosa sp.*, and apple *Malus domestica*. The ground layer surrounding the hedgerows was frequently dominated by nettles *Urtica dioica*.
- 4.2.13 Hedgerows are a priority habitat under the NERC Act 2006. Hedgerows can provide important foraging opportunities and shelter, as well as connectivity to the wider landscape. As such, it is considered that the hedgerows are of local value.

Broadleaved woodland (off-site)

- 4.2.14 The broadleaved woodland typically contained a mix of the following species; elder *Sambucus nigra*, field maple, willow *Salix sp.*, ash *Fraxinus excelsior*, cherry *Prunus avium*, beech *Fagus sylvatica*, aspen *Populus tremula*, wych elm *Ulmus glabra*, oak *Quercus robur* and sycamore *Acer pseudoplatanus*. The woodland forms a buffer between the site and the White Horse Business Park and is entirely outside of the site boundary.
- 4.2.15 Woodlands provide good foraging and nesting opportunities for a wide variety of species, as well offering important connectivity to the wider landscape. Whilst this woodland is unlikely to meet the priority habitat criteria, the Wilshire BAP does include all woodland types and hence this habitat is considered to be of local value.

4.3 Badgers

- 4.3.1 No setts were recorded on Site during the Extended Phase 1 Habitat Survey or within the adjacent woodland. However, during surveys for a proposed development site immediately to the south, NPA recorded a sett (consisting of at least 4 entrances) in April 2018 in the adjoining hedge (TN 7 on the Extended Phase 1 Map) with a main sett (at least 10 entrances) approximately 30m south (TN8) within the White Horse Business Park woodland bund.

4.3.2 Within the Site a well-used latrine (TN2) was recorded which showed signs of continual use throughout the season with fresh droppings found in at least one of the dung pits at each site visit. Potential evidence of foraging, such as snuffle holes, were also found across the Site and numerous mammal paths were identified crossing the fields and through the hedgerows.

4.3.3 The Badger population at the Site is considered to be of local value.

4.4 Bats

Activity

4.4.1 The surveys recorded the presence of at least nine different species of bat, these being Noctule, Serotine, Barbastelle, Long-eared bat, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Myotis (of which Bechstein's is a member of) Lesser Horseshoe bat and Greater Horseshoe bat.

4.4.2 The activity was dominated by Pipistrelle species as shown below in Table 4.4.

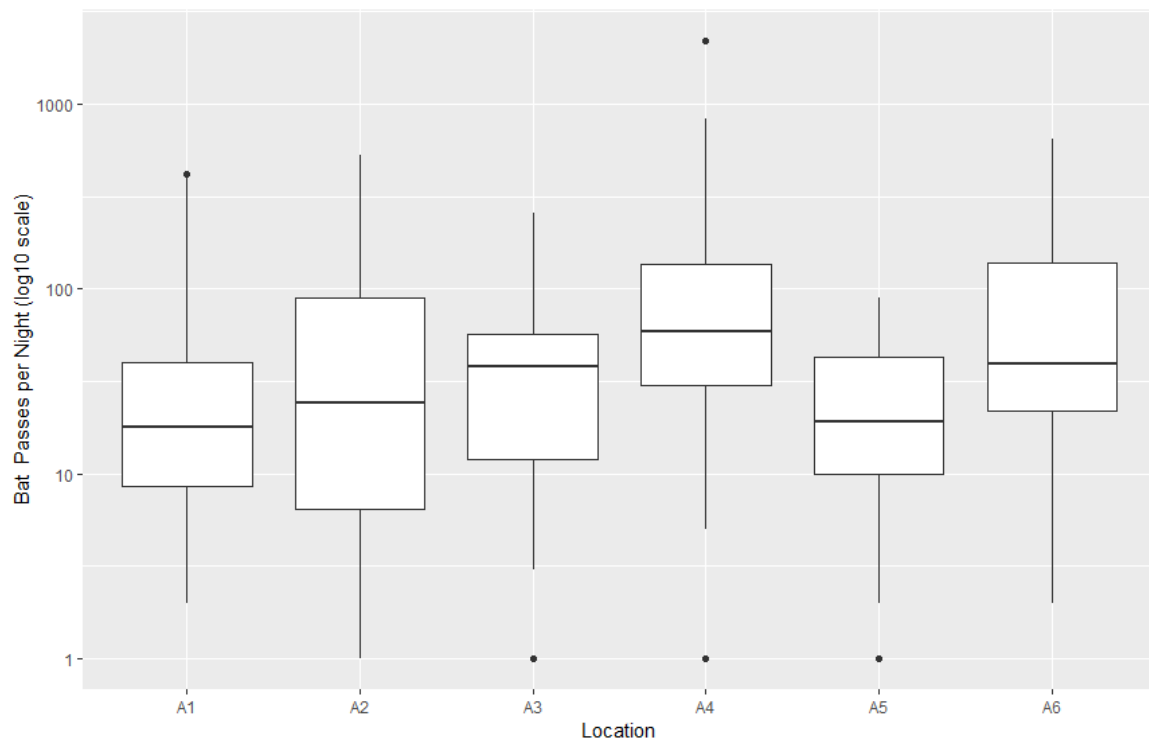
Table 4.4: Count of Species Recorded by Automated Detectors

Species/ species group	Total Count of Passes	% Total of Passes
Pipistrelle species	11,917	55.10%
NLS	4,634	21.43%
Myotis Species	4,327	20.01%
Long-Eared species	327	1.51%
LHS	227	1.05%
LHS	106	0.49%
Barbastelle	67	0.31%
Vesper	22	0.10%
Grand Total	21,627	

Activity Location

4.4.3 The location of activity recorded by the automated detectors is shown on the bat activity figures, associated pivot tables (Appendix III) and box plots (Appendix IV). Box plot 4.1 below shows that the greatest activity was recorded at location 4.

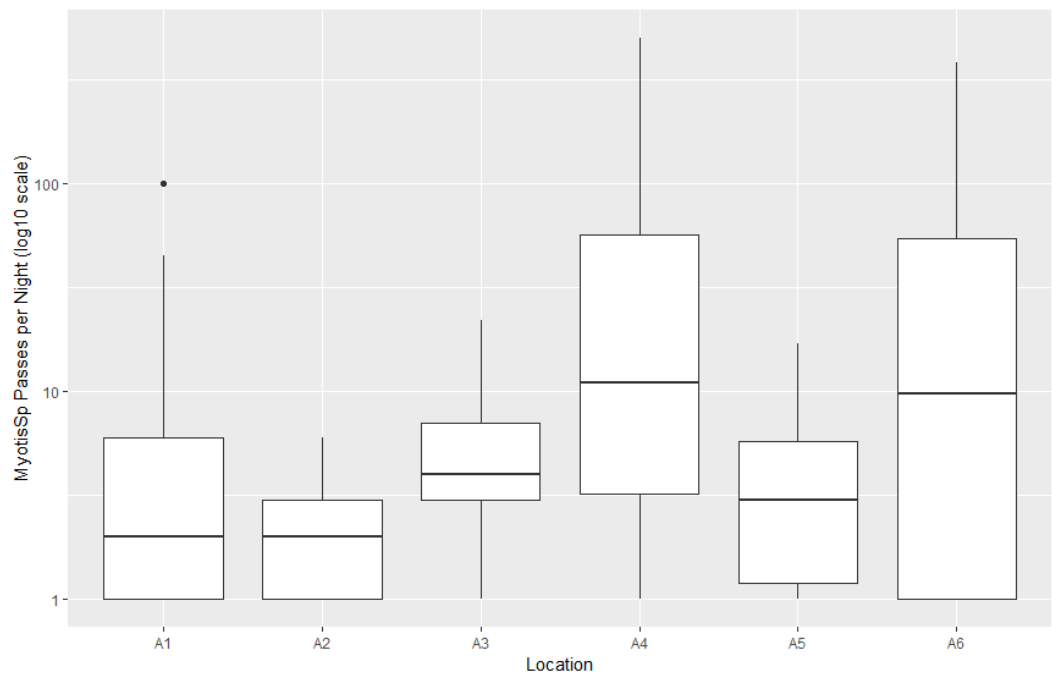
Box Plot 4.1: Total bat activity by automated detector location



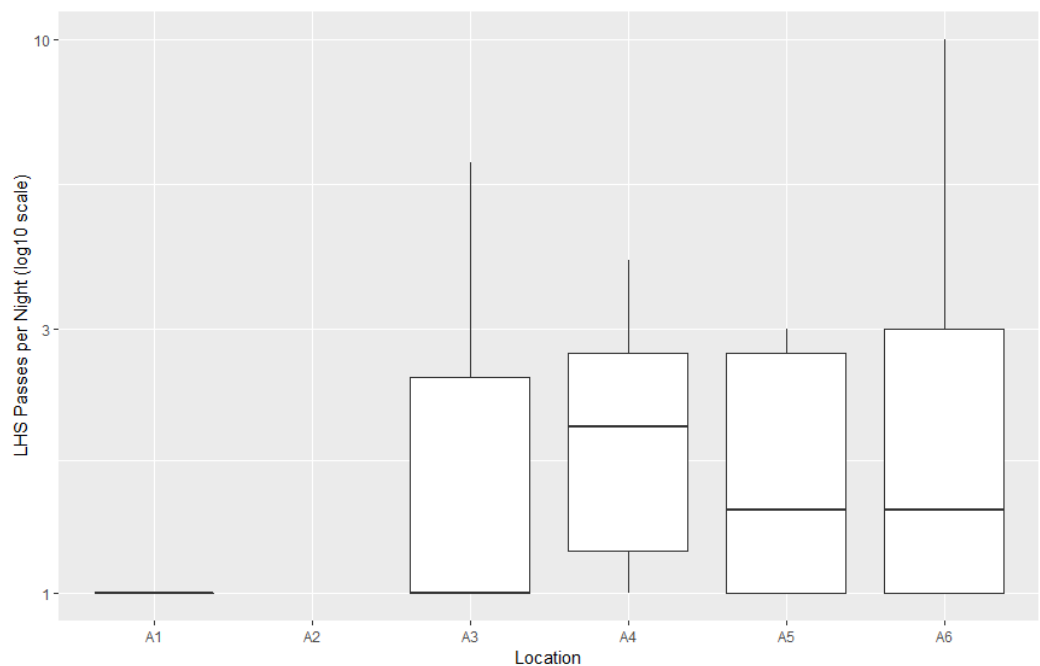
4.4.4 Box plots 4.2 and 4.3 show that *Myotis* species and LHS activity was also greatest at location 4.

4.4.5 Box plot 4.4 shows that GHS activity was greatest at location 5.

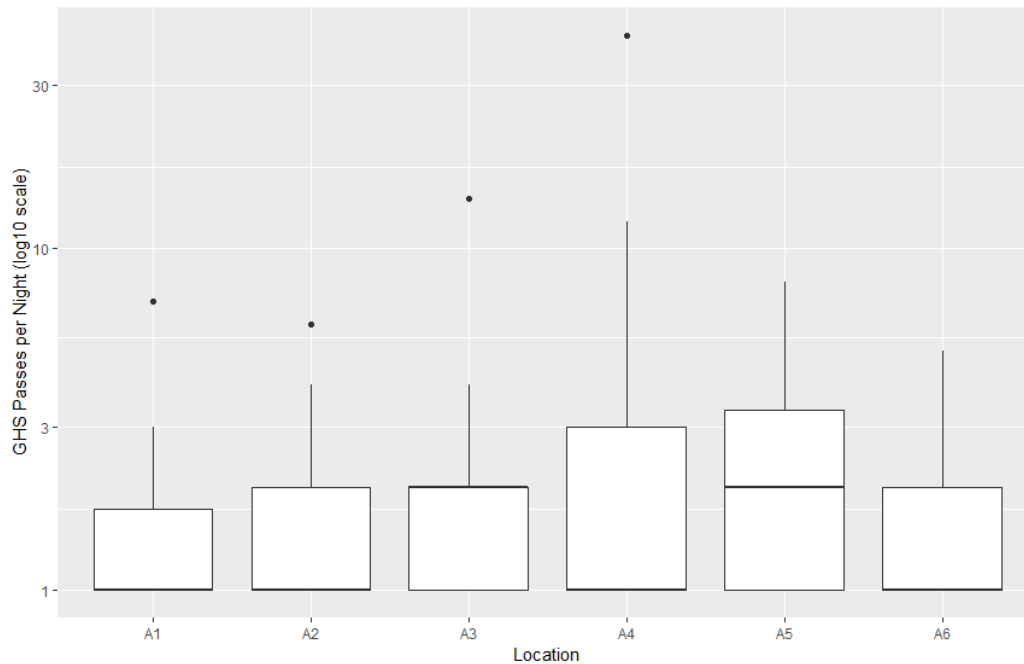
Box Plot 4.2: Myotis activity by automated detector location



Box Plot 4.3: LHS activity by automated detector location



Box Plot 4.4: GHS activity by automated detector location



4.4.6 During the manual activity surveys, the activity appeared fairly evenly distributed along the hedgerows and woodland edge.

4.4.7 *Myotis* and LHS activity was highest at location 4 (in part due to foraging bouts around the mature Oak and with it being at a hedgerow junction).

Seasonality

4.4.8 The months in which the activity was recorded by the automated detectors is shown on the bat activity figures, associated pivot tables (Appendix III) and box plots (Appendix IV) and the box plots shown below.

4.4.9 Box plot 4.5 below shows overall bat activity was generally greatest towards the middle of the bat activity season, with May followed by June recording the highest activity levels.

4.4.10 Box plot 4.6 shows that *Myotis* species activity was greatest in October and May.

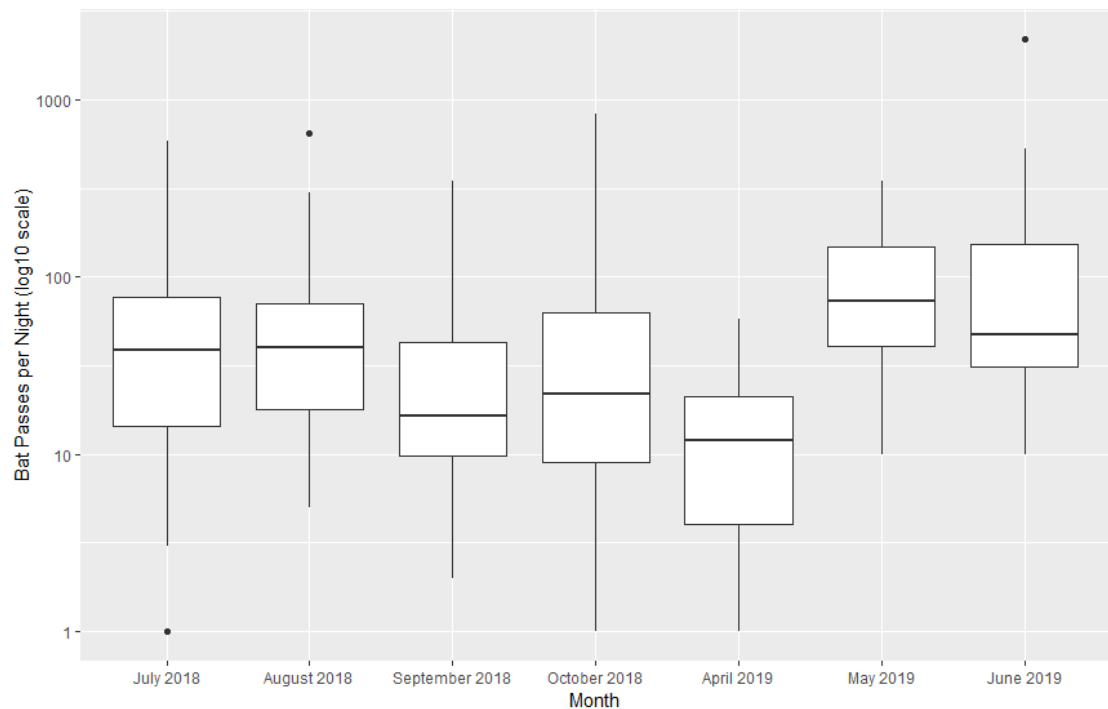
4.4.11 Box plot 4.7 shows that GHS activity was highest in June.

4.4.12 Box plot 4.8 shows that LHS activity was greatest in July.

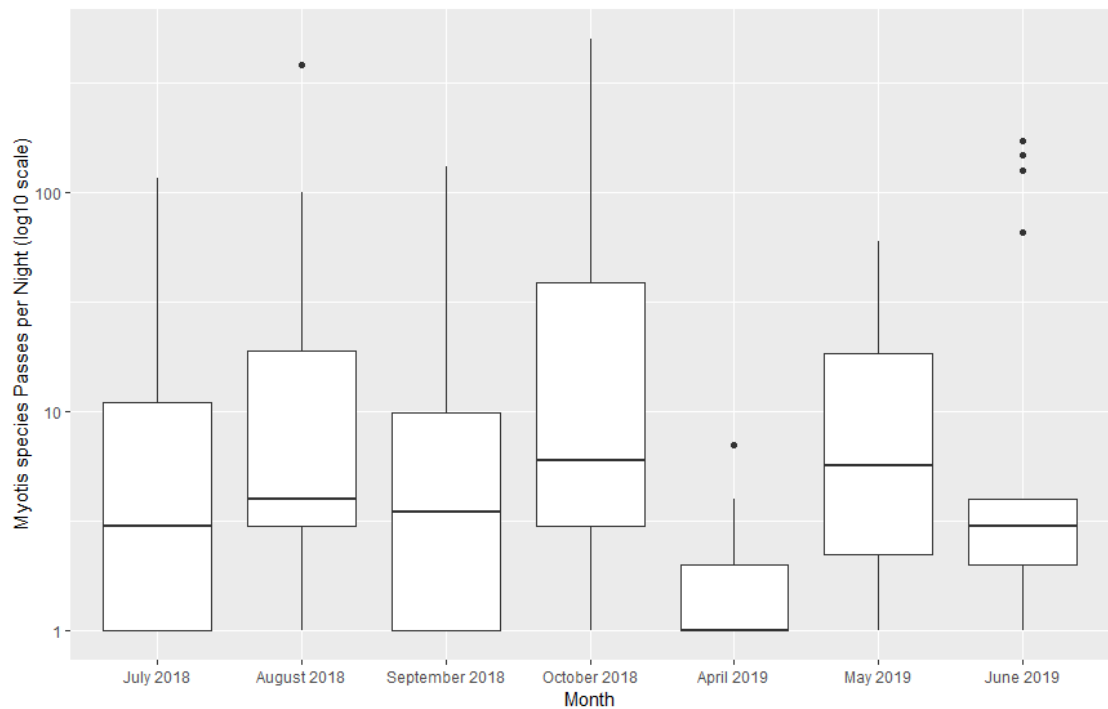
Evaluation

4.4.13 Given the roosts of Bechstein's, GHS and LHS within the wider area and records of those species foraging on Site, and the assemblage of other species recorded the Site is considered to be of district value for bats.

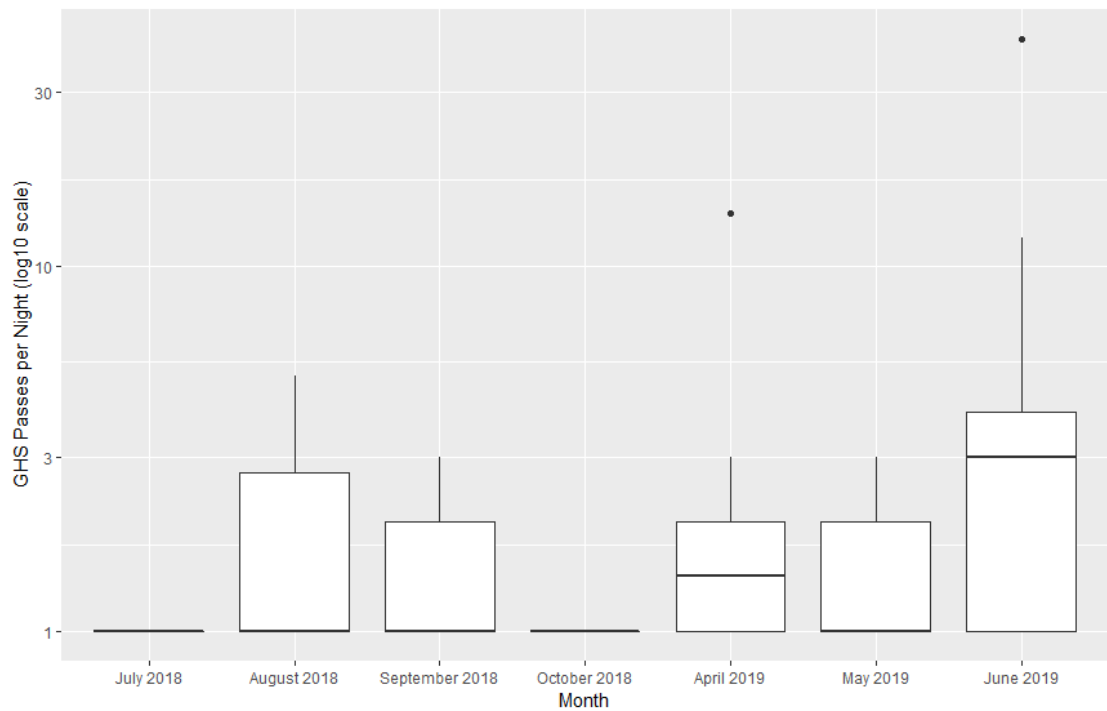
Box Plot 4.5: Total bat activity by Month



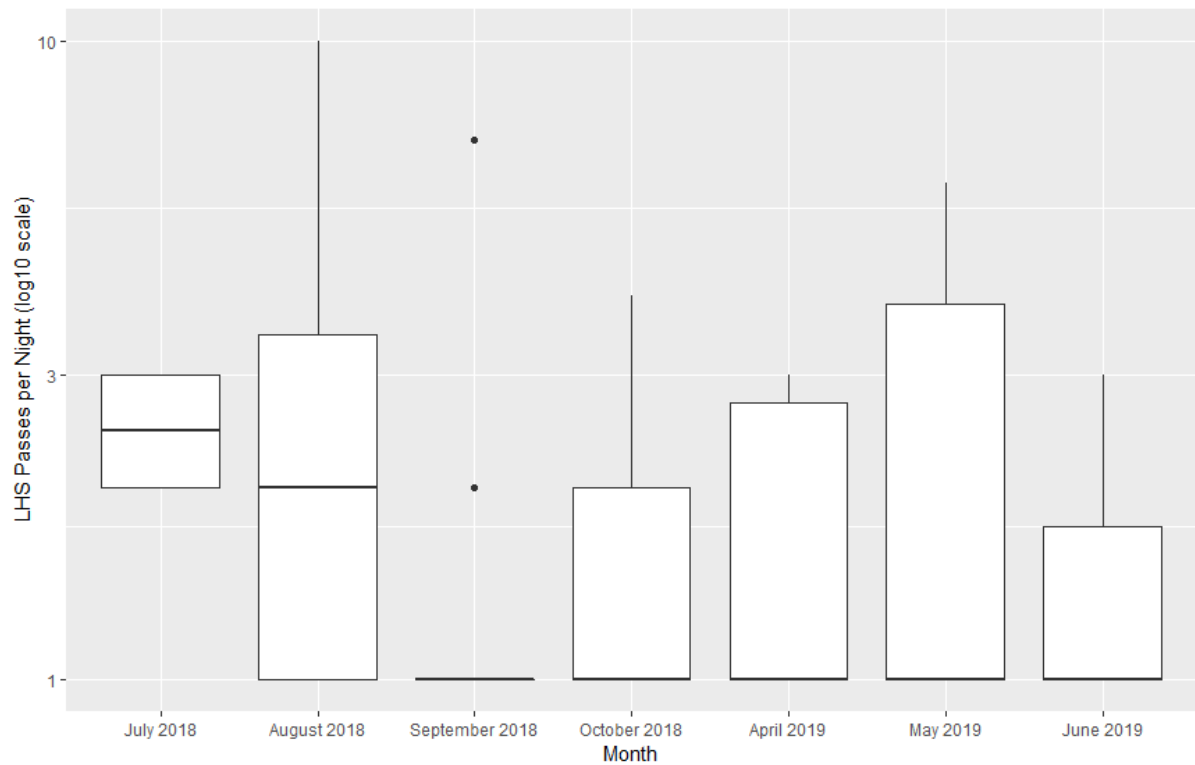
Box Plot 4.6: Myotis species activity by Month



Box Plot 4.7: GHS activity by Month



Box Plot 4.8: LHS activity by Month



4.5 Birds

- 4.5.1 A full list of bird species recorded during the surveys is given below in Table 4.5. The table details the species, the number of individual birds recorded together with the breeding status and an estimated maximum number of breeding pairs. The Breeding Bird Survey maps (visits 1-4) show the locations of the records.
- 4.5.2 Nearby buildings to the Site, along Woodmarsh road, provided nesting sites for use by House Sparrows and House Martins. Additionally, a dead Woodpigeon was found, providing evidence of a kill by a Sparrowhawk on the first visit; latterly during the second visit a pair of female Sparrowhawks displayed agitated behaviour, flying in and away from the site indicating use of the site.
- 4.5.3 Species' composition of the site is broadly as expected for a site with largely poor semi-improved grassland and species poor hedgerows. A few mature standard trees on field margins also provide opportunities for birds.
- 4.5.4 Priority Birds or those of Principal Importance which are also most usually Red Listed BoCC but not necessarily those listed on Schedule 1 of the WCA, are a material consideration in planning terms under the National Planning Policy Framework (NPPF). This gives guidance on the treatment of such species to prevent further decline.
- 4.5.5 Four of the bird species (House Sparrow, Bullfinch, Song Thrush, Starling) found breeding at the site in 2019 are considered a Priority Species being included in the England BAP because of their declining numbers and current scarcity and described as Species of Principle Importance in Section 41, of the NERC Act 2006. House Sparrow, Song Thrush and Starling are also on the UK's Red List.
- 4.5.6 None of the birds found breeding at the site in 2019 are listed on Schedule 1 of the WCA 1981.

Table 4.5: Breeding Bird Records

Bird Species	BTO species code	Habitat Association	Breeding status: Confirmed	Breeding Status: Probable	Breeding Status: Possible	Not breeding	No. recorded	No. of breeding pairs (max)	Priority species	BoCC
Blackbird	B.	Hedgerow, scrub, farmland		✓			17	13		Green
Robin	R.	Hedgerow, scrub, farmland		✓			11	9		Green
Duncock	D.	Hedgerow, scrub, farmland	✓				6	1		Amber
House Sparrow	HS	Hedgerow, scrub		✓			26	20	✓	Red
Blue tit	BT	Hedgerow, scrub	✓				9	7		Green
Great tit	GT	Hedgerow, scrub	✓				9	8		Green
Long-tailed tit	LT	Hedgerow, scrub	✓				13	4		Green
Chaffinch	CH	Mature tree			✓		1	1		Green
Chiffchaff	CC	Hedgerow, mature tree	✓				5	3		Green
Blackcap	BC	Hedgerow, scrub	✓				8	3		Green
Bullfinch	BF	Hedgerow, scrub			✓		2	1	✓	Amber

Bird Species	BTO species code	Habitat Association	Breeding status: Confirmed	Breeding Status: Probable	Breeding Status: Possible	Not breeding	No. recorded	No. of breeding pairs (max)	Priority species	BoCC
Lesser Whitethroat	LW	Hedgerow, scrub			✓		1	1		Green
Wren	WR	Hedgerow, scrub	✓				13	10		Green
Greenfinch	GR	Mature trees, aerial			✓		1	1		Green
Goldfinch	GO	Hedgerow, scrub, aerial			✓		6	4		Green
Woodpigeon	WP	Mature trees, woodland, aerial			✓		20	4		Green
Collared Dove	CD	Aerial				✓				Green
Great Spotted Woodpecker	GS	Mature trees, aerial			✓		1	1		Green
Jay	J.	Mature trees, hedgerow, aerial			✓		2	1		Green
Jackdaw	JD	Improved grassland, aerial			✓		11	-		Green
Magpie	MG	Hedgerow, mature trees, aerial	✓				8	2		Green
Song Thrush	ST	Mature trees, aerial		✓			3	2	✓	Red

Bird Species	BTO species code	Habitat Association	Breeding status: Confirmed	Breeding Status: Probable	Breeding Status: Possible	Not breeding	No. recorded	No. of breeding pairs (max)	Priority species	BoCC
Starling	SG	Hedgerow, improved grassland, aerial			✓		3	1	✓	Red
Buzzard	BZ	Mature trees			✓		1	1		Green
Sparrowhawk	SH	Mature trees			✓		2	2		Green
Goldcrest	GC	Hedgerow			✓		1	1		Green
Herring Gull	HG	Aerial				✓	3	-	✓	Red
Lesser Black-backed Gull	LB	Aerial				✓	4	-		Amber
Swift	SI	Aerial				✓	2	-		Amber
Swallow	SL	Aerial				✓	2	-		Green
House Martin	HM	Aerial				✓	4	-		Amber

4.5.7 Fuller provides a method for assessing the ornithological interest of a site whereby its value, in terms of local, county, regional or national importance is defined by the number of breeding species present. Whilst this scale has been amended over the years to take into account population changes and evaluation processes, it is still an effective method to assess the value of a site.

4.5.8 The following scale provides the framework on which the ornithological value of the site was assessed.

- National >85 species
- Regional 70-84 species
- County/Metropolitan 50-69 species
- District/Borough 25-49 species
- Local/Parish/Neighbourhood <25 species

4.5.9 The combined total of confirmed and probable breeding birds found at the site was 24. The bird assemblage, therefore, falls close to the lowest ('Local') category of importance in Fuller scale.

4.5.10 As such, given the overall local assemblage on-site and low numbers of priority bird species, it is considered to be of site value only.

4.6 Dormouse

4.6.1 No evidence was recorded of Dormouse during the course of the surveys and as such are considered likely absent from the Site and are therefore not considered further within this assessment.

4.7 Great Crested Newts

4.7.1 Access to Pond 1 (see GCN impact map for location) was granted and an eDNA survey undertaken on the 28th of June 2018. The laboratory analysis returned a negative result for the presence of GCN DNA and as such are considered absent from that pond.

4.7.2 Access to ponds at locations 4 was denied. Access to the ponds at locations 2 and 3 was only provided after the eDNA survey had closed in 2018. Access to the "pond" at location 5 was granted, but it did not hold any water.

4.7.3 The hedgerows and longer grassland within the fields also provide suitable terrestrial habitat. Given this and the presence of ponds that support breeding GCN within close proximity to the Site (see GCN Impact Map) the Site is considered to be of local value to GCN.

4.8 Reptiles

4.8.1 The reptile surveys confirmed the presence of Slow Worms on Site, with a single female Slow Worm being recorded on the 11th of September 2018. Hence, under Froglife guidance, there is considered to be a low population of slow worm on-site.

4.8.2 Given the low numbers of reptiles recorded on-site, it is considered to be of site value only.

5.0 Impacts and Mitigation

5.1.1 A number of ecological receptors have been identified above. Table 4.1 below identifies the potential impacts that may occur for each of these receptors and incorporates mitigation measures (see green Infrastructure Parameters Plan for evidence) to avoid and reduce these impacts. In addition, it sets out additional ecological enhancements, in accordance with the NPPF.

Table 4.1: Potential Impacts and Mitigation

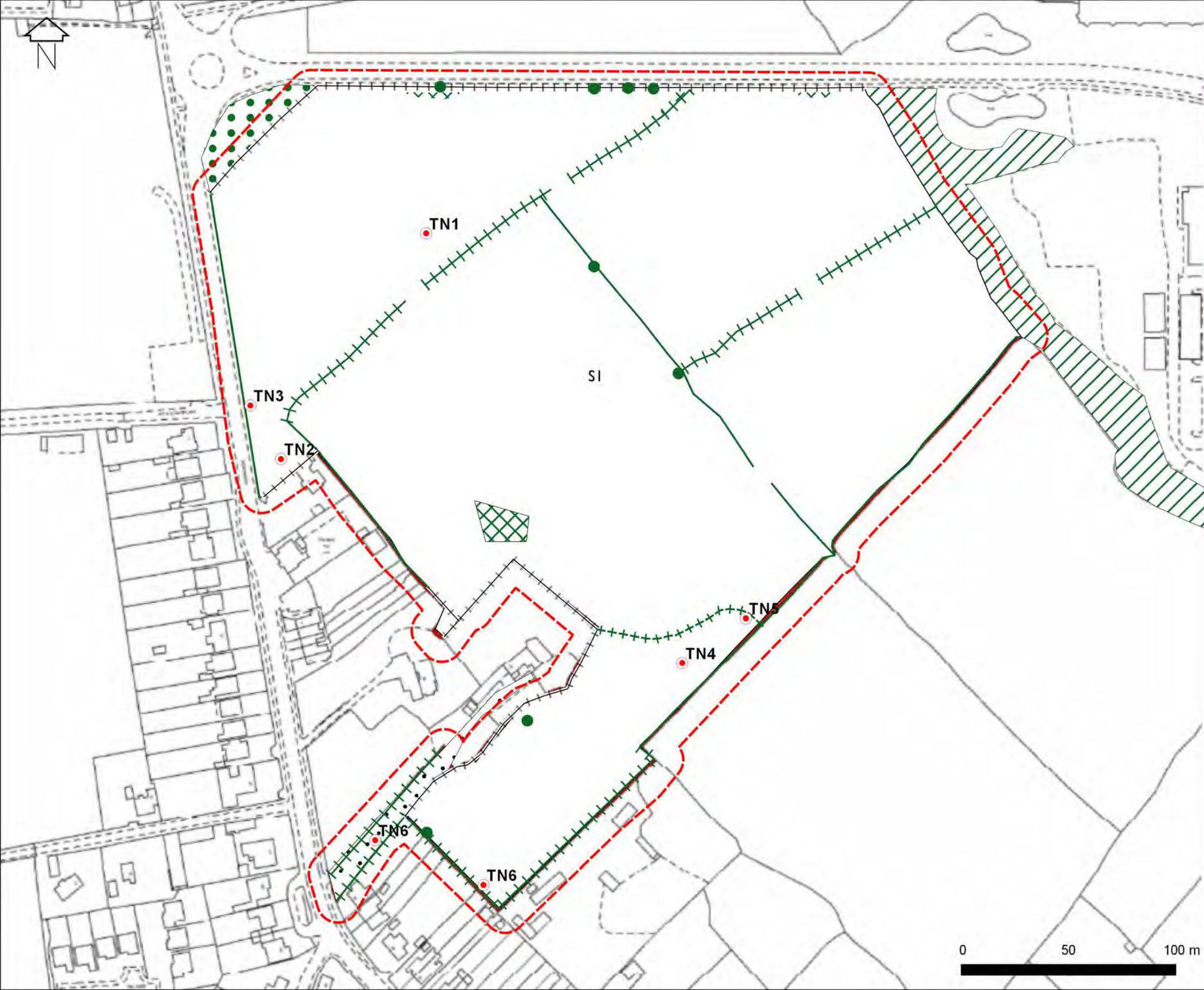
Ecological Receptor	Period	Potential Impacts	Design Response / Mitigation Measures	Residual Impact
Bath and Bradford Bats SAC	Construction	- Impact to on Site functionally-linked commuting and foraging habitat through: - partial loss of agricultural fields; - loss of approximately 140m; - fragmentation of hedgerow/commuting network; and - Construction lighting.	- Minimise loss of hedgerow network as far as practicable; - Minimise width (<10m) and lighting requirements at three locations where road access requires hedgerow removal. - Minimise loss of foraging habitat, through provision of wide habitat buffers, and creation of invertebrate-rich habitats within those buffers. - No night-time construction lighting during main bat activity season (April–October) and sensitive lighting controlled via CEMP or similar outside this period. - Contribution to Wiltshire Council strategic fund to implement strategic measures to mitigate for net loss of poor-quality habitat (<i>i.e.</i> poor semi-improved grassland).	Not significant
	Operation	Loss of functionally-linked foraging habitat and fragmentation of commuting habitat through lighting.	Sensitive lighting plan across Site, including dark and buffer lighting zones as shown on the Green Infrastructure Parameters Plan.	Not significant.

Ecological Receptor	Period	Potential Impacts	Design Response / Mitigation Measures	Residual Impact
		Recreational Pressure at Pickett and Clanger, Biss Wood and Green Lane Wood (<i>i.e.</i> visitors damaging habitat through fire, collection of firewood (potentially damaging roosting features and/or invertebrate prey habitat) and nutrification of habitats through dog fouling).	- Provision of significant areas of POS on Site to limit recreational pressures on nearby woodlands. - Contribution to Wiltshire Council strategic fund to implement strategic measures to reduce recreational impacts of planned housing growth.	
Salisbury Plain SPA	Construction	None predicted given distance from Site		Not significant
	Operation	Recreational pressure on/disturbance of Stone Curlew populations.	Contribution to Wiltshire Council strategic fund to implement strategic measures to reduce recreational impacts of planned housing growth.	Not significant
Salisbury Plain SAC	Construction	None predicted given distance from Site	N/A	N/A
	Operation	None predicted given distance from Site	N/A	N/A
Pickett and Clanger Wood SSSI	Construction	Potential effect on bat populations, but not in relation to designated features.	See Bath and Bradford on Avon Bats SAC for impacts and mitigation response for bats.	Not significant
	Operation			
Non-statutory designated sites	Construction	None predicted given distance from Site (other than impacts in relation to bats, dealt within the bat SAC section).	N/A	Not significant
	Operation	None predicted given distance from Site (other than impacts in relation to bats, dealt within the bat SAC section).	N/A	N/A
Habitats	Construction	- Permanent loss of predominantly low value internal Site habitats (semi-improved grassland), and loss of approximately 140m of hedgerows to allow for access and circulation; - Potential root damage of hedgerows and adjacent woodland.	- Minimise loss of habitat, through provision of wide habitat buffers, and creation of botanically-rich habitats within those buffers; - Preliminary net gain assessment suggests a net gain would not be achieved on Site. If detailed design proposals still result in a net loss, a contribution to Wiltshire Council strategic fund to implement strategic measures to mitigate for net loss of poor-quality habitat could result in net gain. - Tree and hedge protection fencing to be installed in	Not significant.

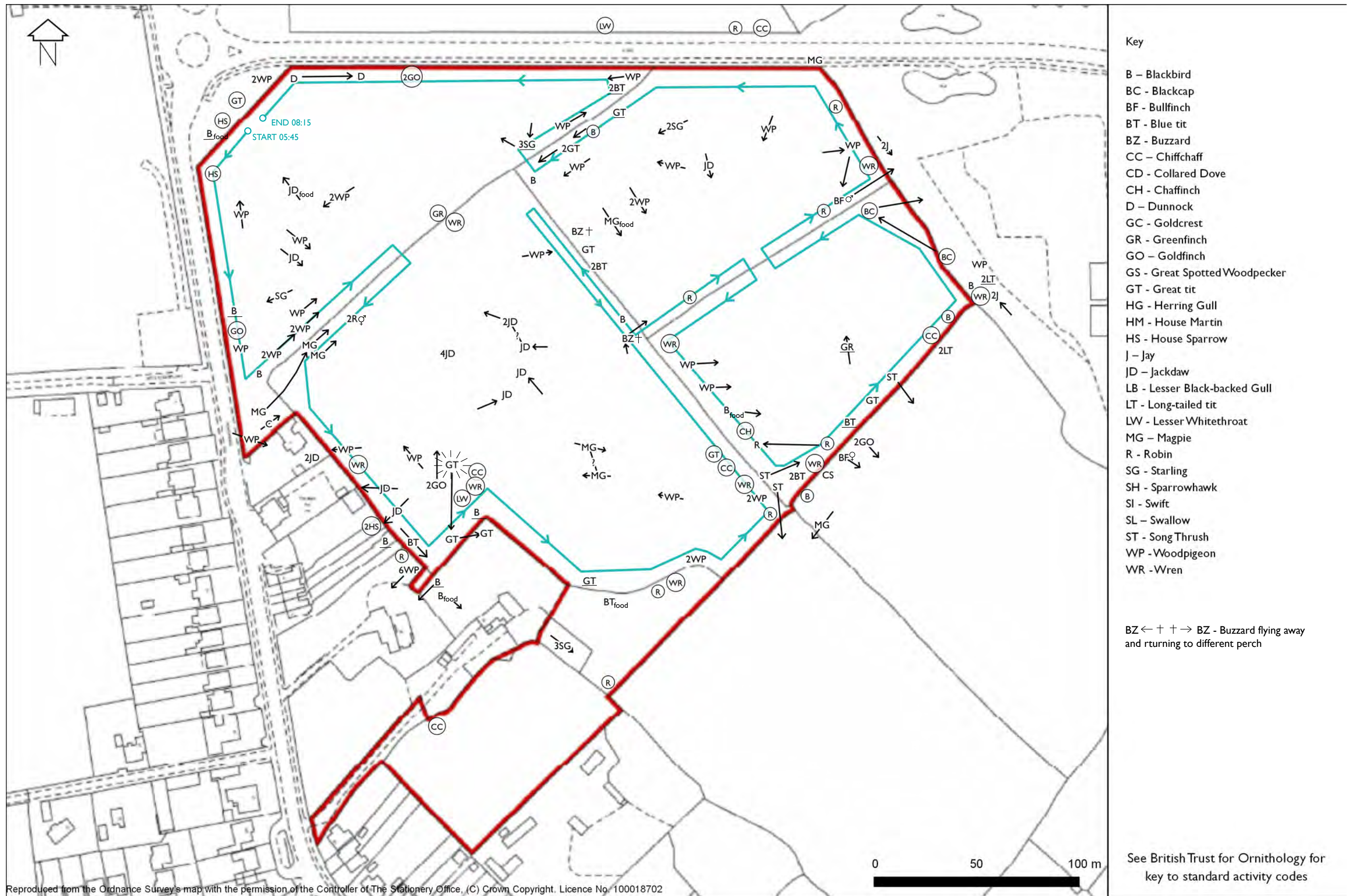
Ecological Receptor	Period	Potential Impacts	Design Response / Mitigation Measures	Residual Impact
			accordance with arboricultural advice.	
	Operation	Permanent loss of existing internal site habitats	Sensitive management of habitats through Landscape and Ecological Management Plan.	Not significant.
Badgers	Construction	- Risk of an offence being committed should an active Badger sett be damaged / destroyed or if an occupying Badger is disturbed during any excavations. - Risk of disturbance to foraging Badgers including entrapment in open excavations. - Fragmentation of habitat	- Proposals allow for buffers to recorded setts. - Pre-construction check for signs of any Badger activity should be undertaken prior to construction to identify the presence of any active setts. Should a sett be found in close proximity to proposed works/which could result in an offence, mitigation could include increasing buffer to development or applying for sett closure licence. - Open trenches / excavations should be either covered overnight or means of escape (e.g. plank at no greater angle than 45°) should be provided.	Not significant
	Operation	- Loss of foraging habitat and connectivity.	Proposed creation of buffer habitats surrounding the Site.	Not significant
Bats	Construction	Whilst there are differences between the ecological needs of Myotis, GHS and LHS compared to other bat species; given their broad/overarching ecological requirements (need for roosting habitat, a strong coherent network of dark habitats rich in invertebrate prey) it is considered that the potential impacts and mitigation set out above for the Bath and Bradford-on-Avon SAC apply to other bat species also.		Not significant
	Operation			Potentially significant dependant on lighting associated with highways.
Birds	Construction	- Potential damage / destruction of a nest; - Alteration of feeding habitat.	- Disturbance to and displacement of breeding birds should be avoided by undertaking vegetation clearance outside of the bird breeding season (March – August inclusive) or with a prior check for active birds' nests. - If active birds are found following the check for active birds, or during works, then a non-working buffer zone will be imposed until fledglings have left the nest.	Not significant

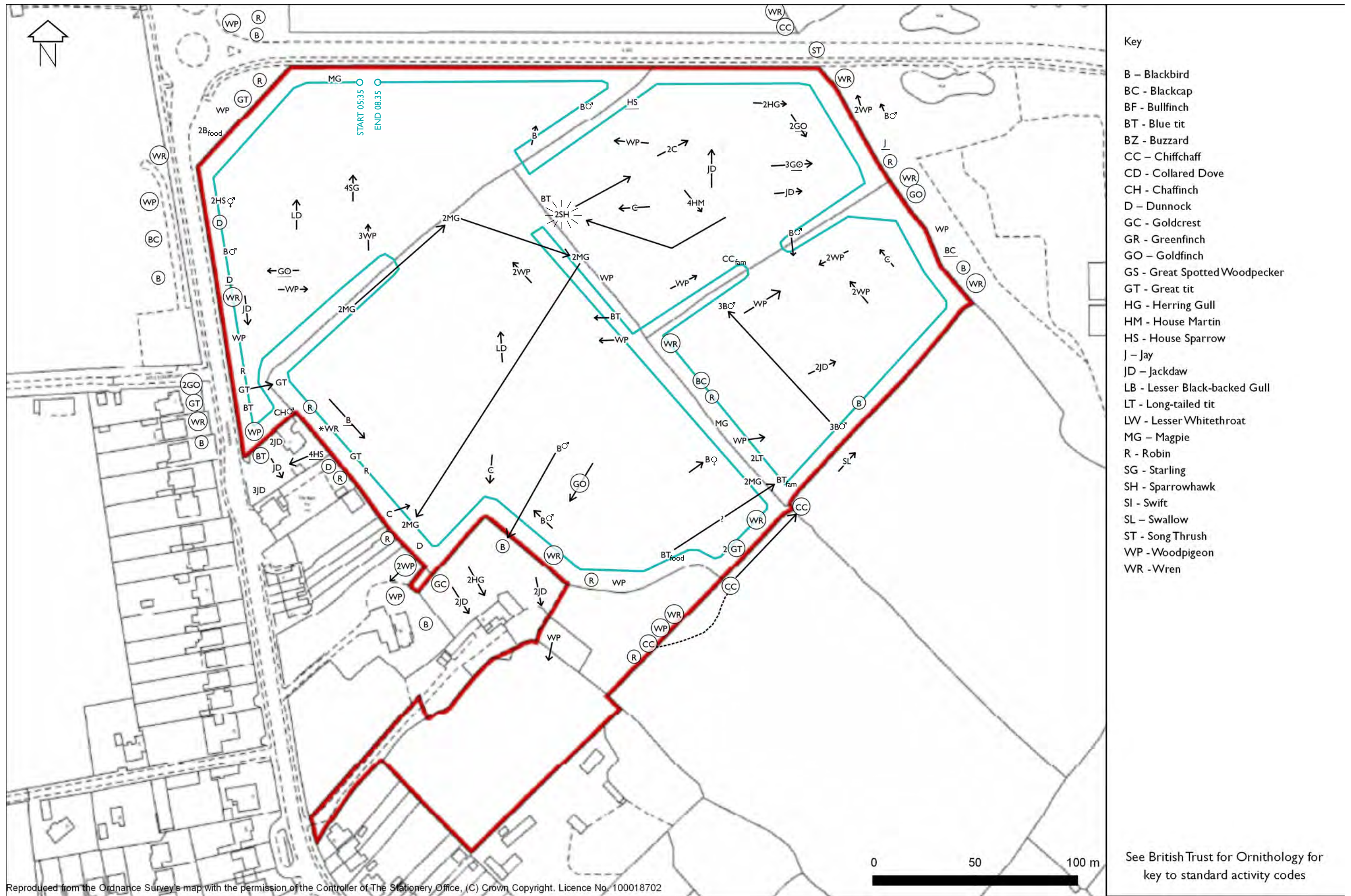
Ecological Receptor	Period	Potential Impacts	Design Response / Mitigation Measures	Residual Impact
			- Retention and enhancement of boundary habitats to mitigate for loss of internal site habitats. To include berry and seed producing planting. - Tree and hedgerow protection fencing to be installed in accordance with arboricultural advice. - Erection of bird boxes/nesting features to provide overall increase in nesting habitat.	
	Operation	Loss of nesting and feeding habitat.	Detailed management prescriptions and monitoring to be provided within Landscape and Ecological Management Plan to ensure habitat establishment and continued suitability of habitat.	Not significant
Great Crested Newt	Construction	- Loss of terrestrial habitat; - Fragmentation of terrestrial habitat through roads presenting barriers; - Killing and injury during construction works	- Enhanced terrestrial habitats proposed within buffer habitats; - Creation of permanent water bodies suitable for GCN breeding proposed within buffer habitats; - Newt crossing detail (e.g. tunnel and/or flush kerbs) to be created at northern road crossing point; - Subject to detailed design the proposals have the potential to have significant impacts on GCN through loss of habitat. If this is the case contributions could be made to Wiltshire Council's forthcoming District Level Licencing scheme to provide suitable mitigation off-site. - Sensitive working practices (under licence) to be utilised to avoid killing and injury.	Not significant (either through on and/or off-site mitigation measures)
	Operation	Loss of habitat	Detailed management prescriptions and monitoring to be provided within Landscape and Ecological Management Plan to ensure habitat establishment and continued suitability of habitat on Site and/or management of off-site habitats.	Not significant (either through on and/or off-site mitigation measures)

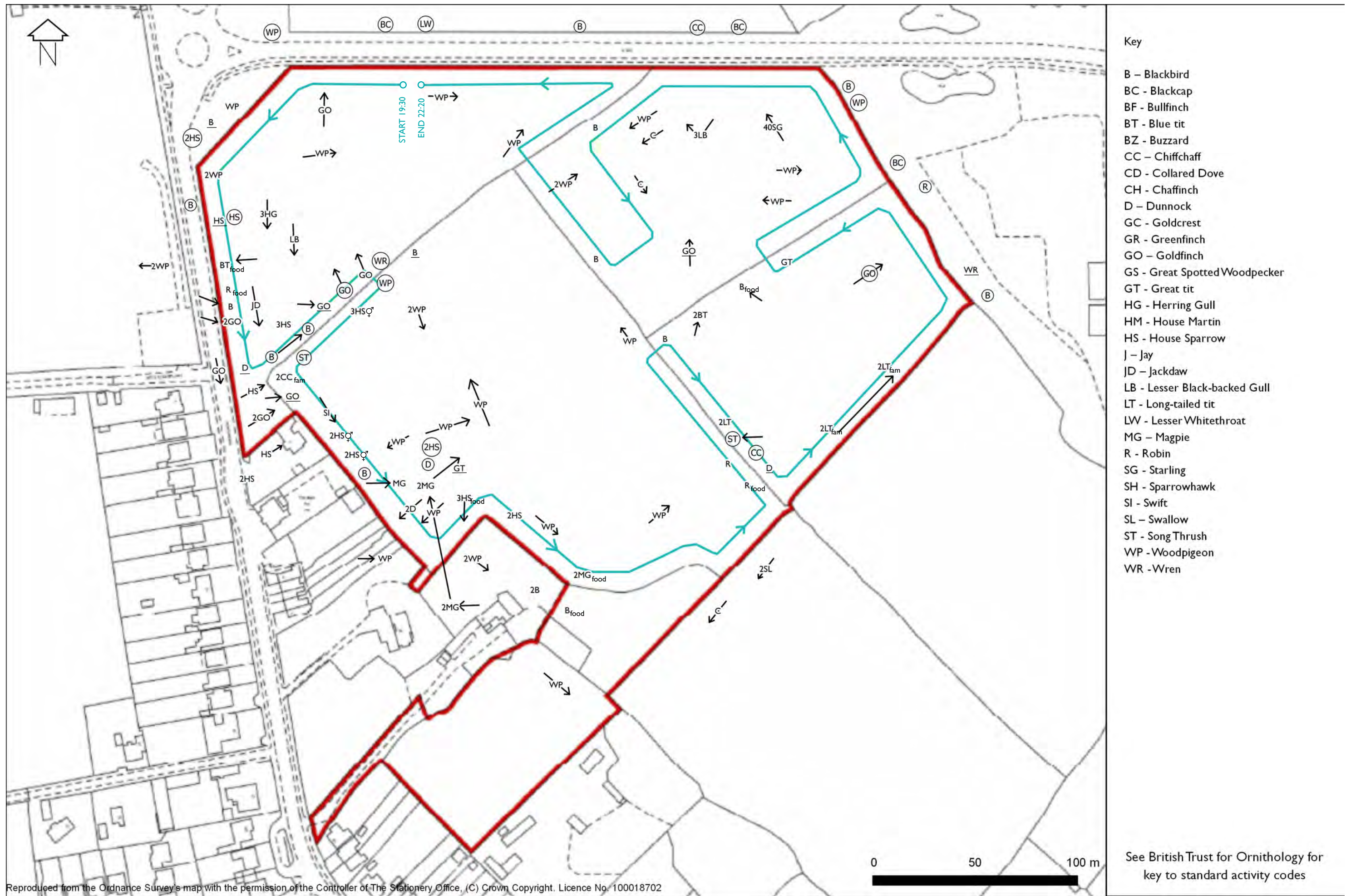
Ecological Receptor	Period	Potential Impacts	Design Response / Mitigation Measures	Residual Impact
Reptiles	Construction	Loss of habitat through the removal/damage of boundary habitats and poor semi-improved grassland leading to direct killing or injury.	- Enhanced terrestrial habitats proposed within buffer habitats; - Sensitive working practice to be secured via CEMP or similar to avoid killing and injury.	Not significant
	Operation	Loss of habitat	Detailed management prescriptions and monitoring to be provided within Landscape and Ecological Management Plan to ensure habitat establishment and continued suitability of habitat.	Not significant

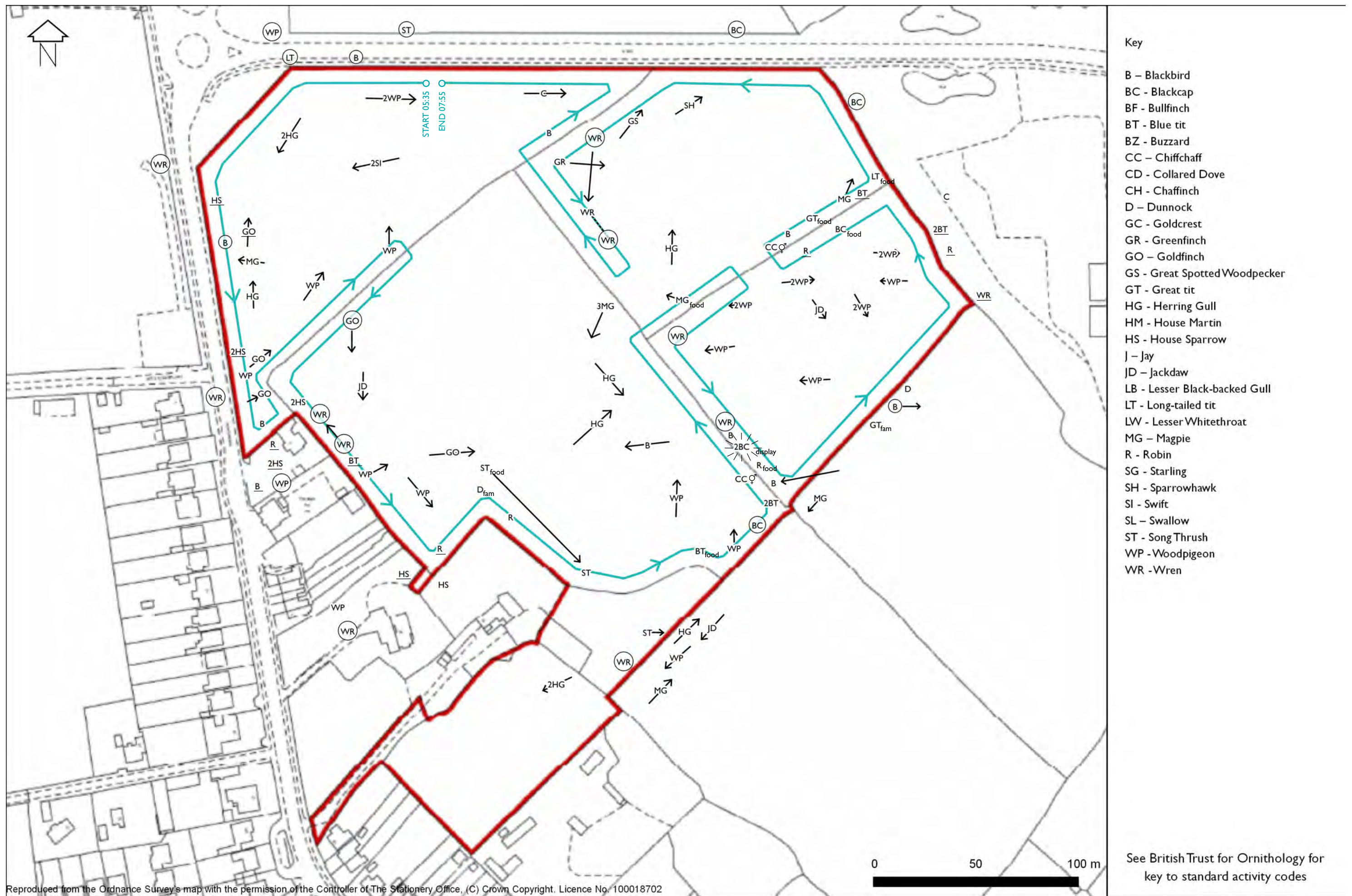


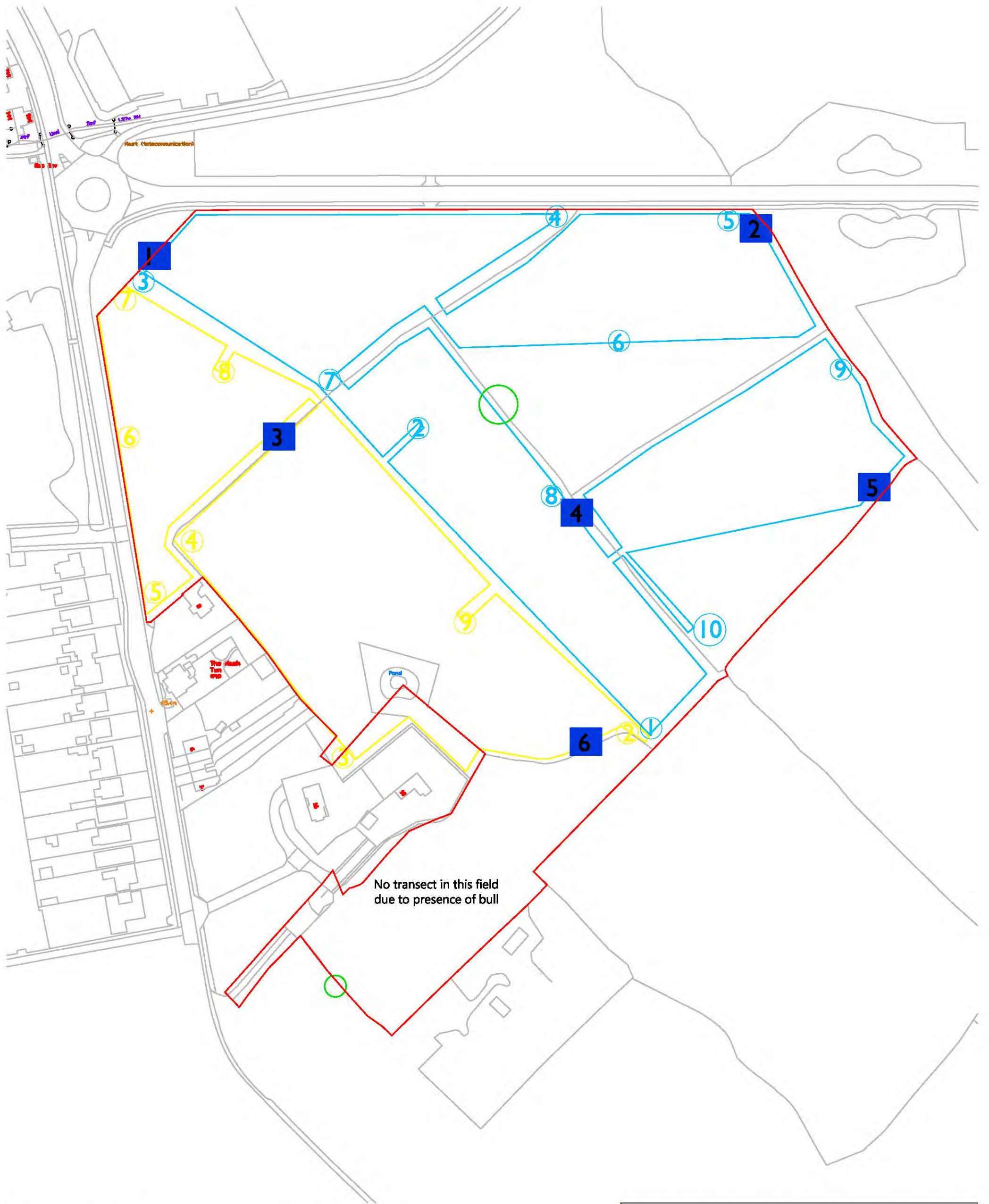
- Key
- Bare ground
 - Broadleaved woodland - semi-natural
 - Parkland/scattered trees - broadleaved
 - SI Poor semi-improved grassland
 - Scrub - dense/ continuous
 - Scrub - scattered
 - Intact hedge - species-poor
 - Hedge with trees - species-poor
 - Dry ditch
 - Fence
 - Scattered trees (broadleaved)
 - Target Note







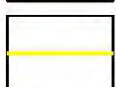




Site boundary



Transect - East



Transect - West



Transect listening point



Automated detector location



Tree with bat roost potential

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Castlewood Properties Ventures Ltd

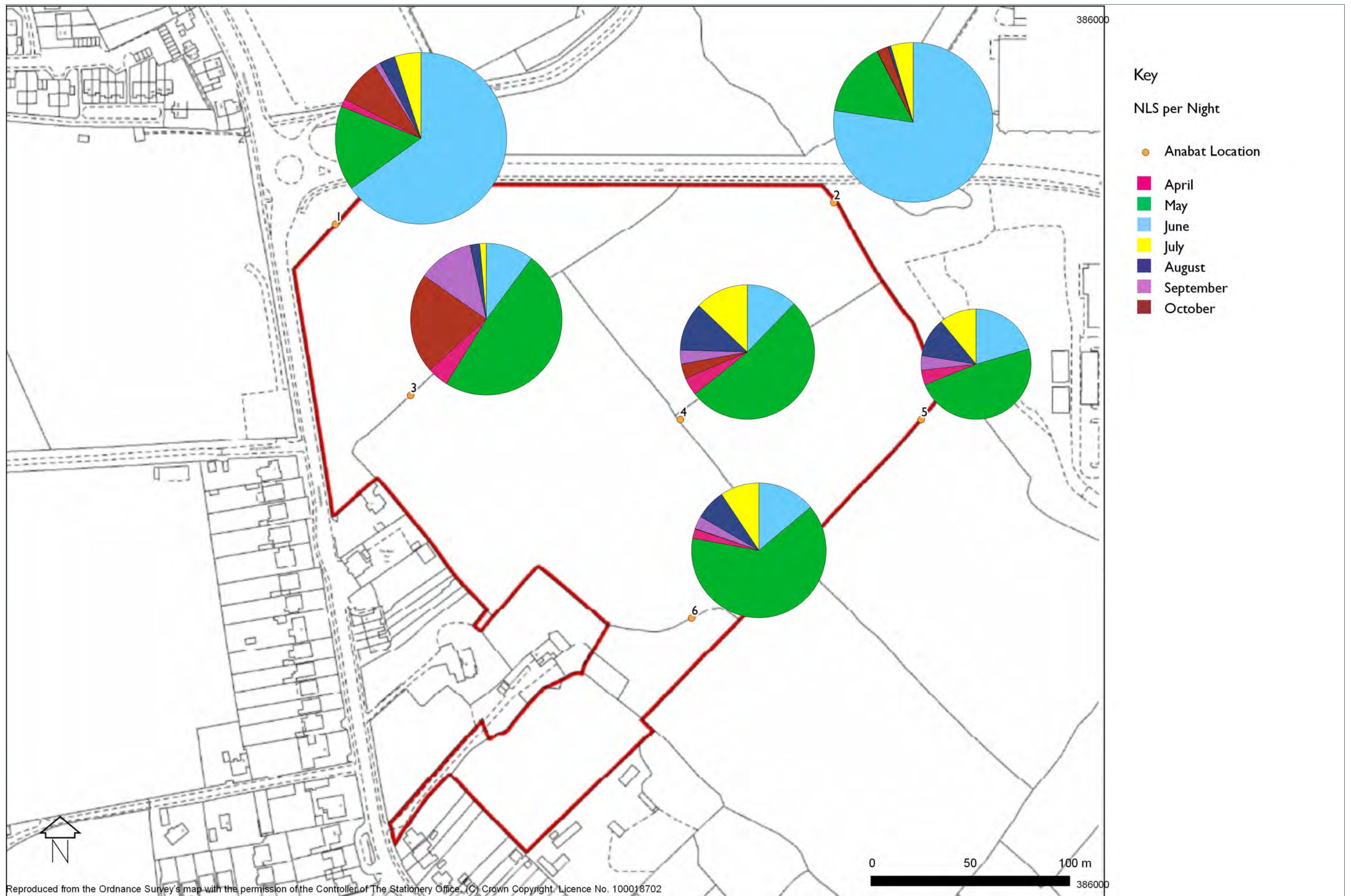
Land off the A363 White Horse Business Park

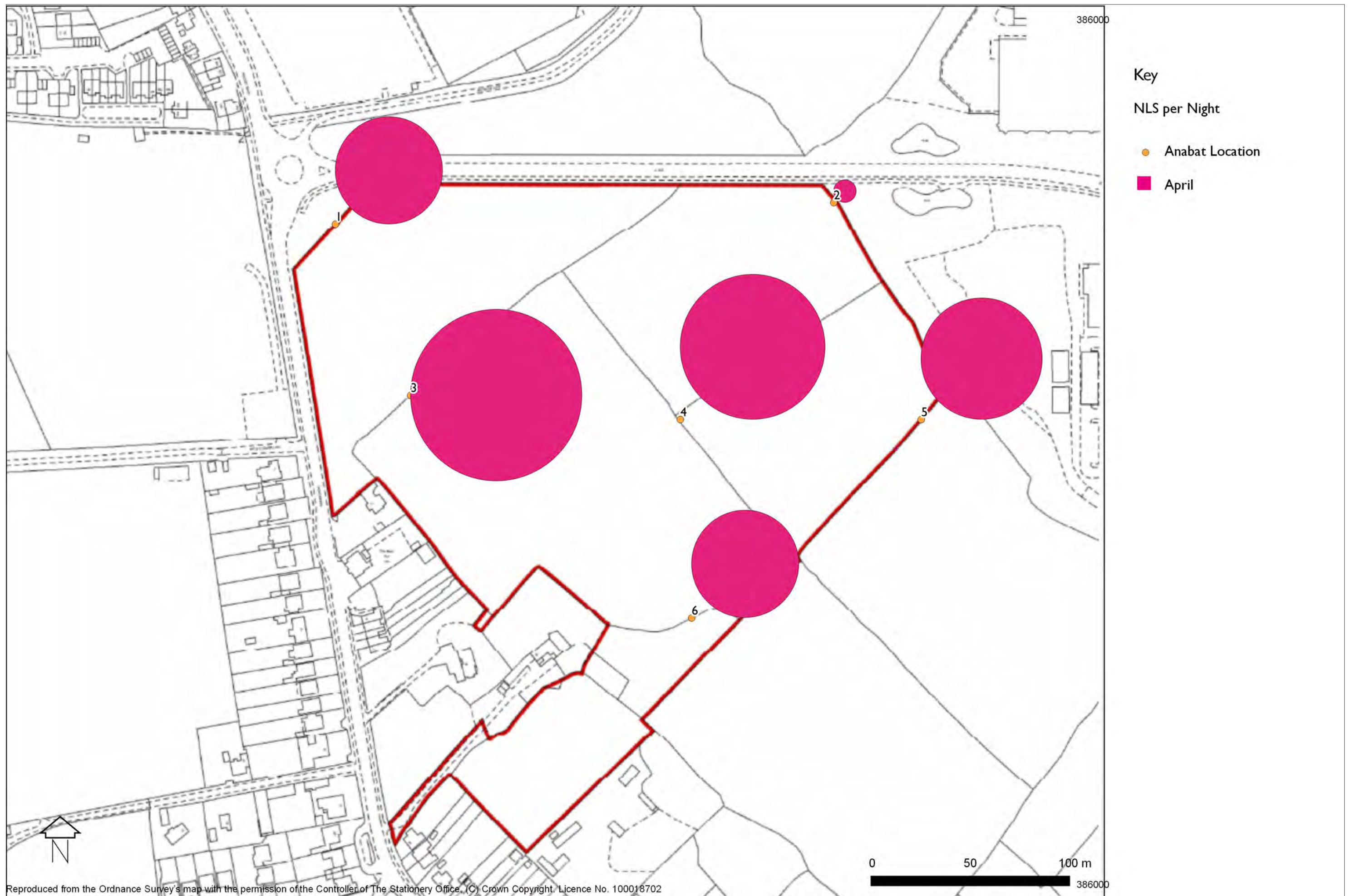
Bat Survey Plan

February 2020

11020

PRELIMINARY





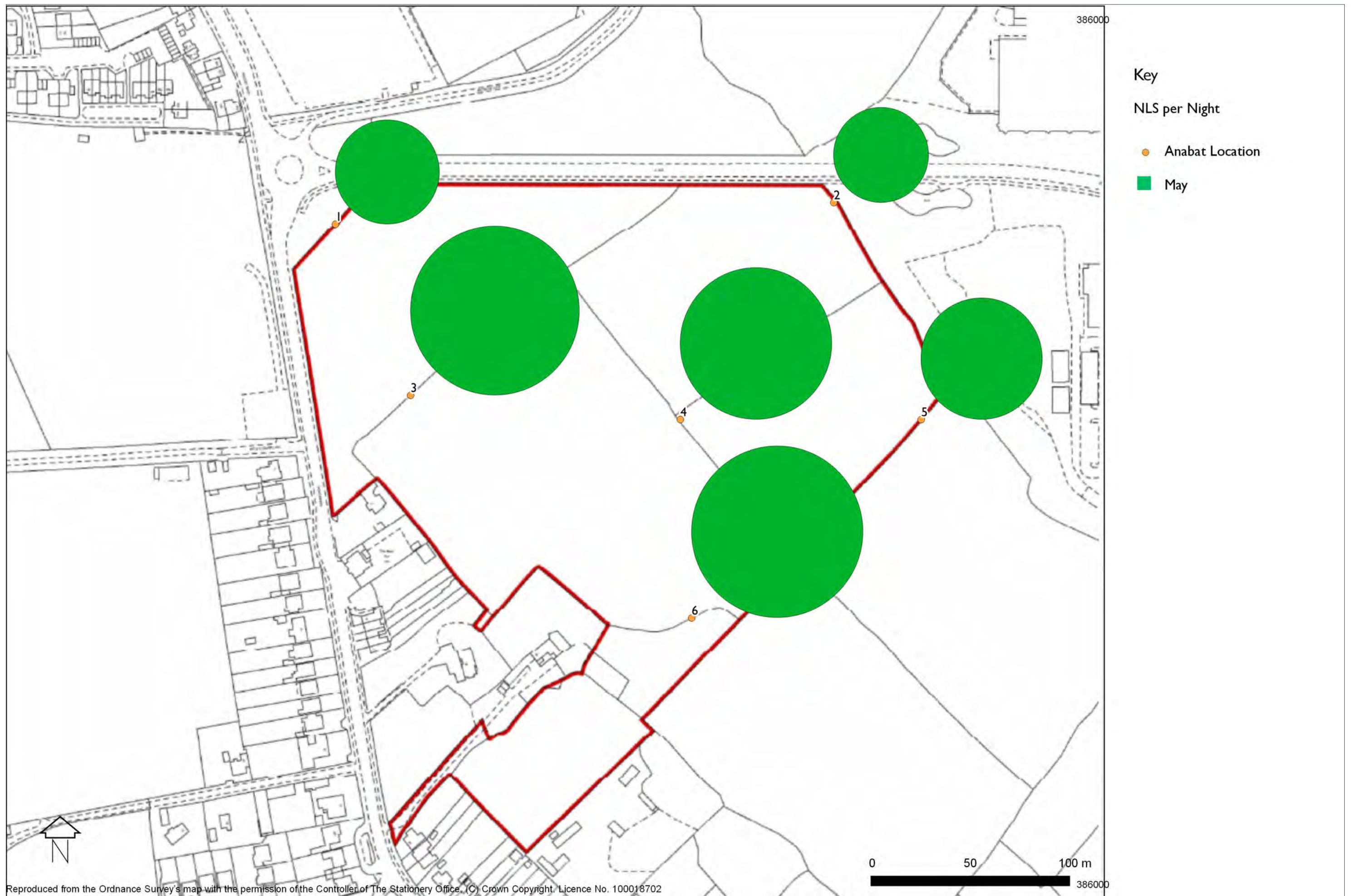
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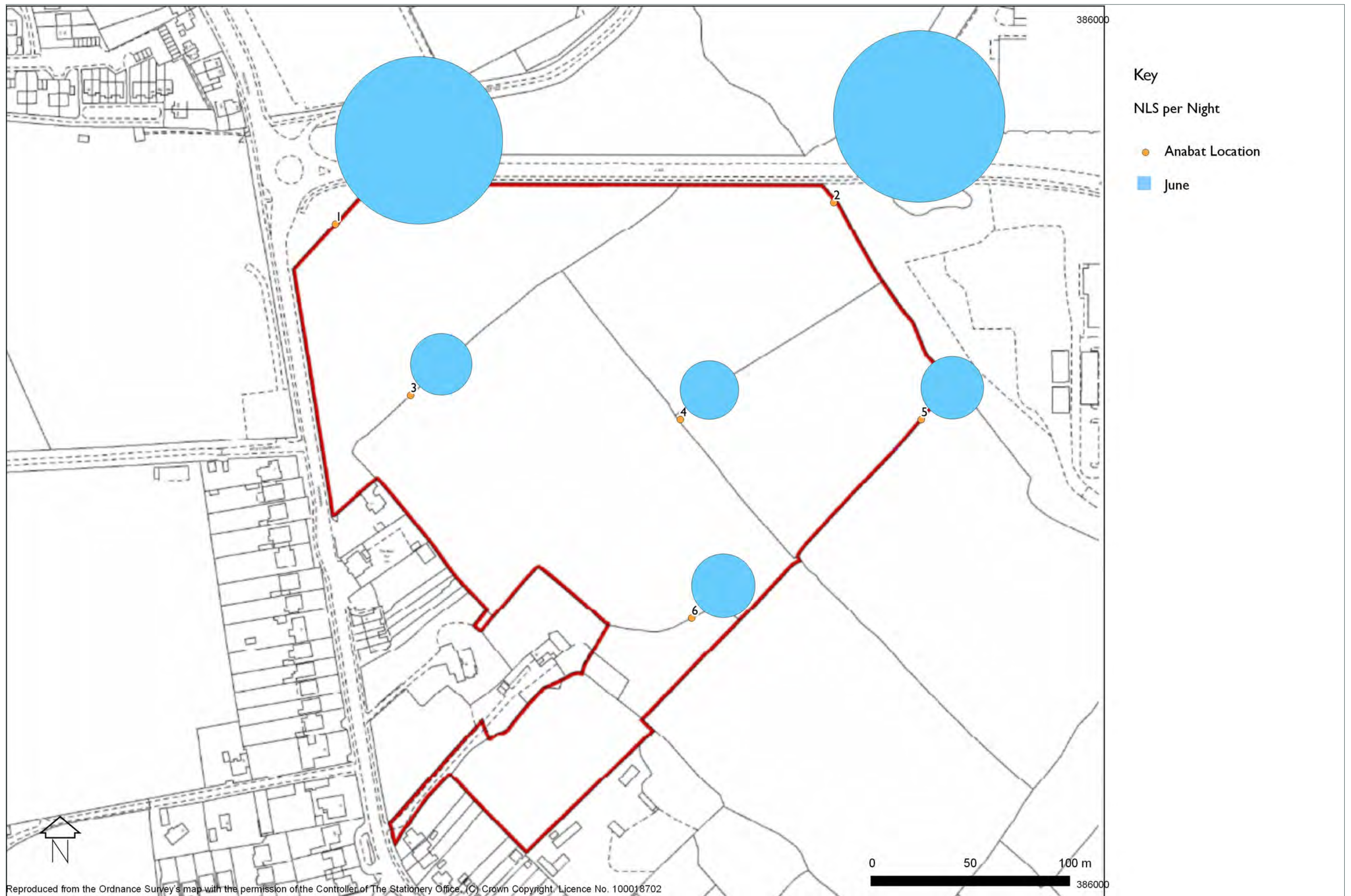
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Noctule, Leisler, Serotine (NLS) by night, April



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Noctule, Leisler, Serotine (NLS) by night, May



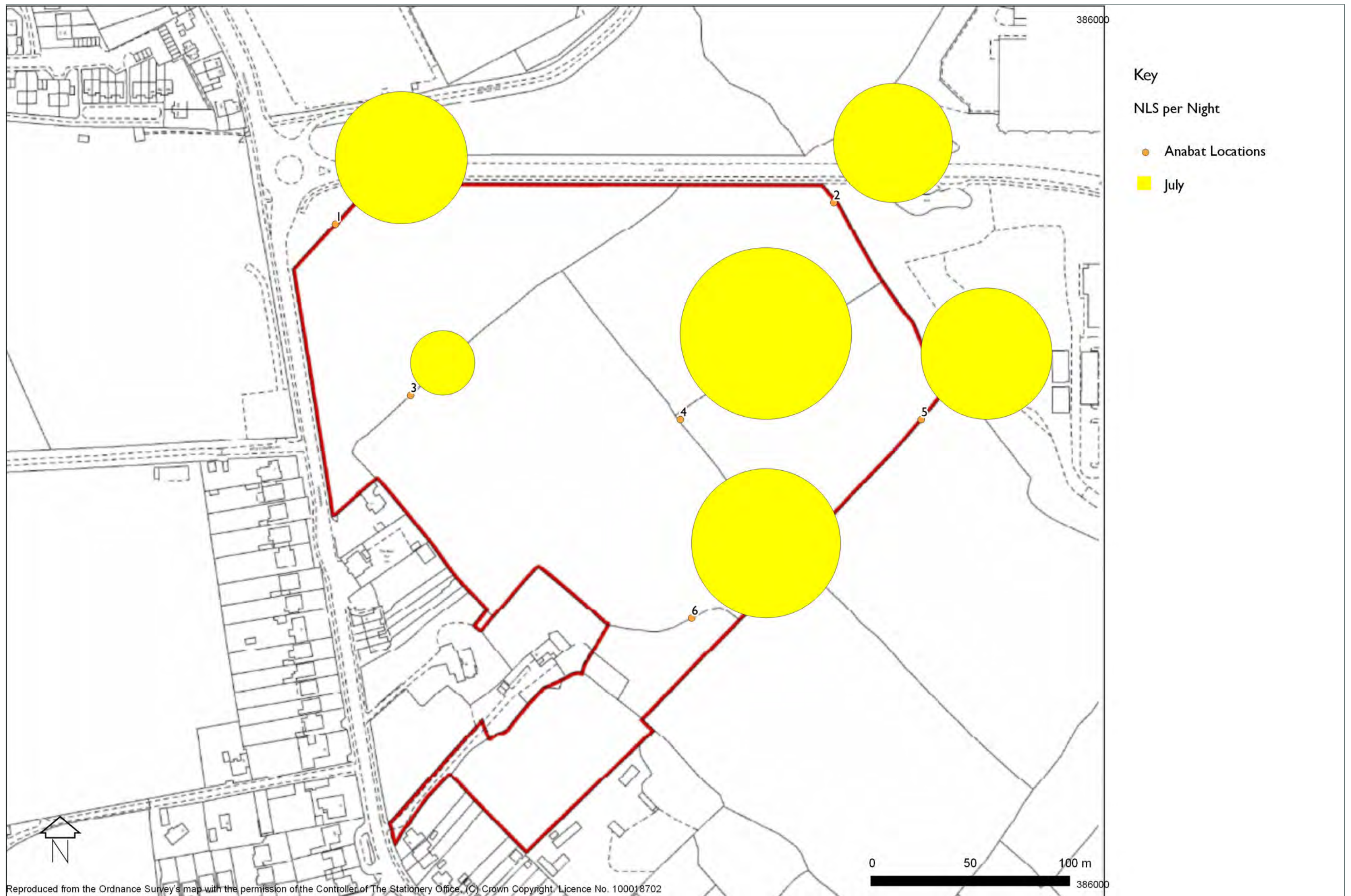
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Noctule, Leisler, Serotine (NLS) by night, June



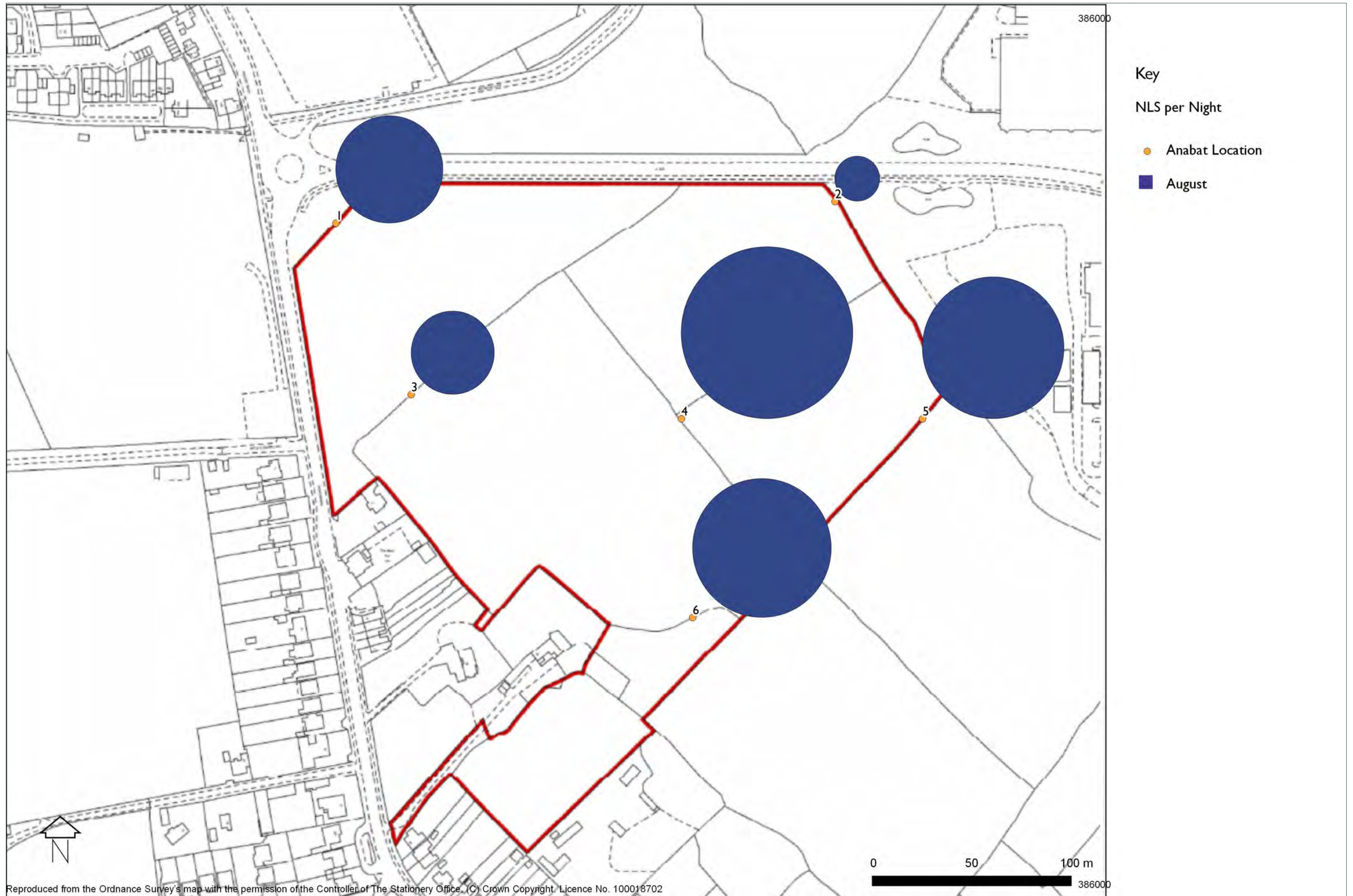
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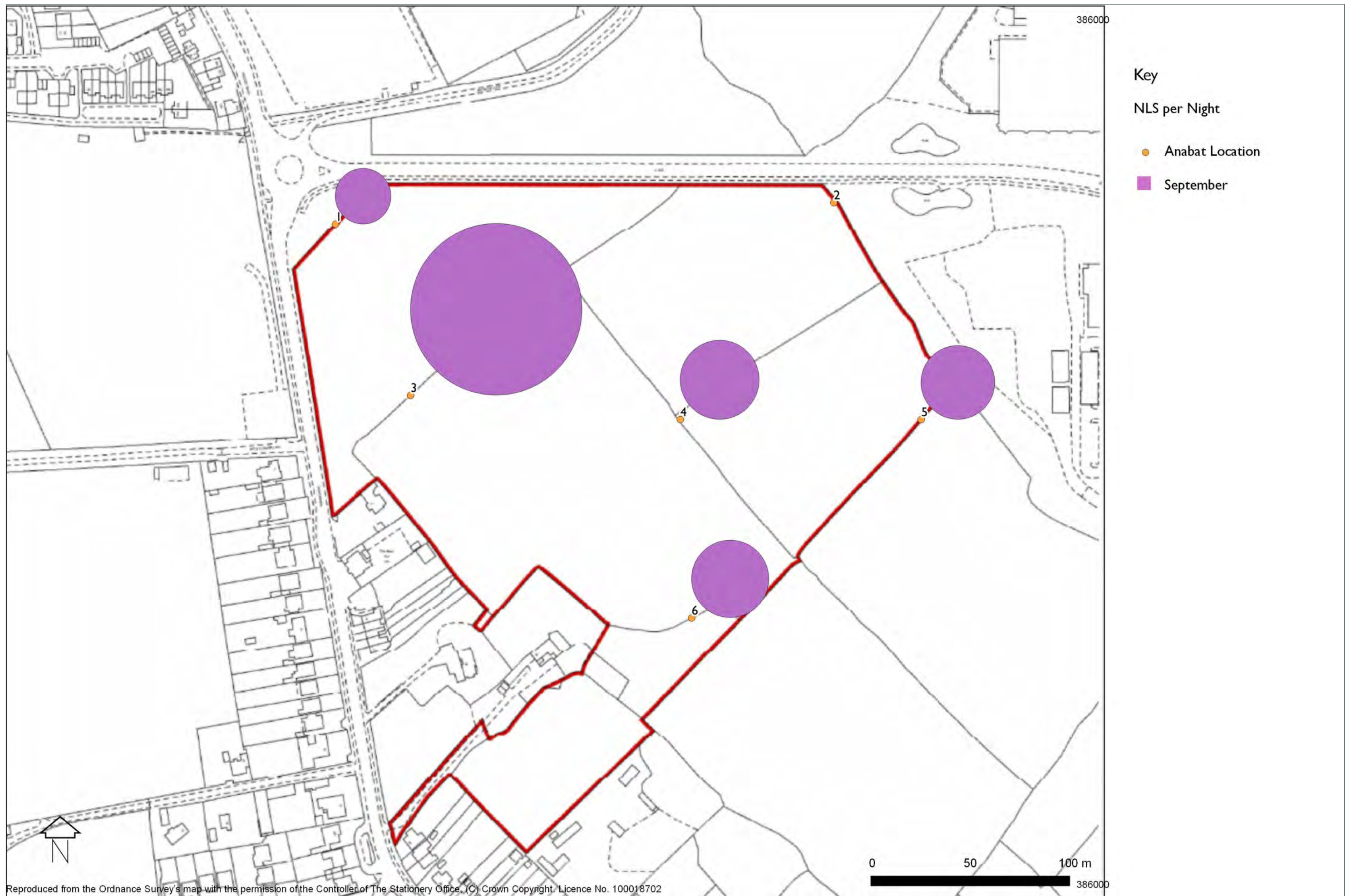
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Noctule, Leisler, Serotine (NLS) by night, July



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Noctule, Leisler, Serotine (NLS) by night, August



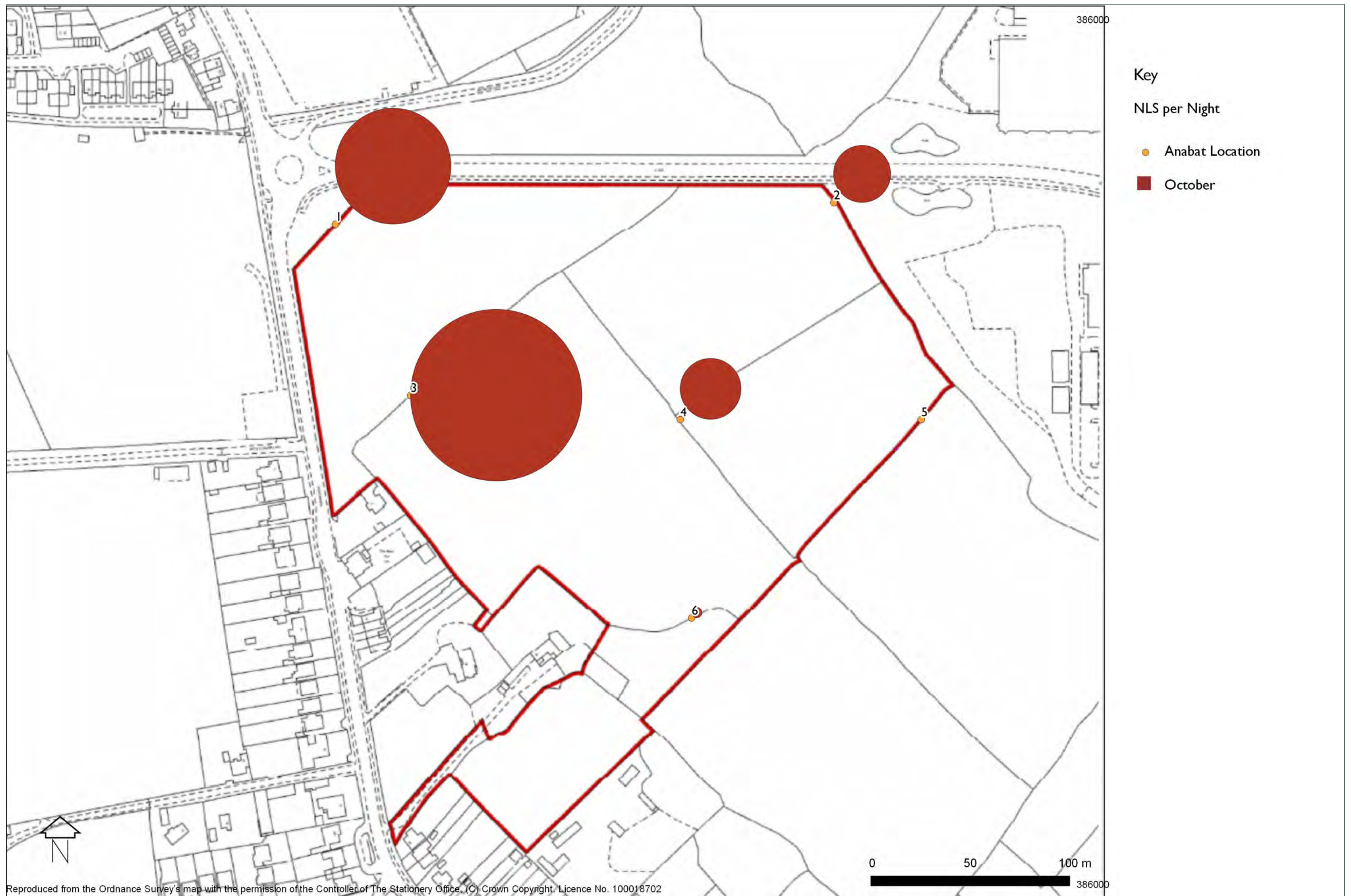
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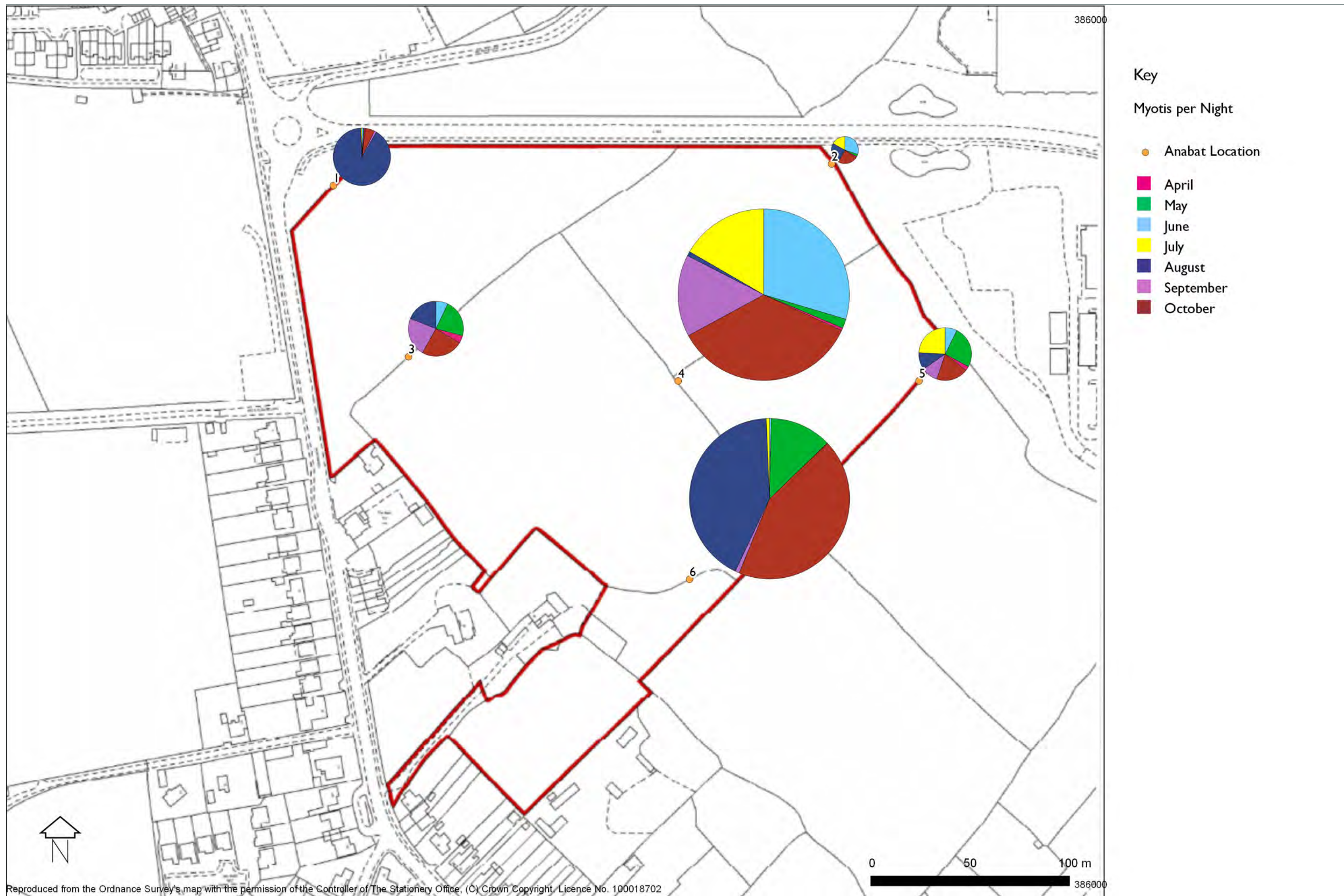
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

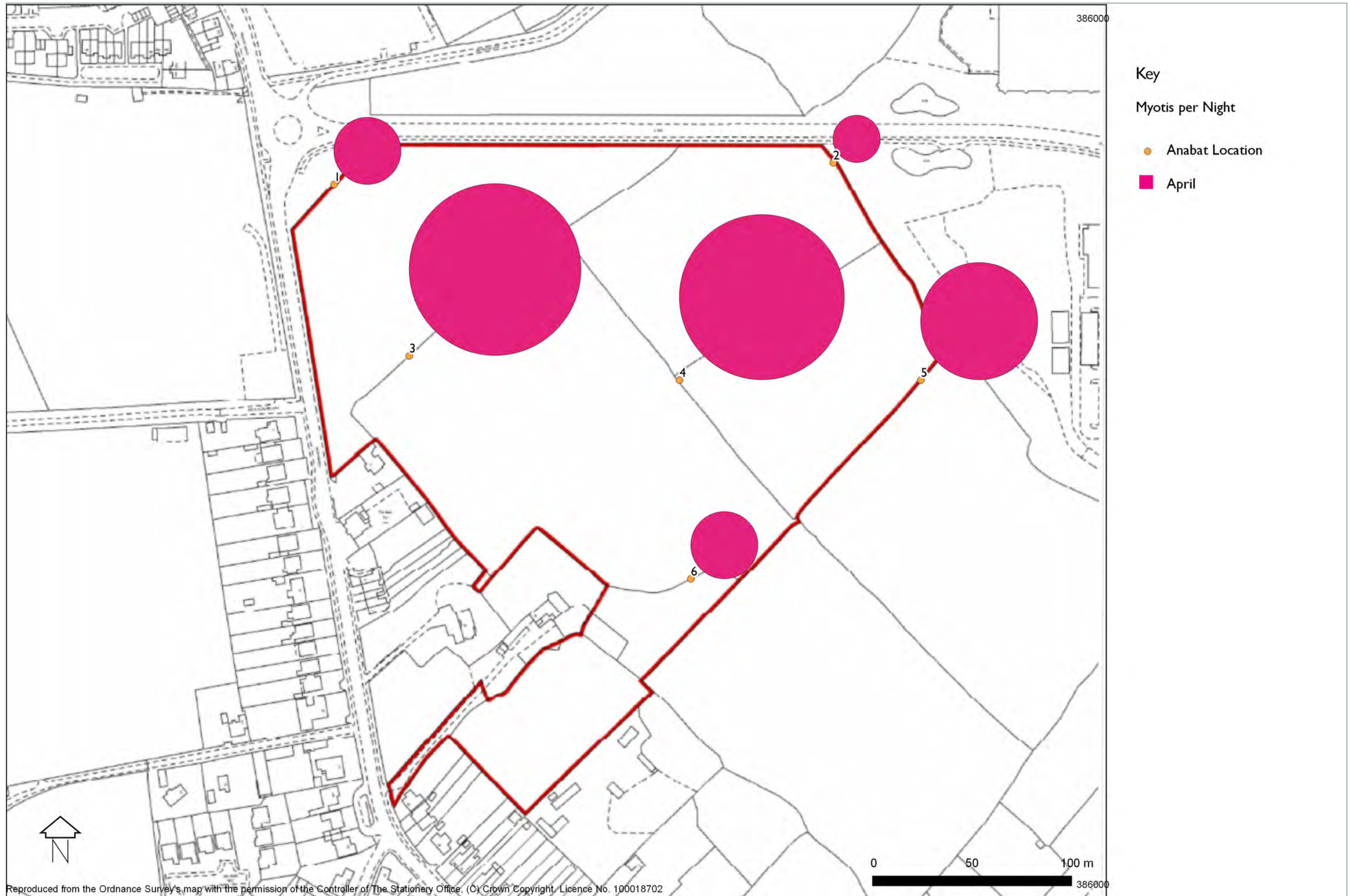
Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Noctule, Leisler, Serotine (NLS) by night, September



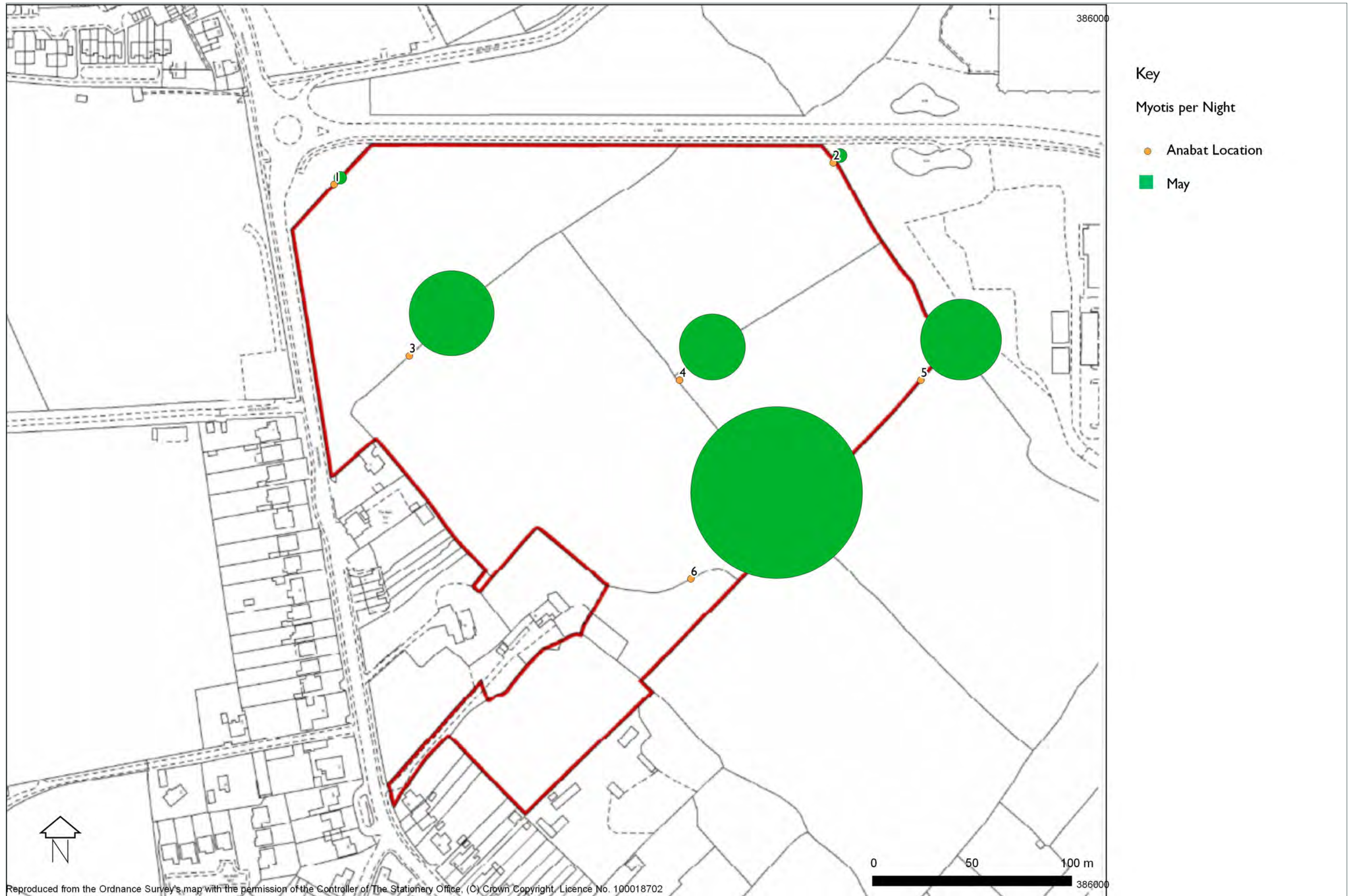
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Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Noctule, Leisler, Serotine (NLS) by night, October



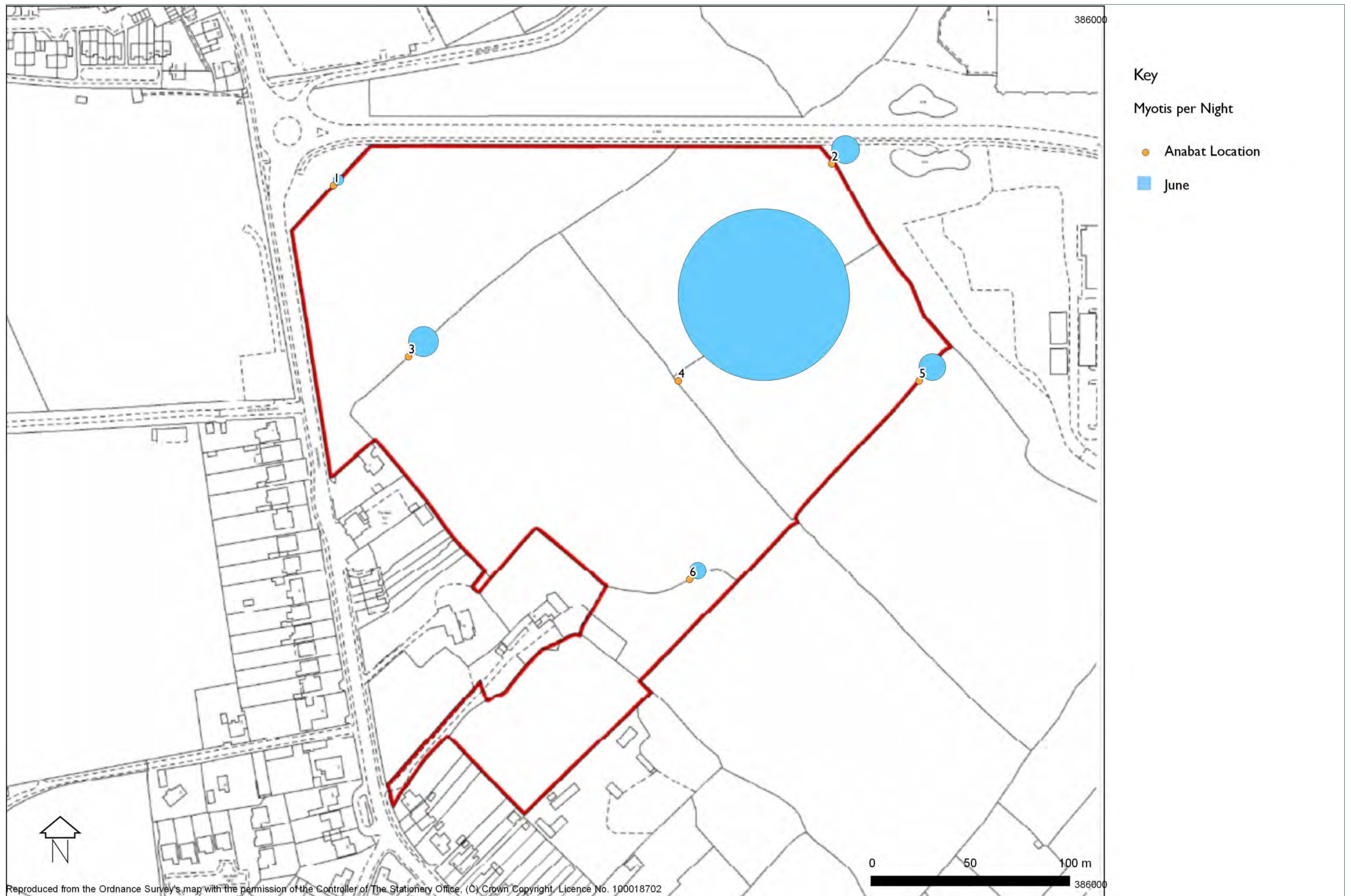
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Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Myotis Species by night

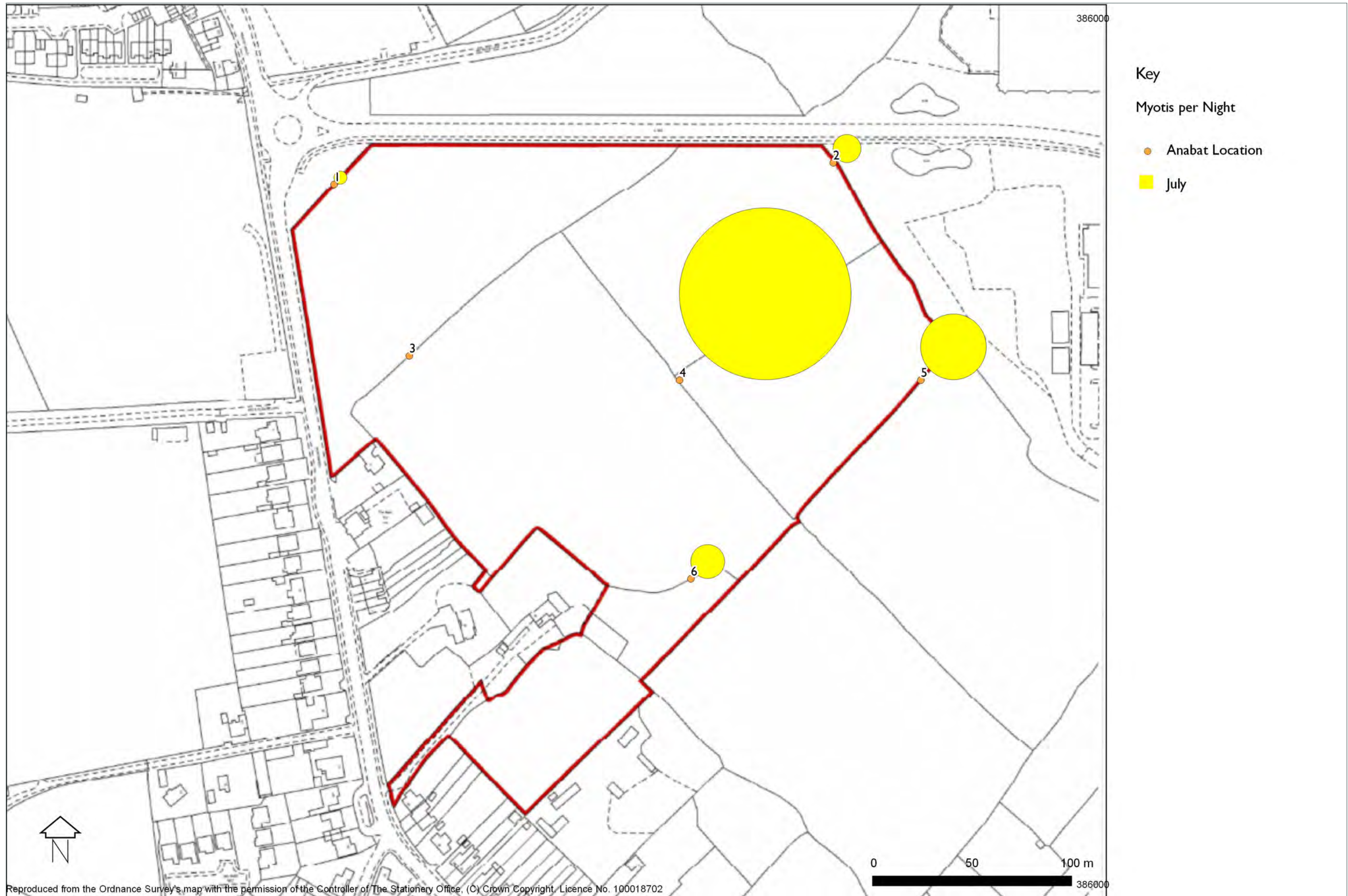


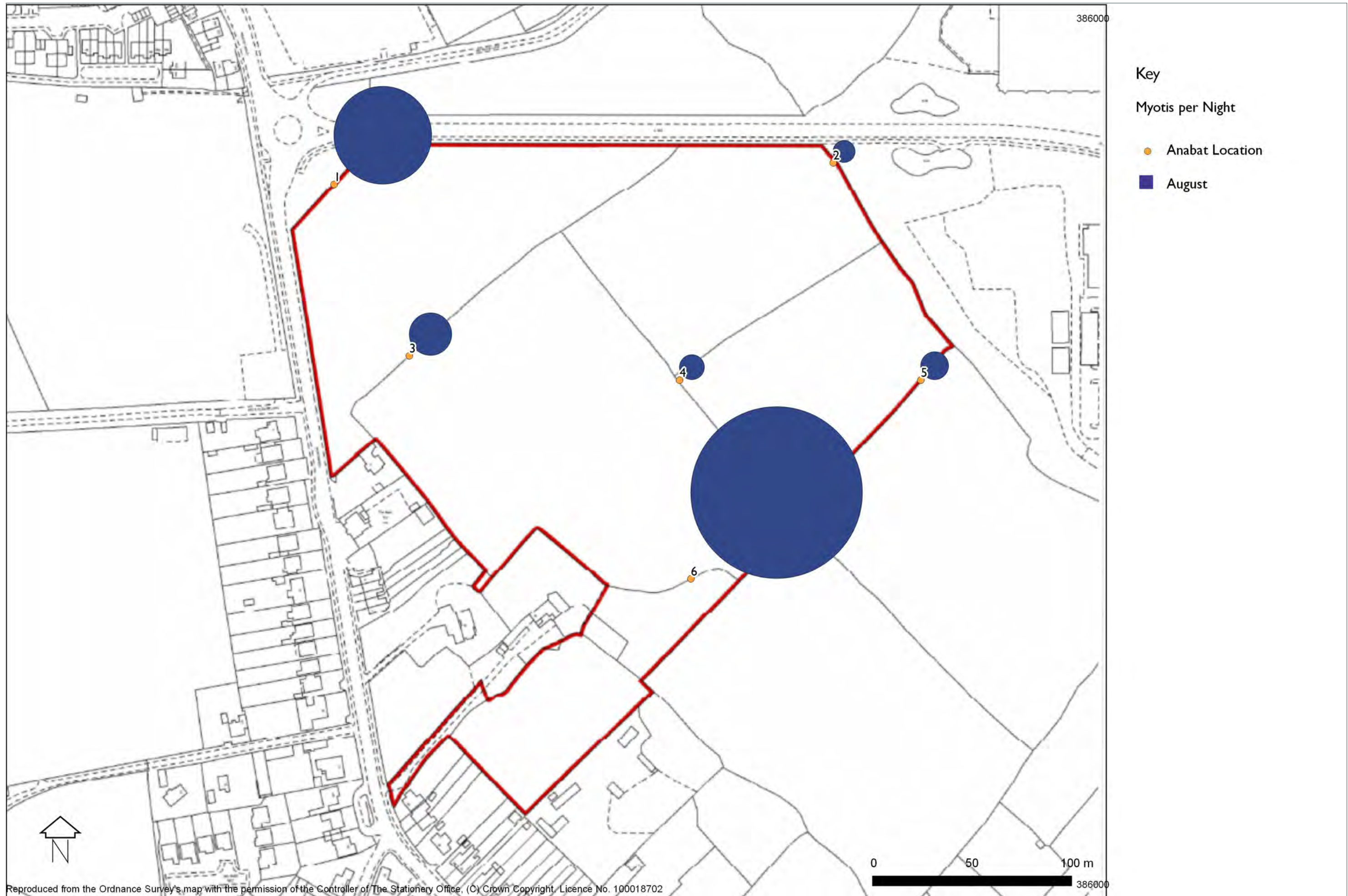
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Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Myotis Species by night, April



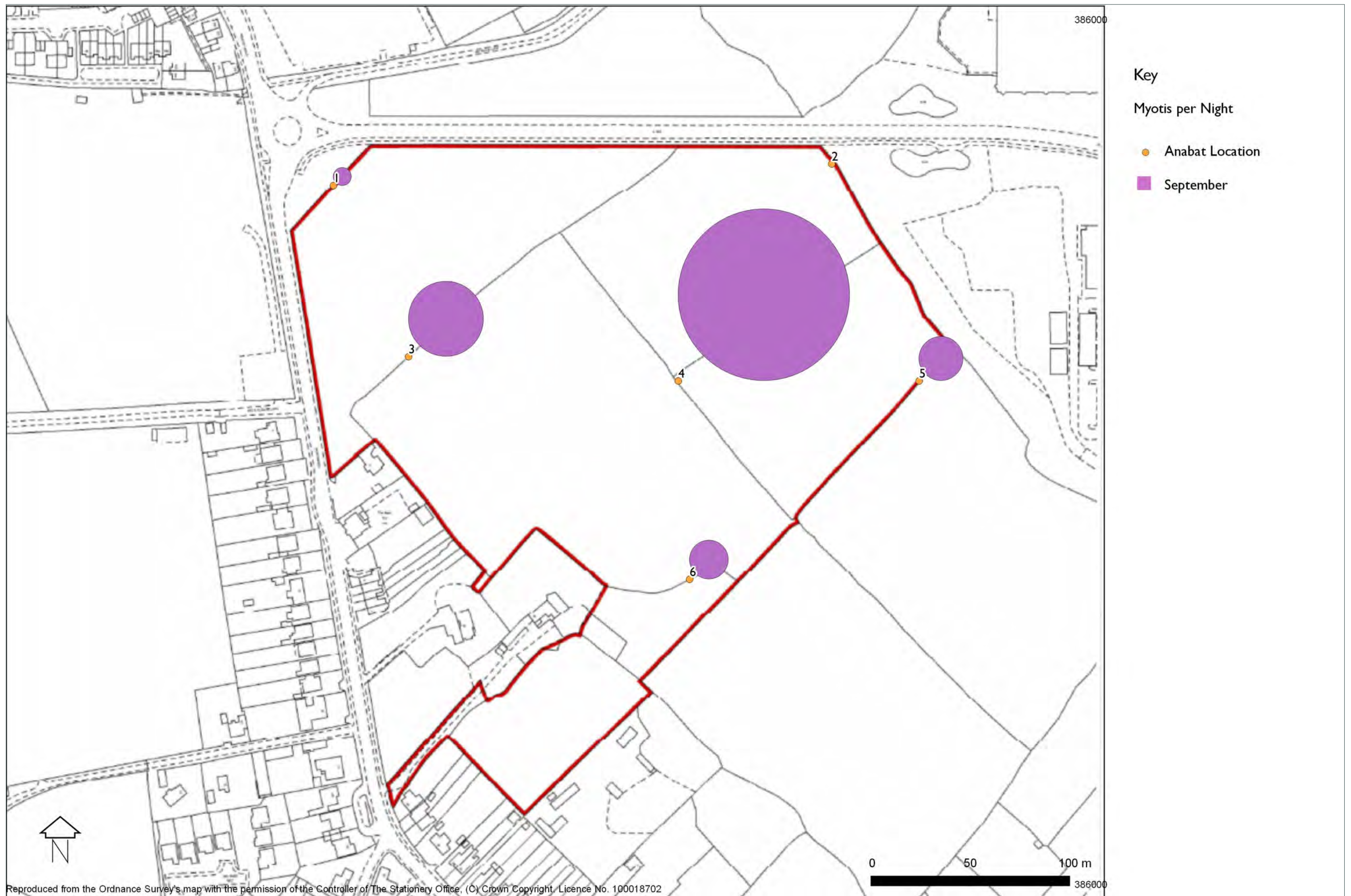
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Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Myotis Species by night, May

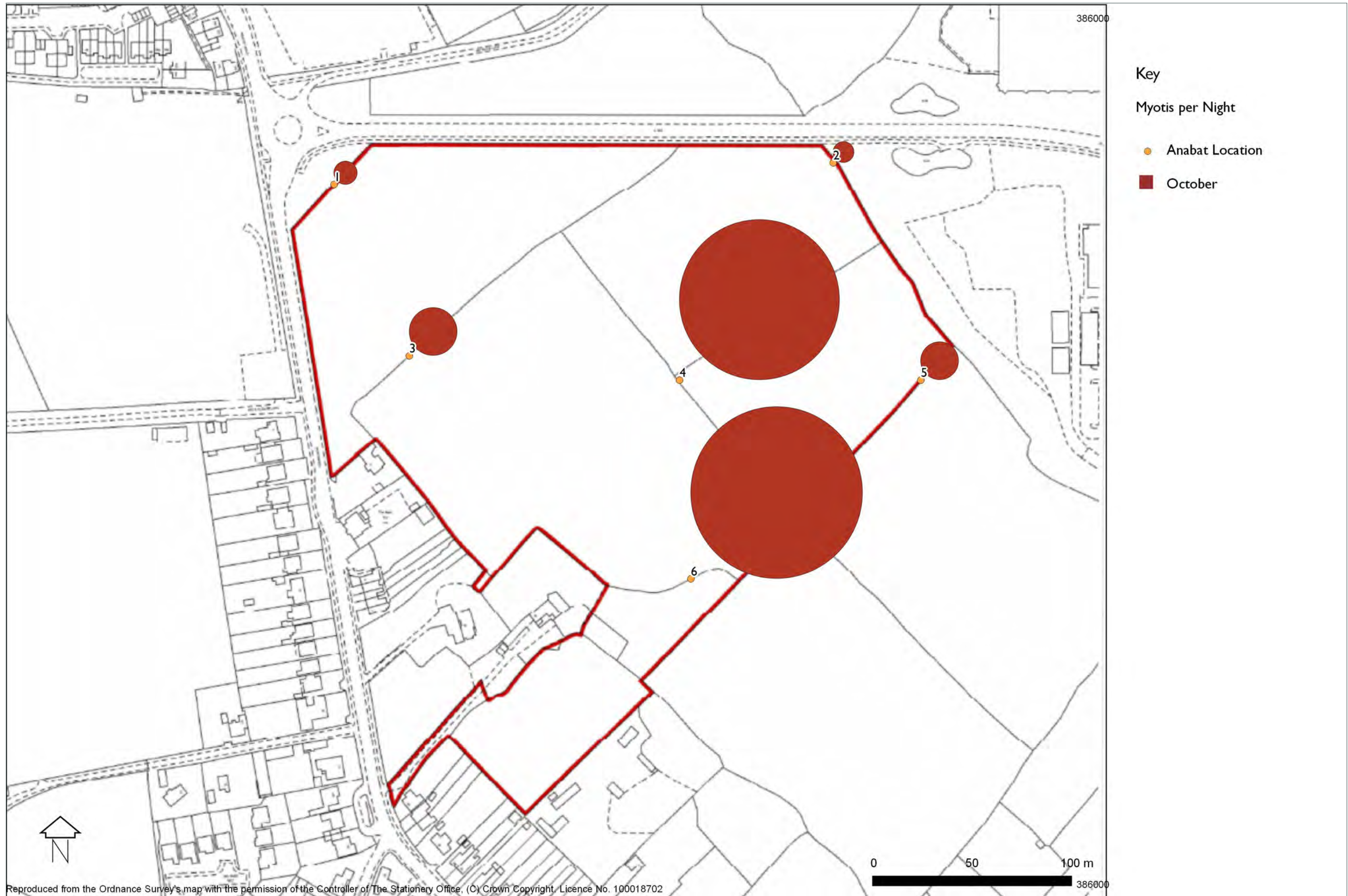




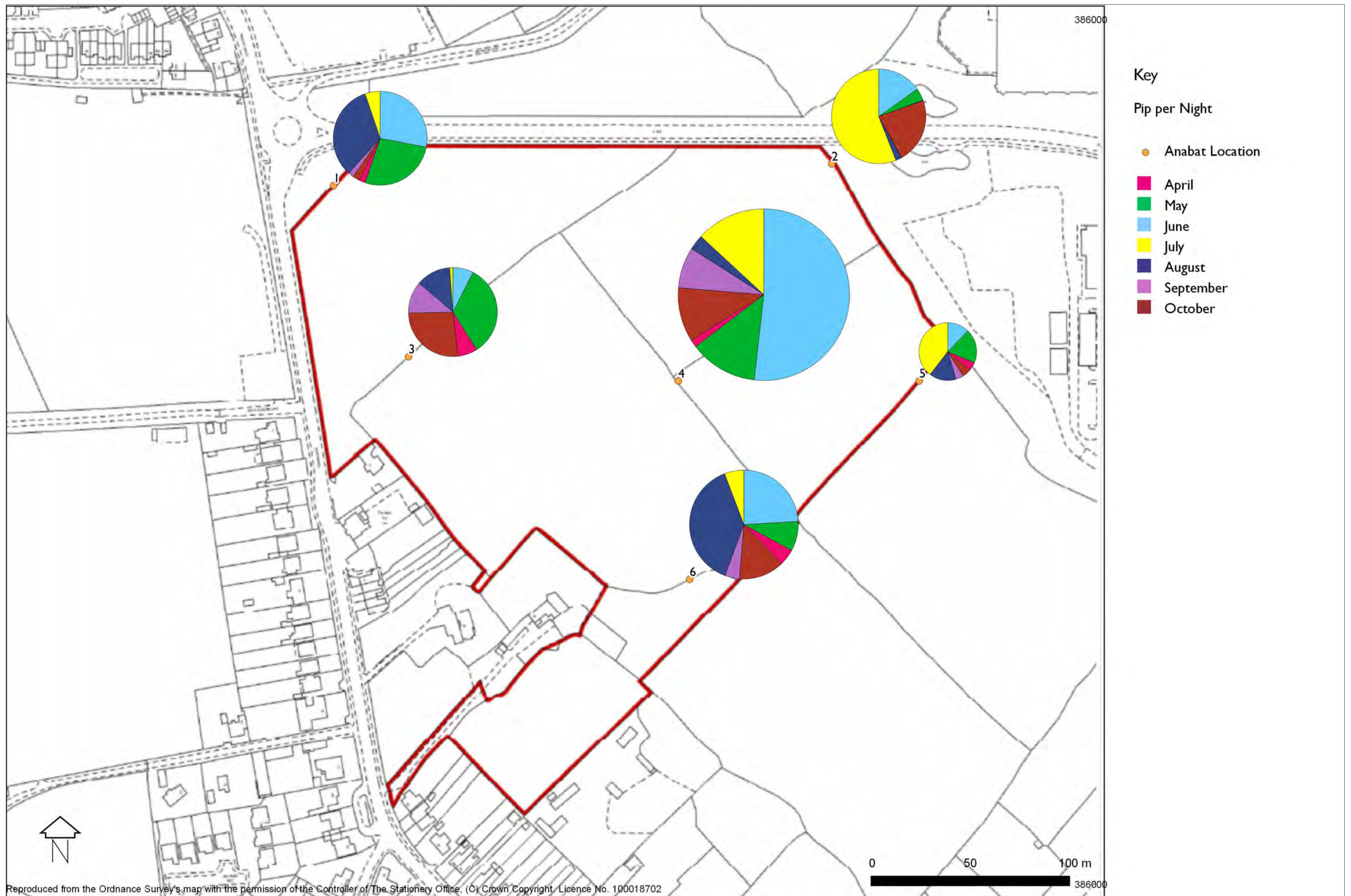


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Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Myotis Species by night, August

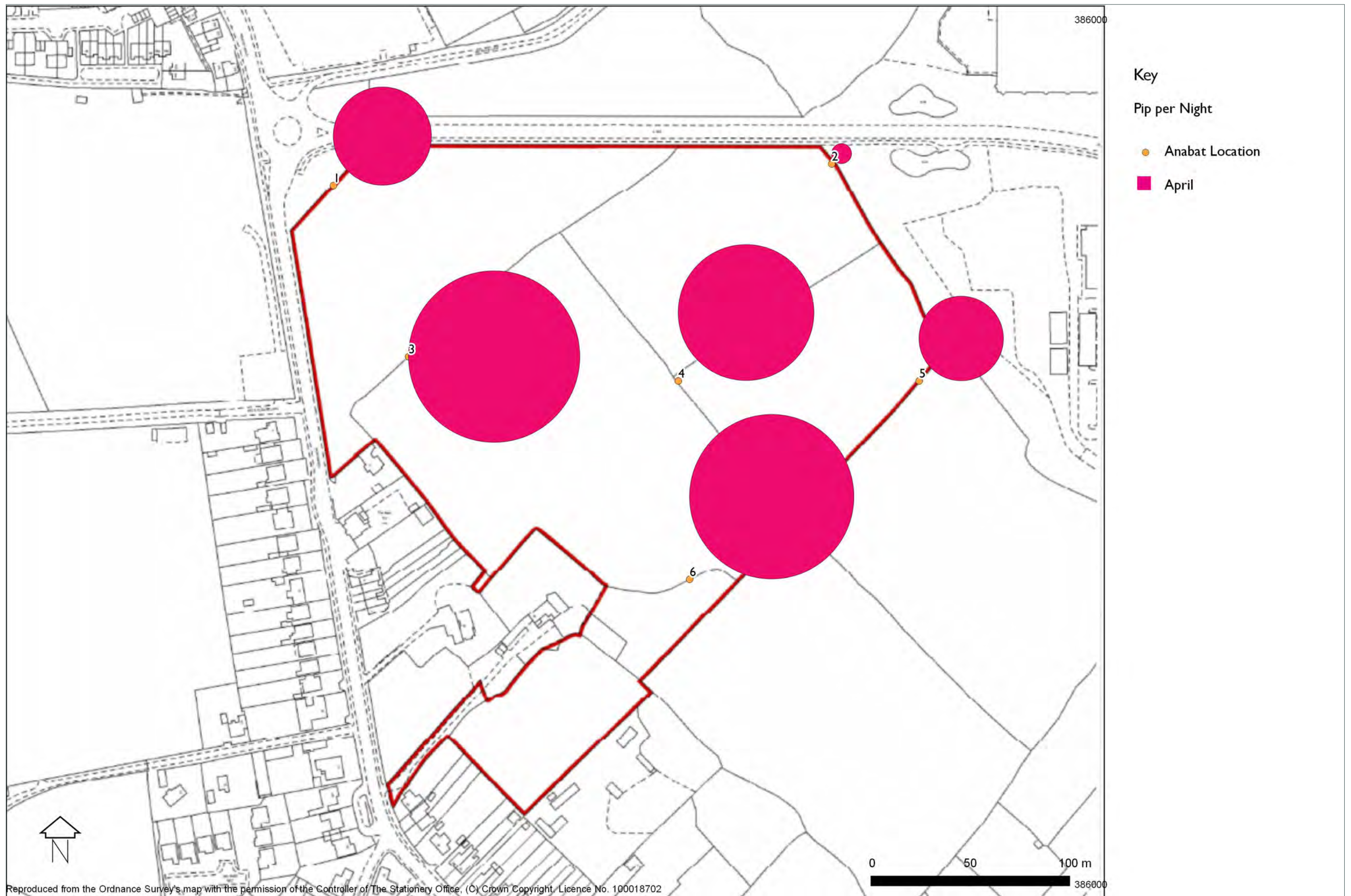




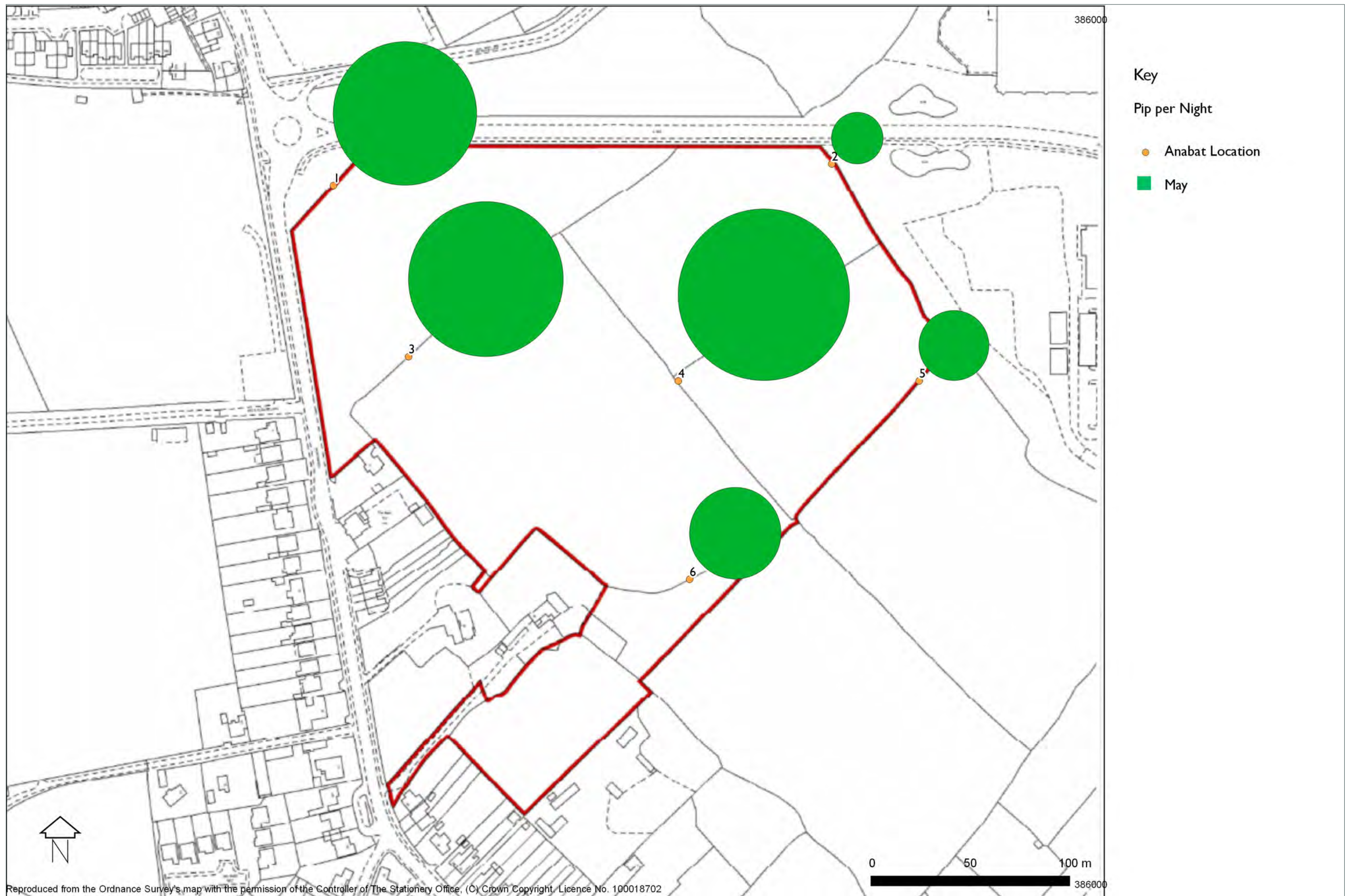
Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Myotis Species by night, October



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Pipistrelle species by night



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Pipistrelle species by night, April



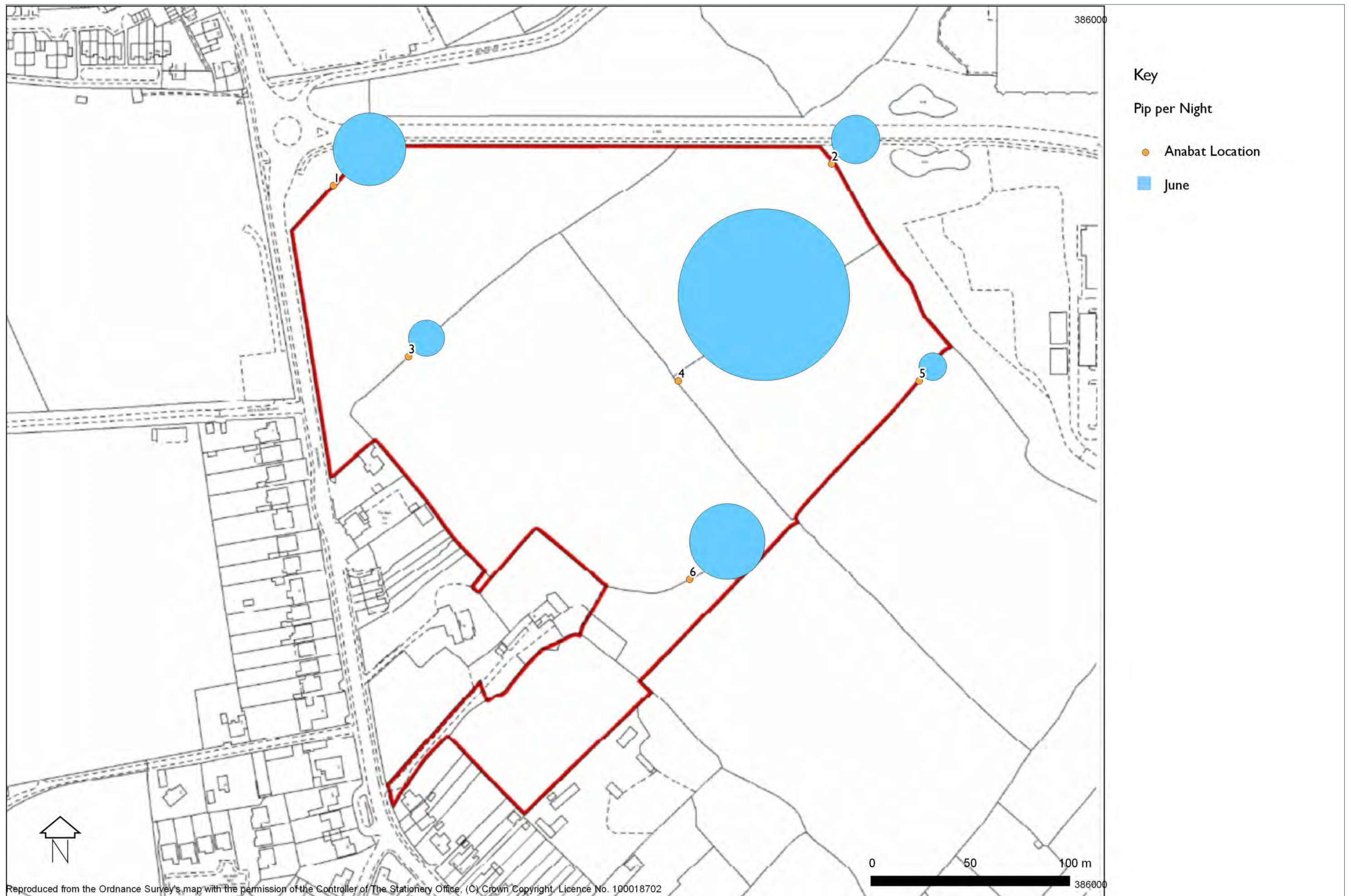
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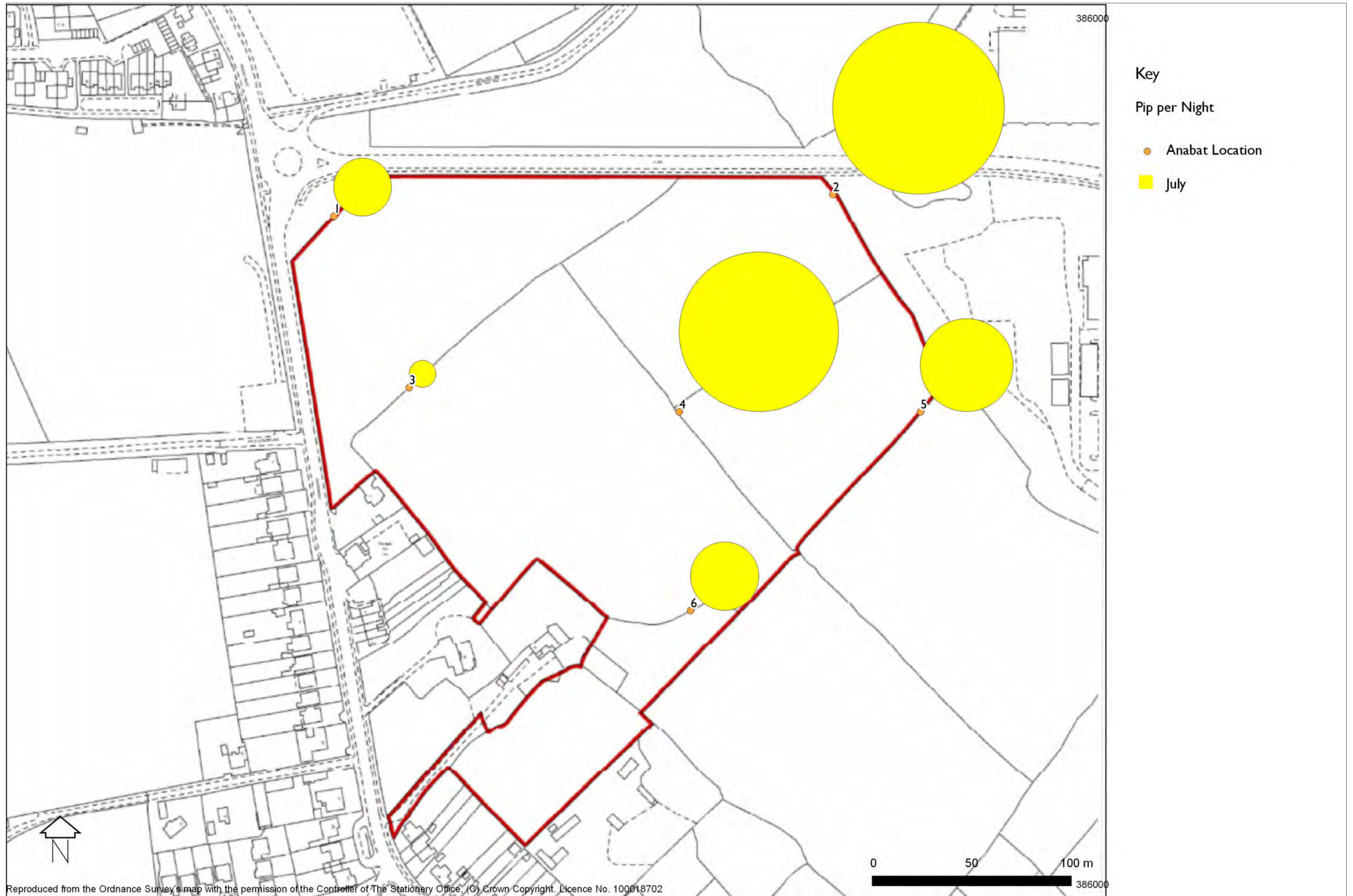
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: LLand at White Horse Business Park, Trowbridge
Figure: Pipistrelle species by night, May



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Pipistrelle species by night, June



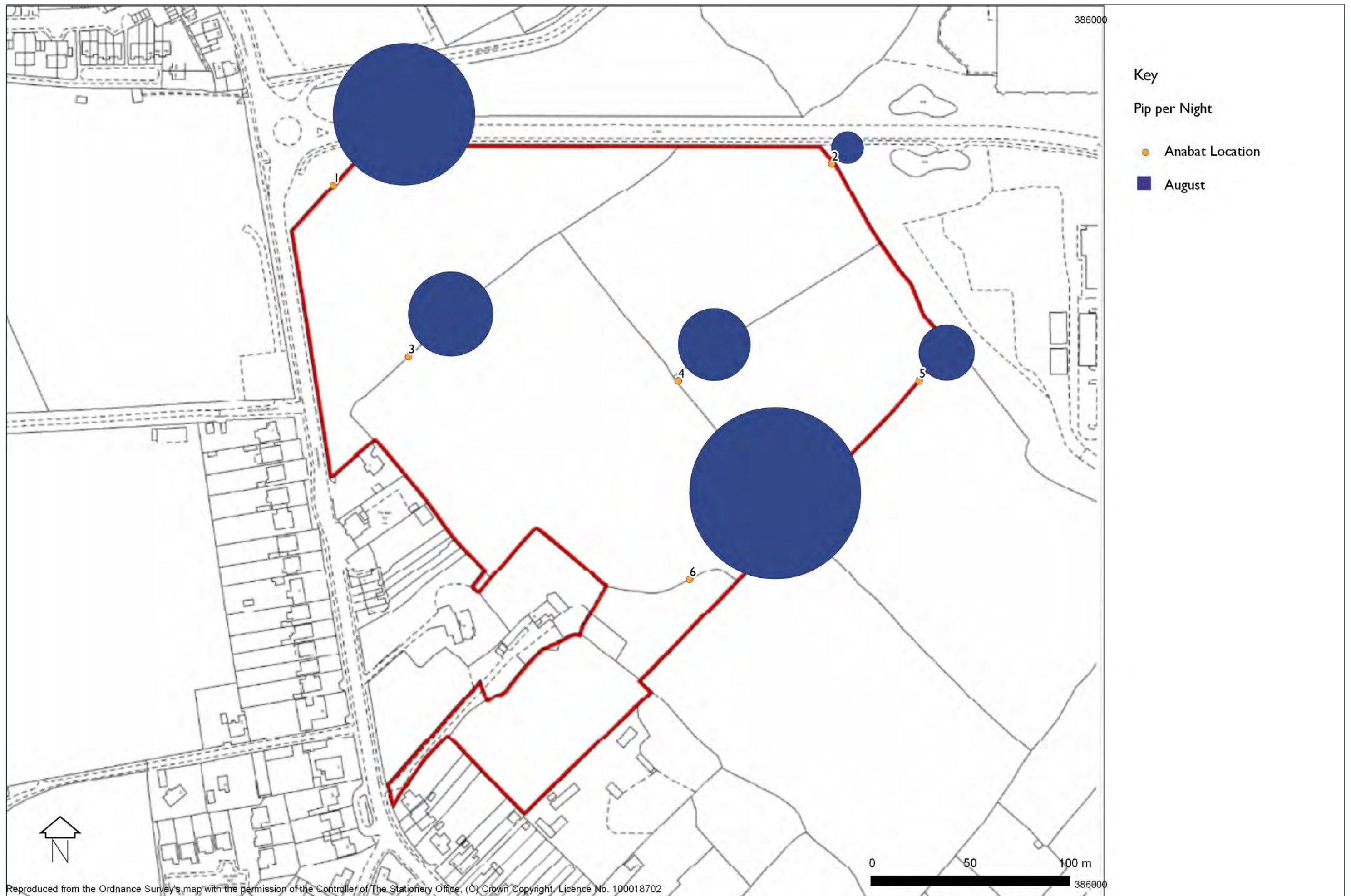
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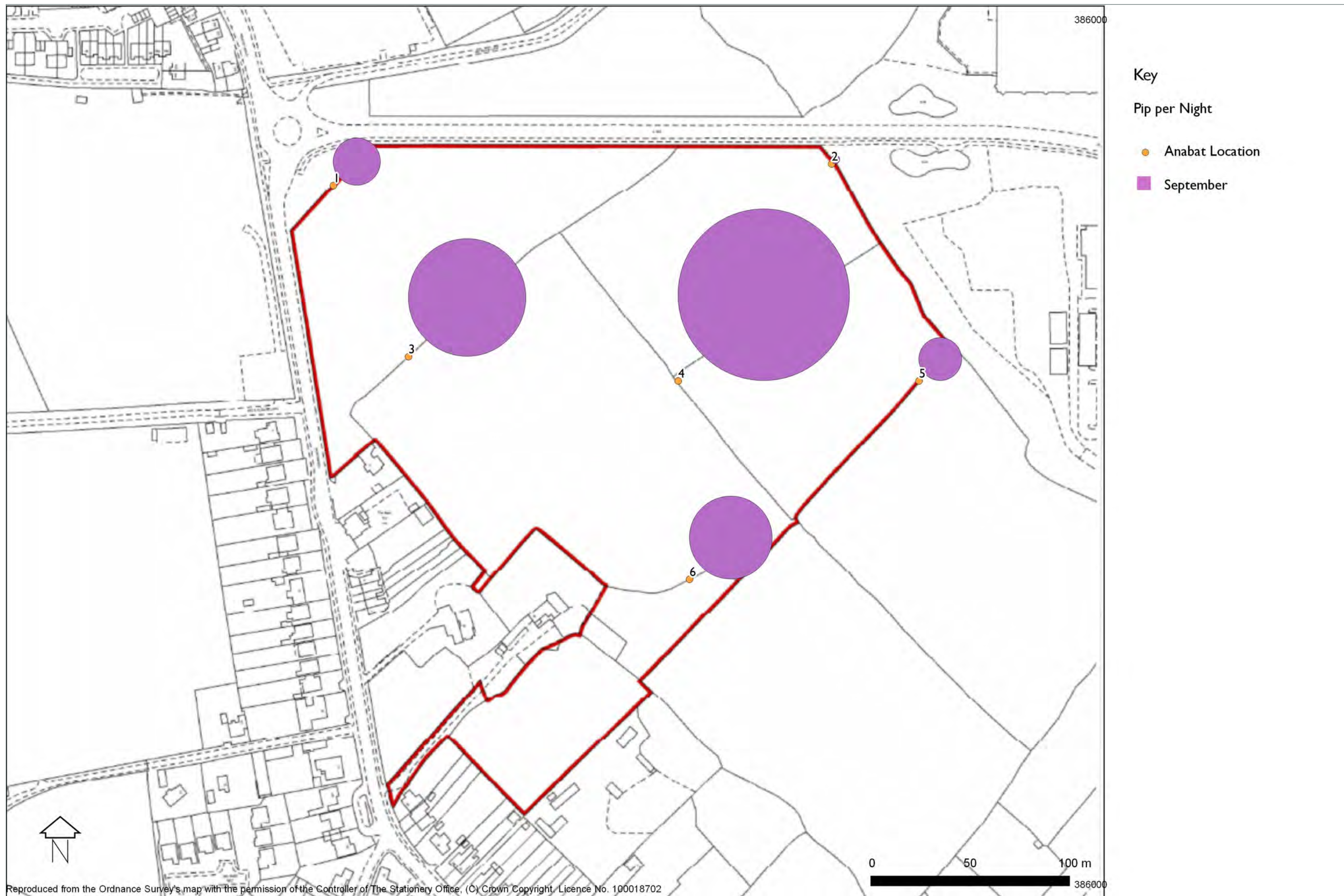
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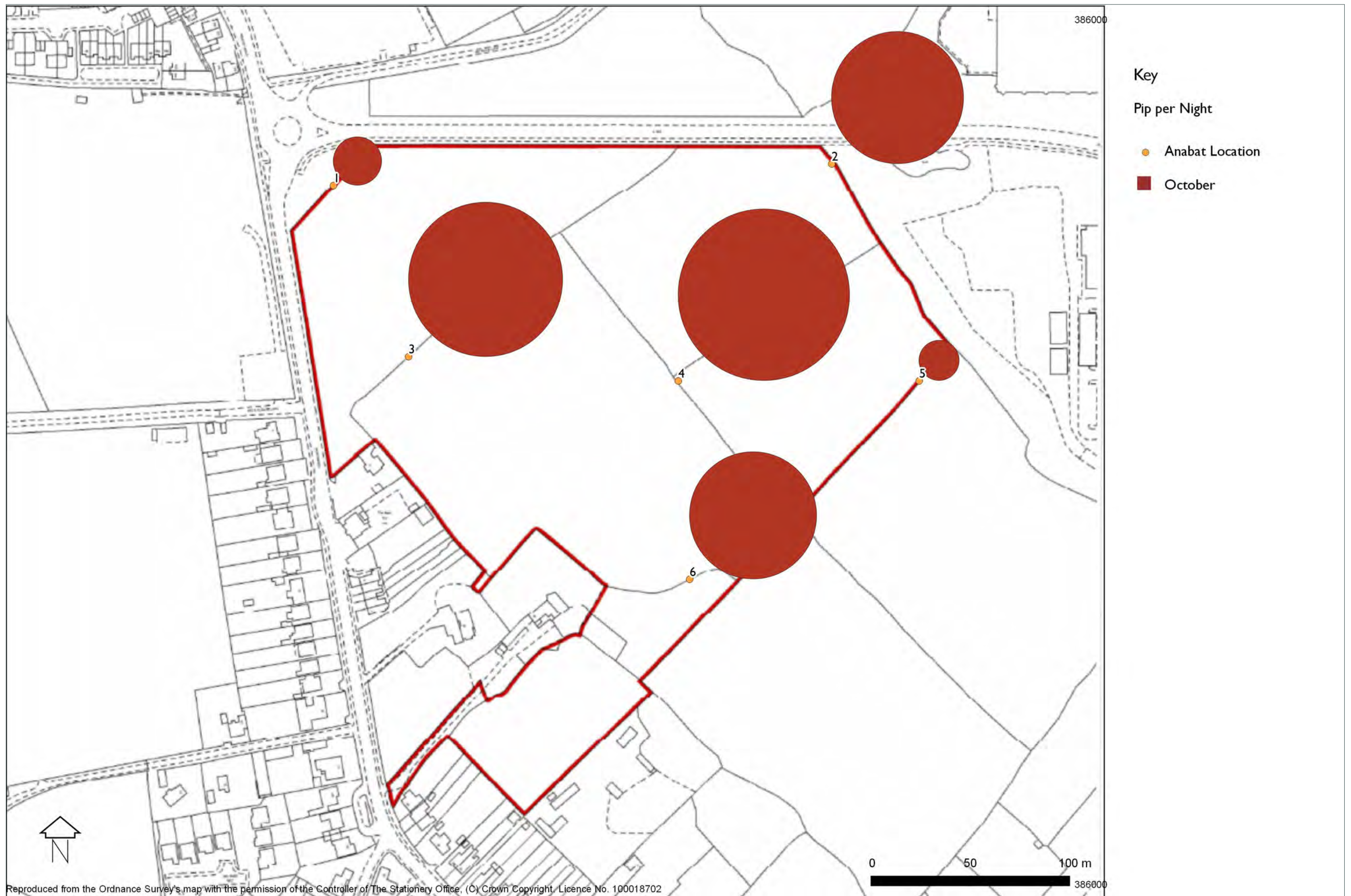
Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

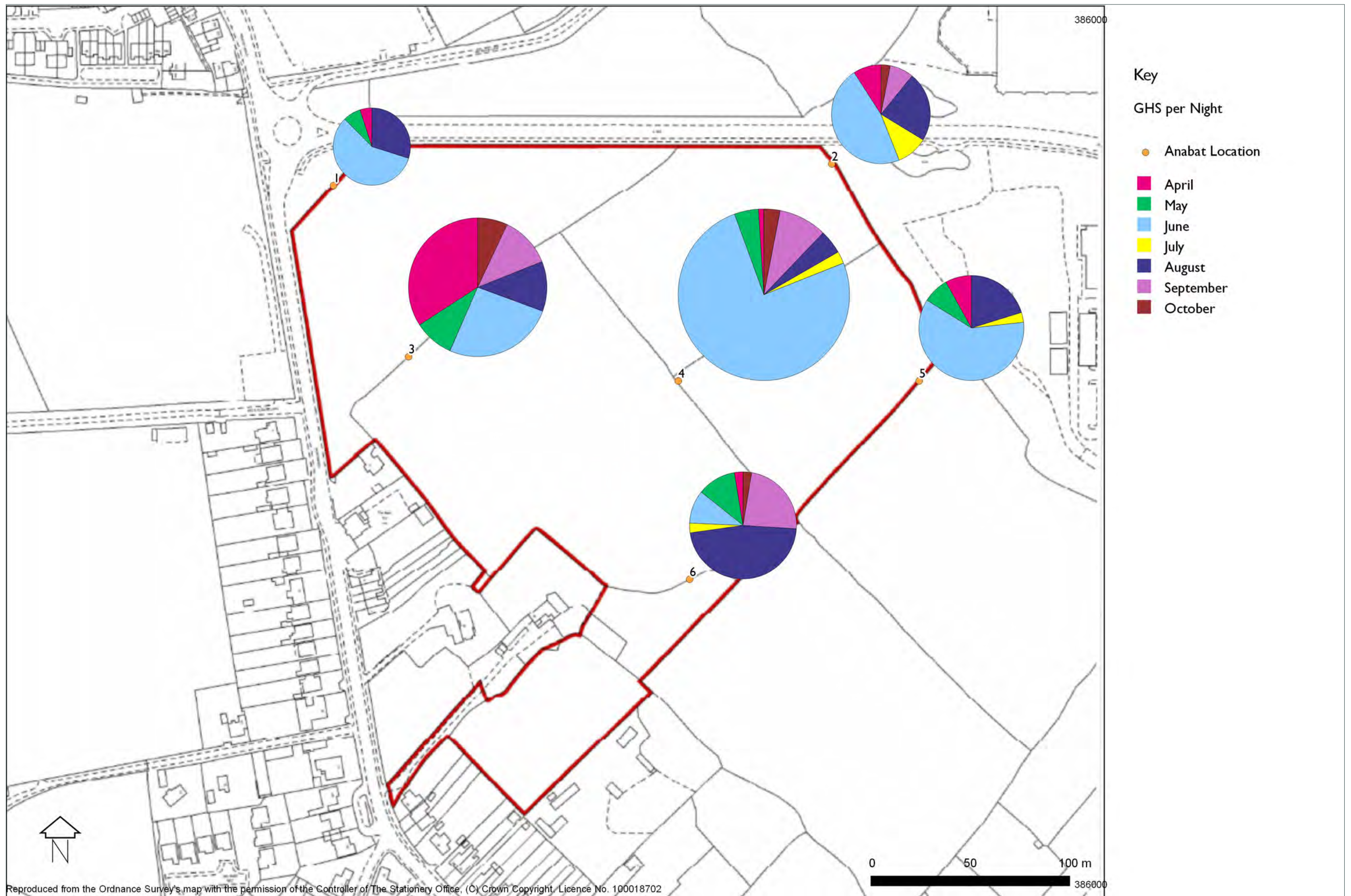
Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Pipistrelle species by night, July



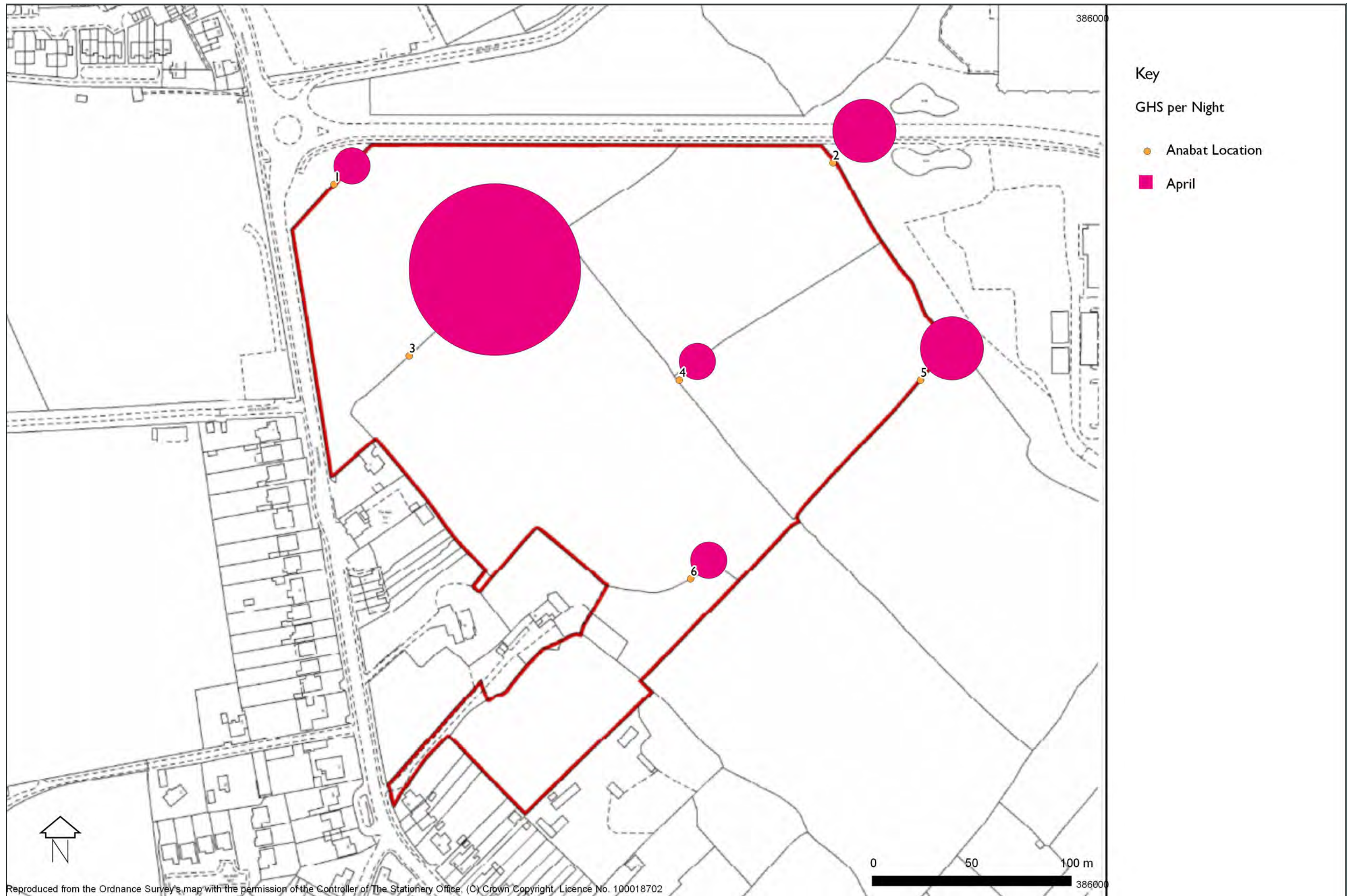


Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Pipistrelle species by night, September





Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Greater Horseshoe Bat by night



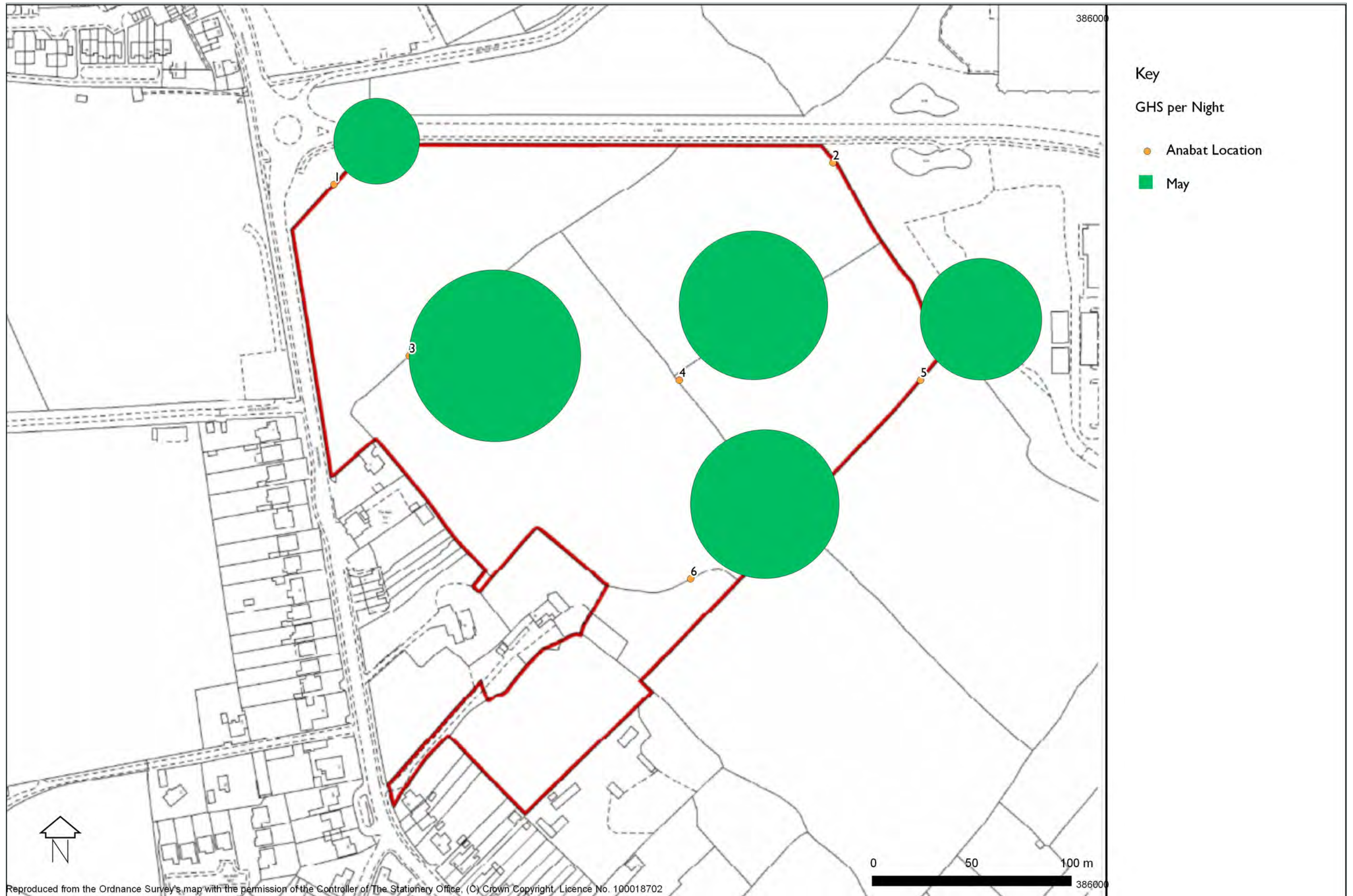
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Greater Horseshoe Bat by night, April



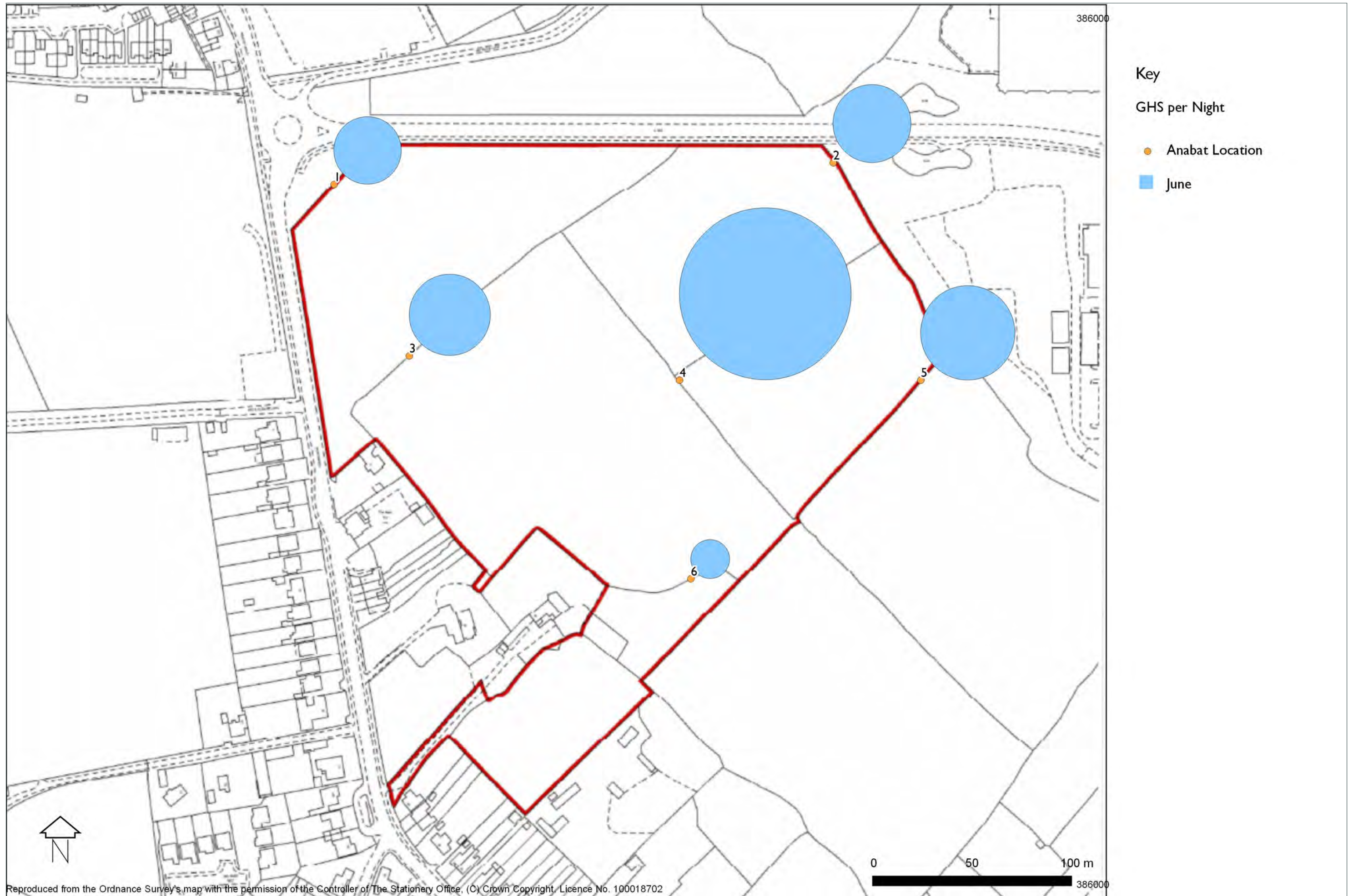
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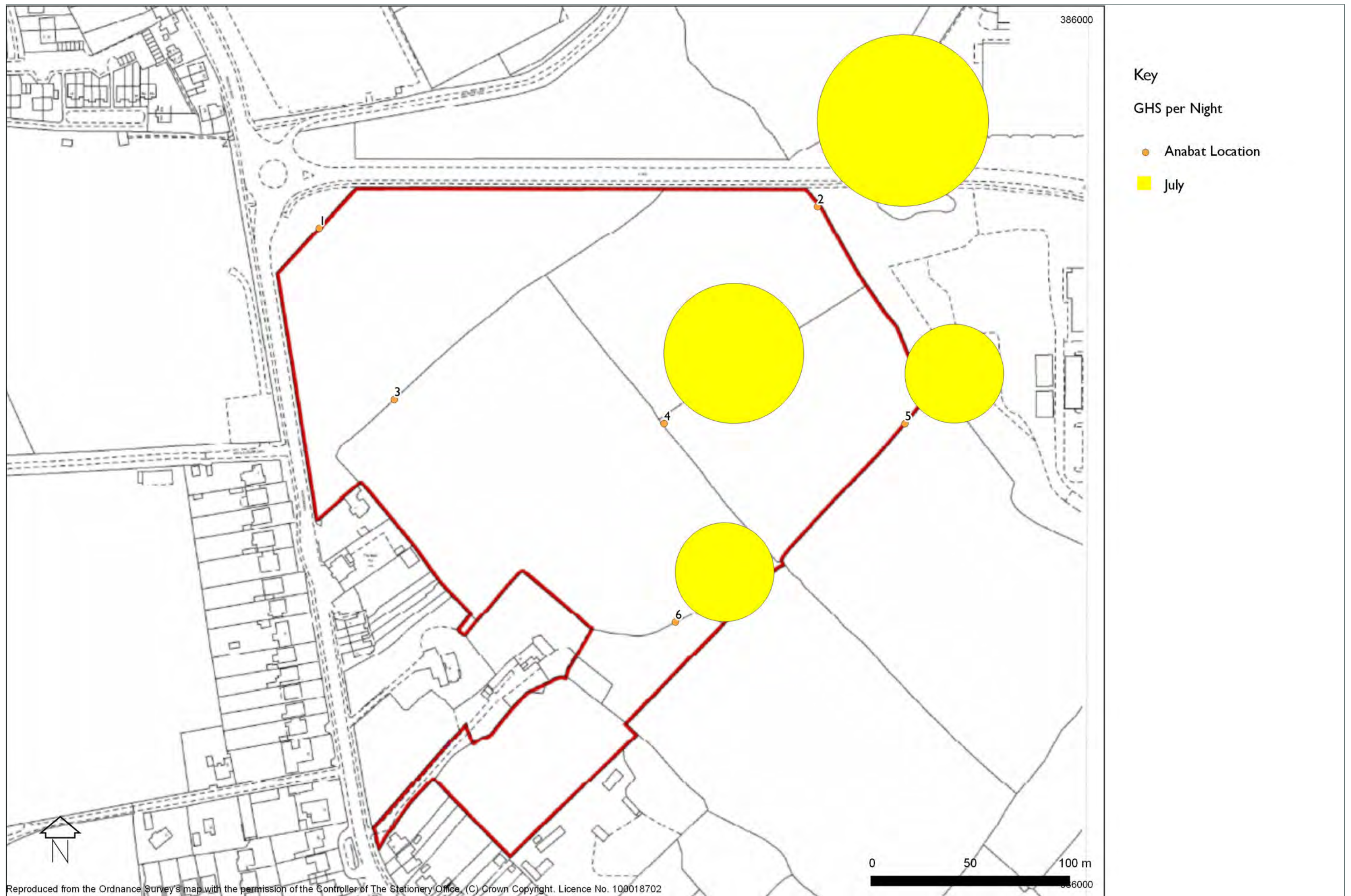
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Greater Horseshoe Bat by night, May



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Greater Horseshoe Bat by night, June



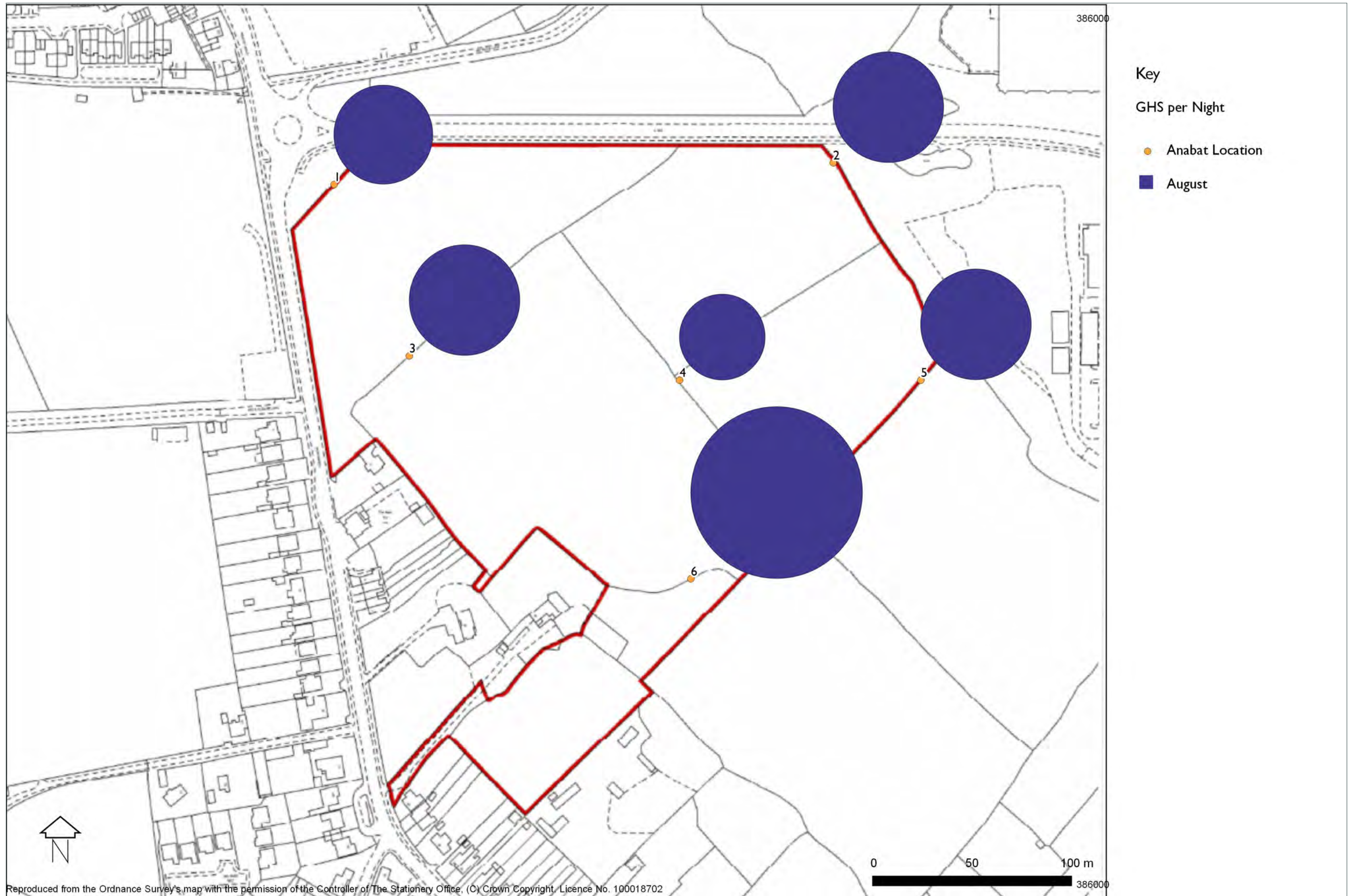
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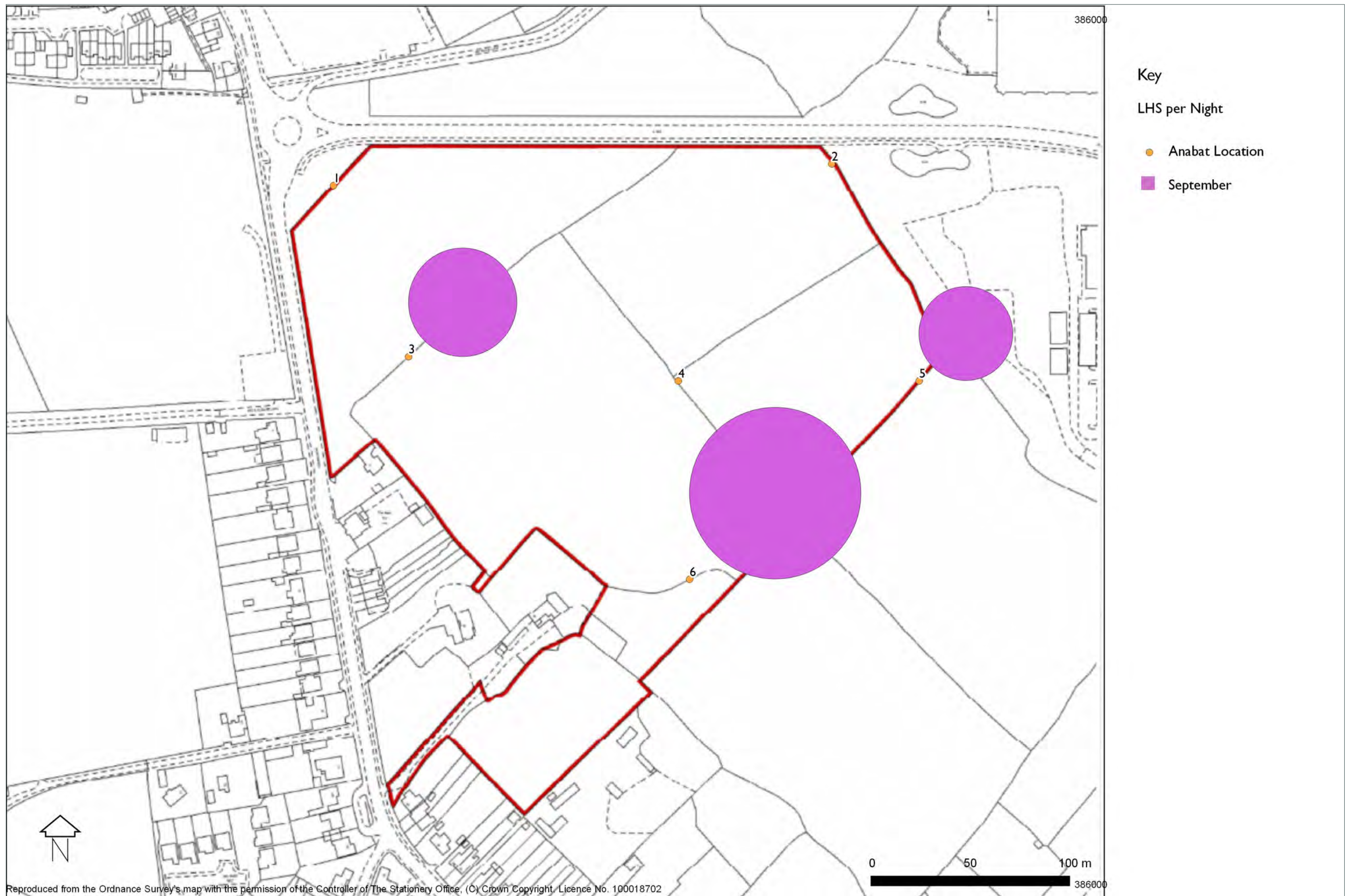
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

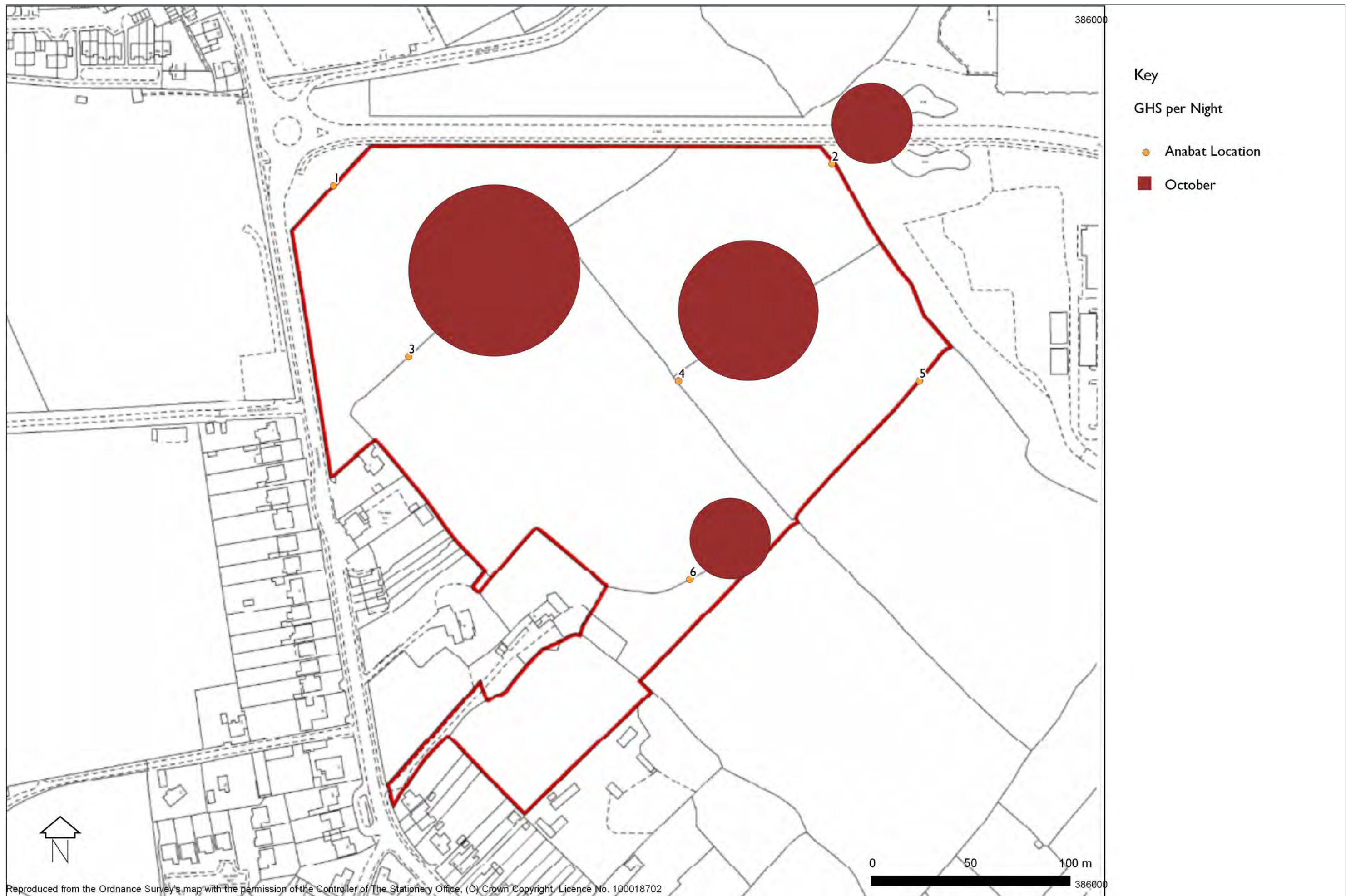
Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Greater Horseshoe Bat by night, July



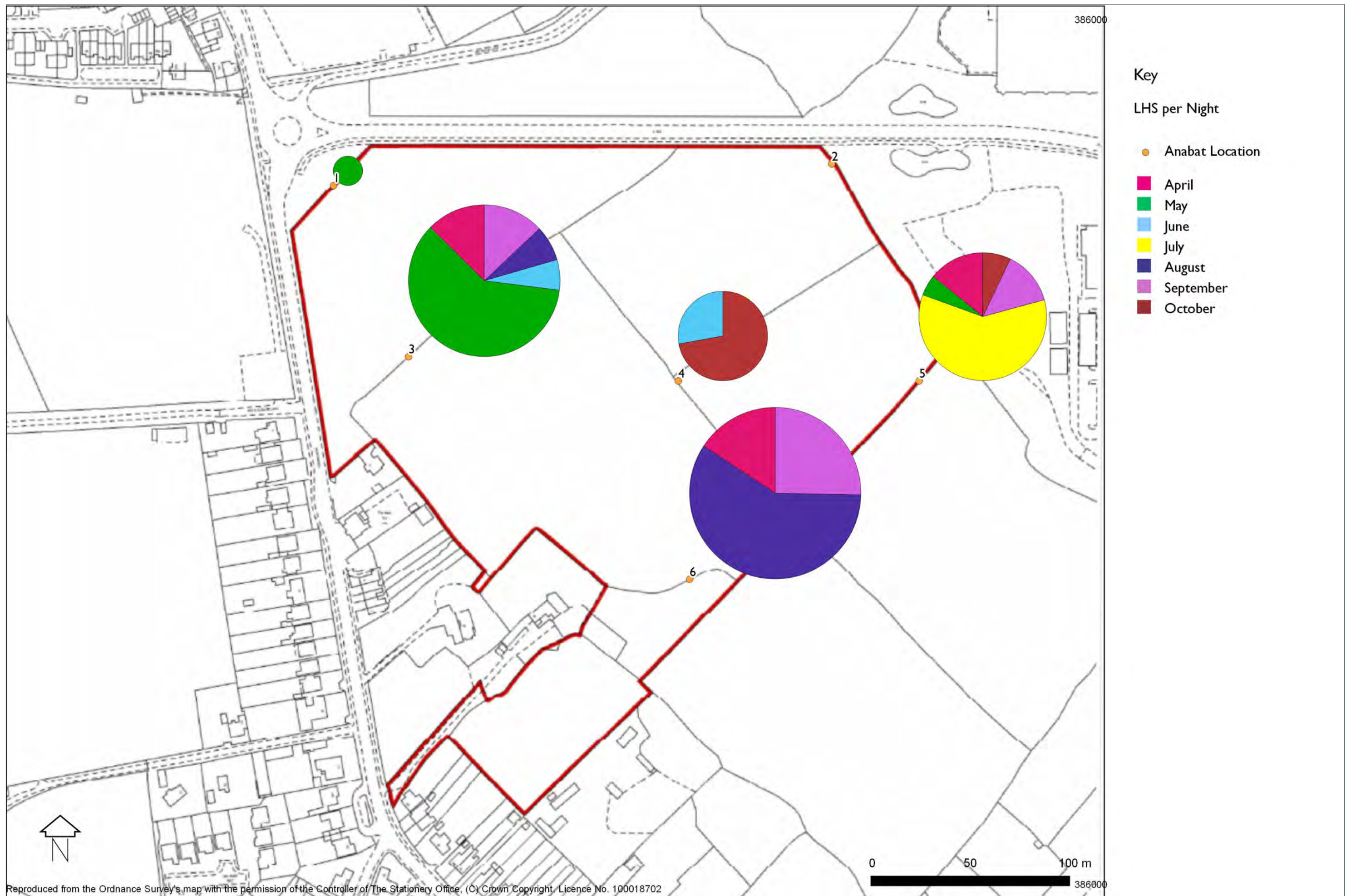
Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Greater Horseshoe Bat by night, August

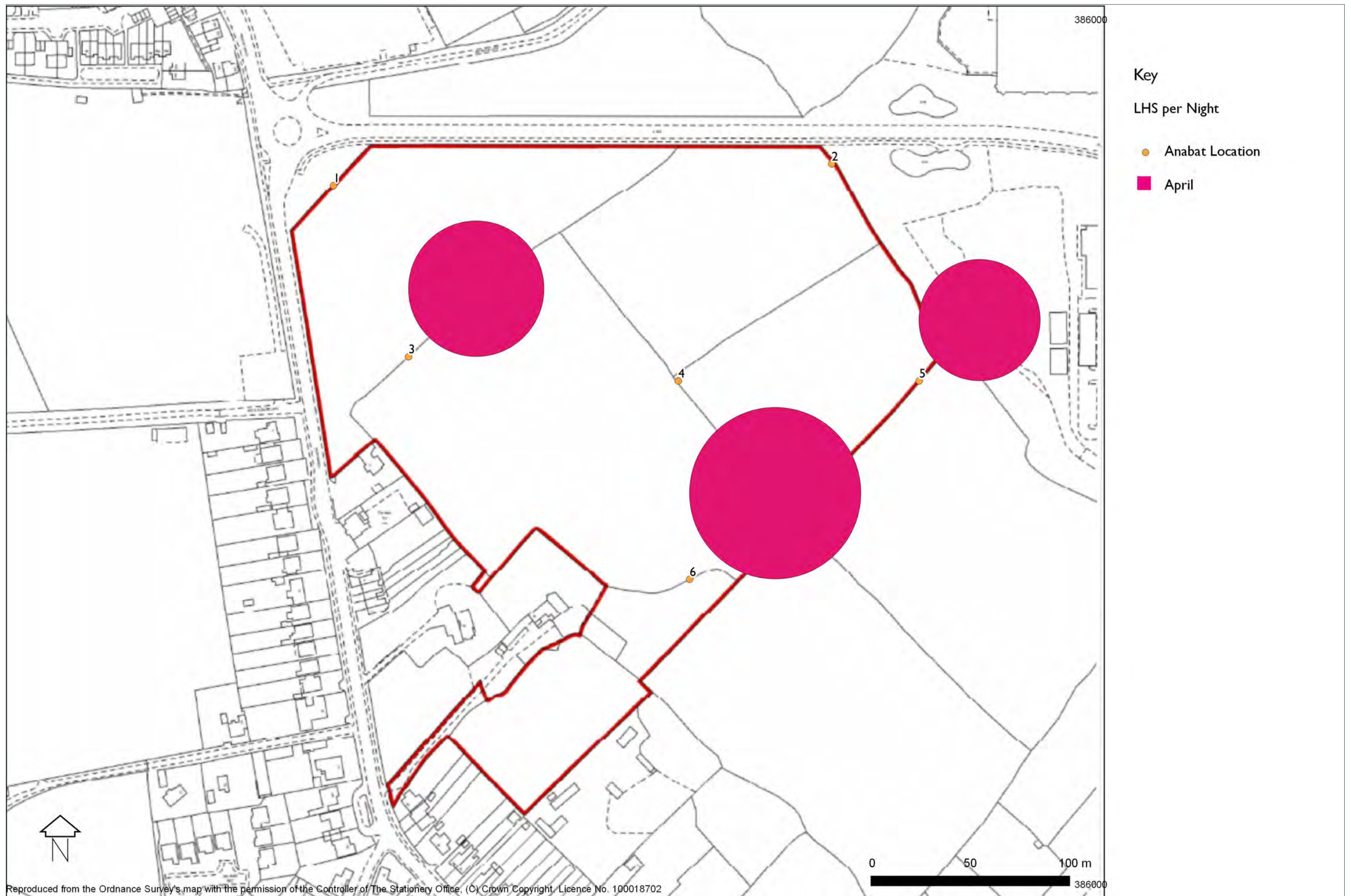


Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Greater Horseshoe Bat by night, September

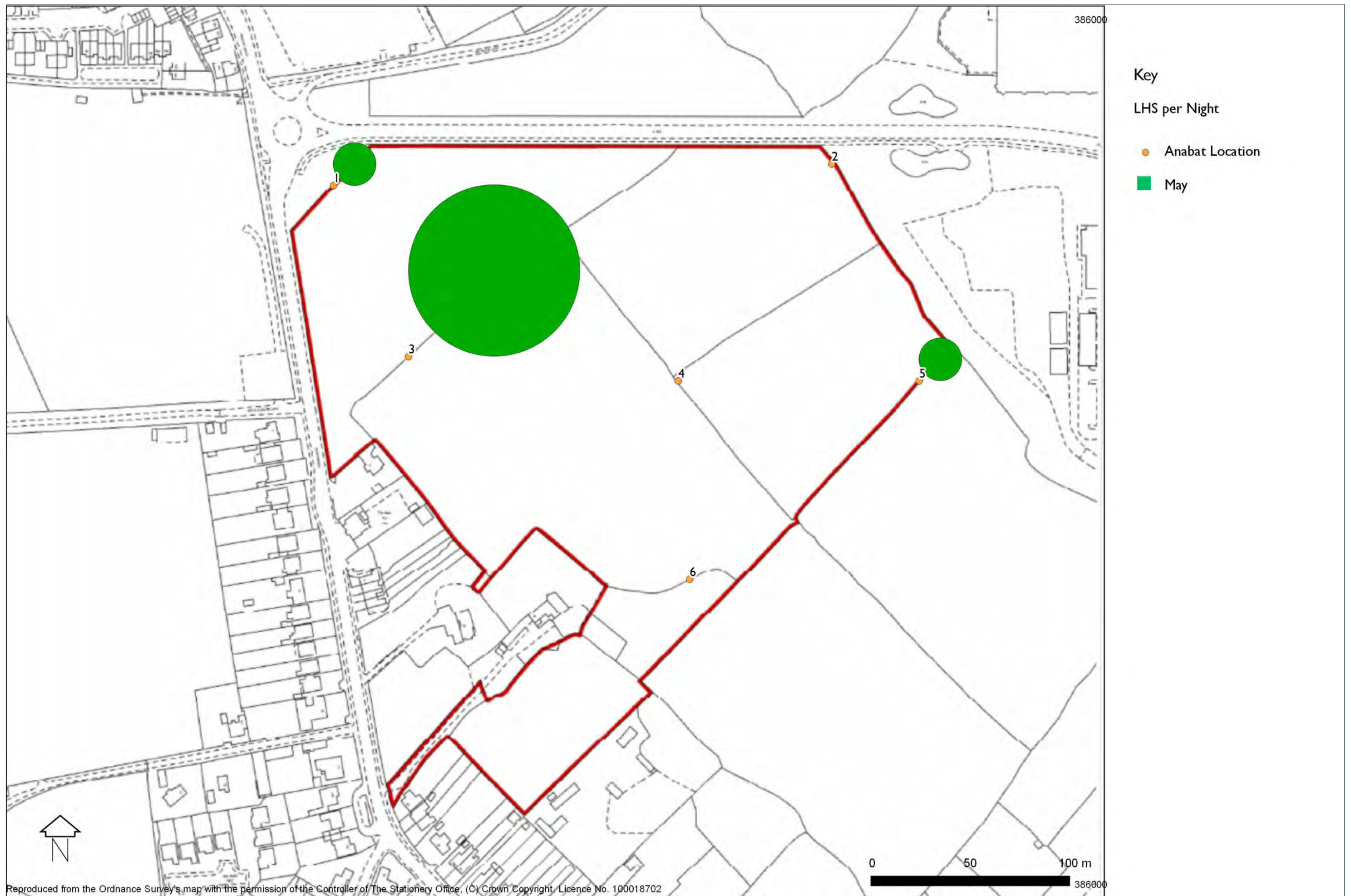


Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Greater Horseshoe Bat by night, October

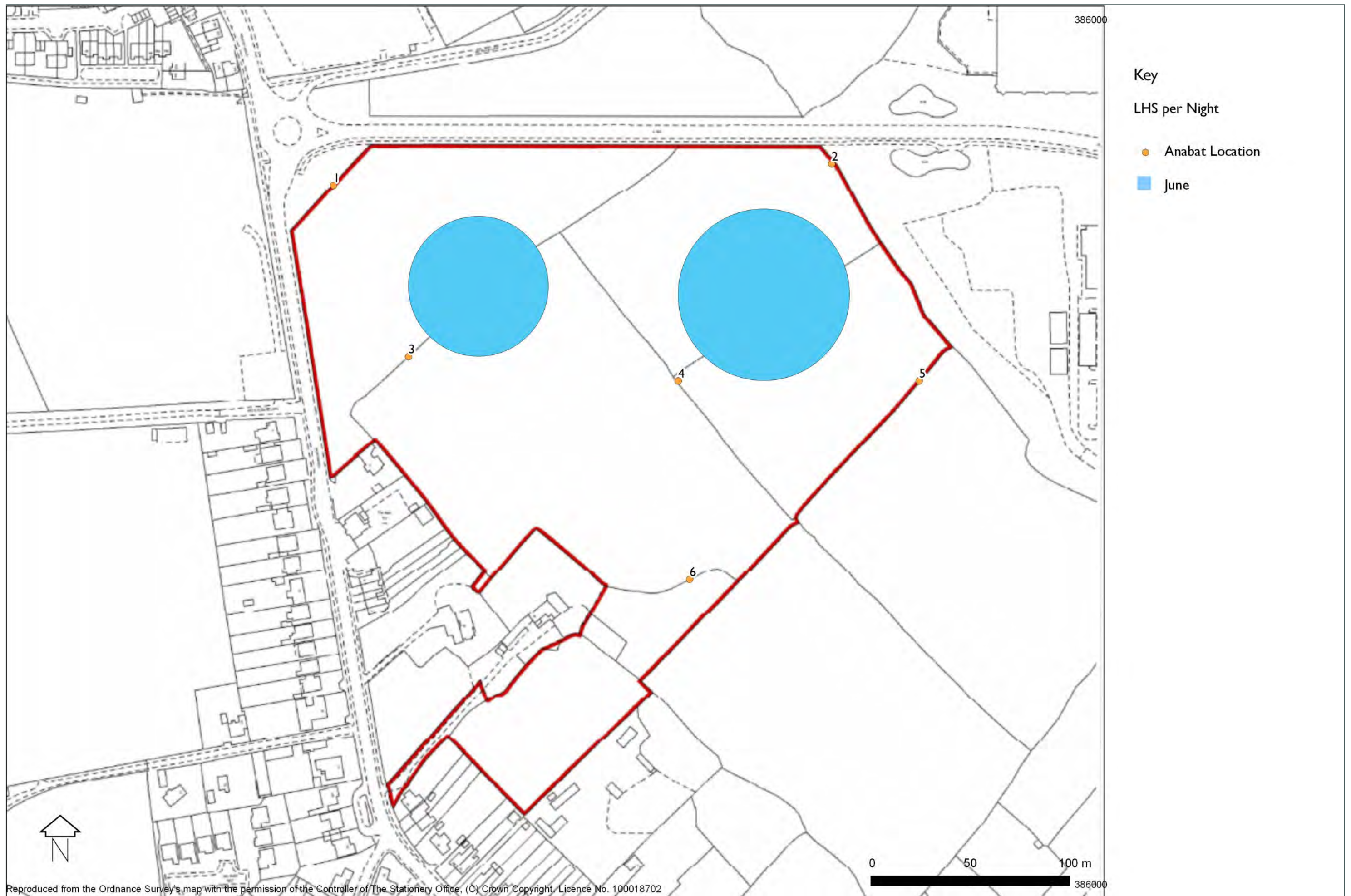




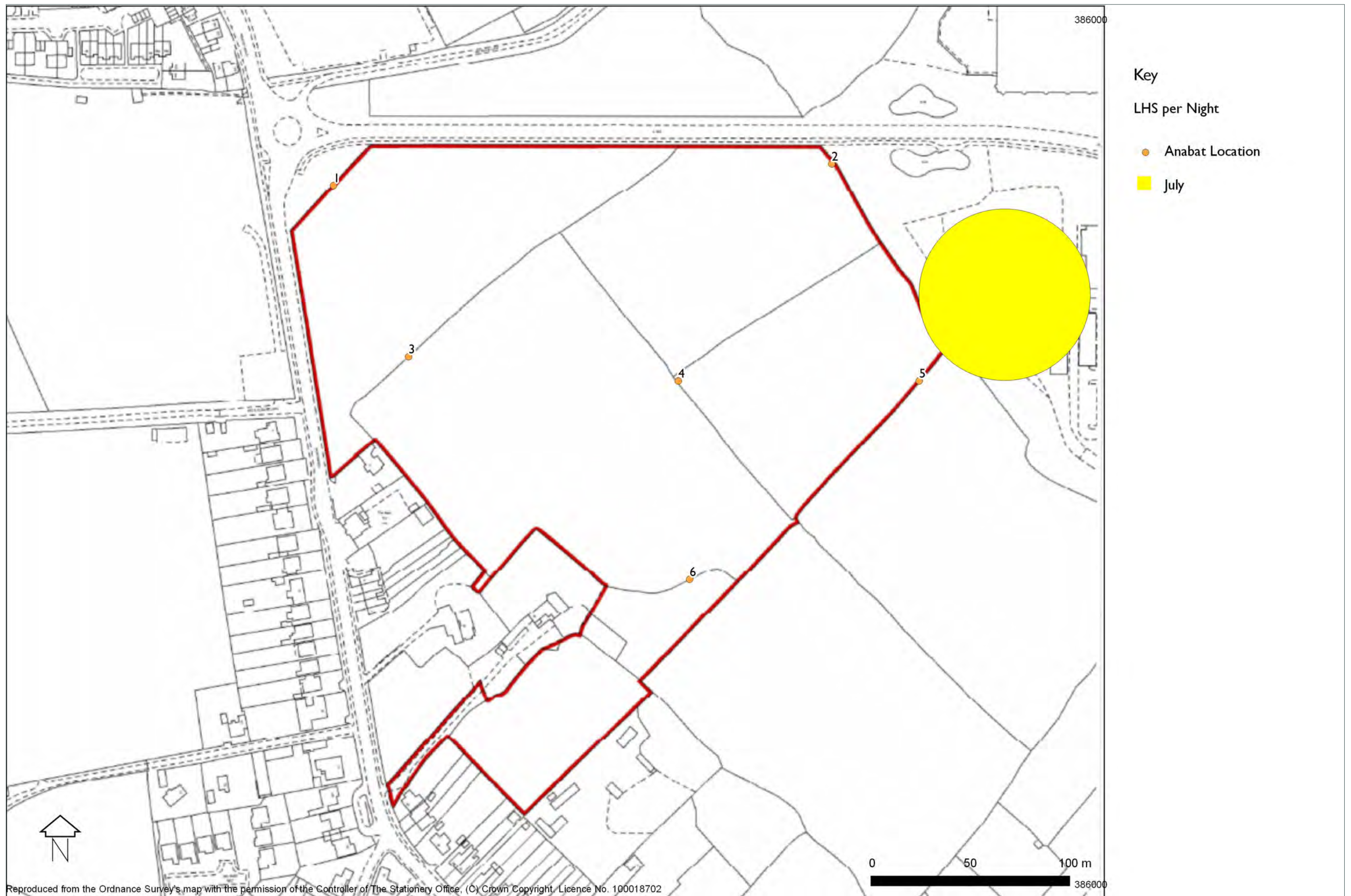
Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Lesser Horseshoe Bat by night, April



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Lesser Horseshoe Bat by night, May



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Lesser Horseshoe Bat by night, June



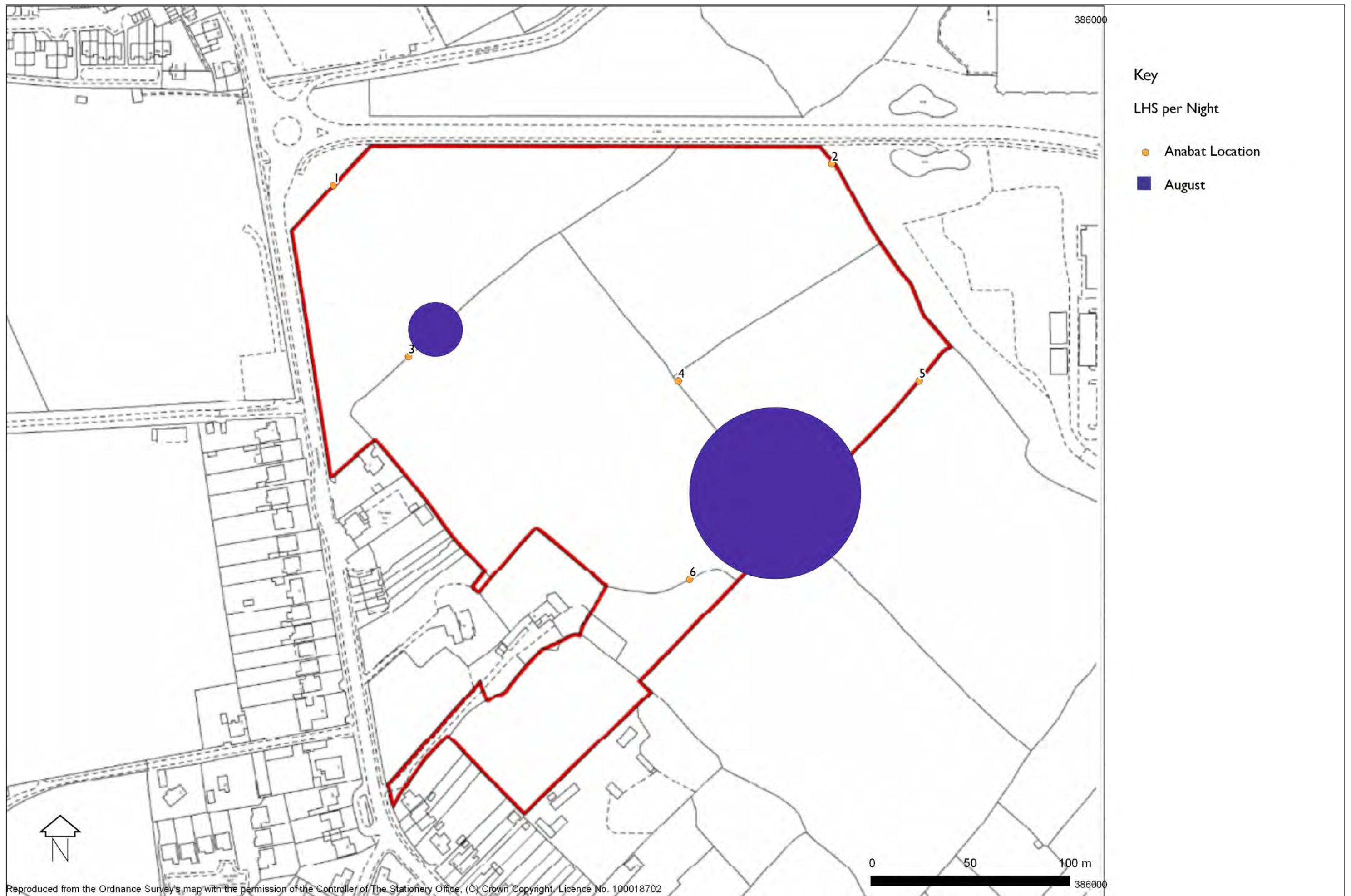
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Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Lesser Horseshoe Bat by night, July



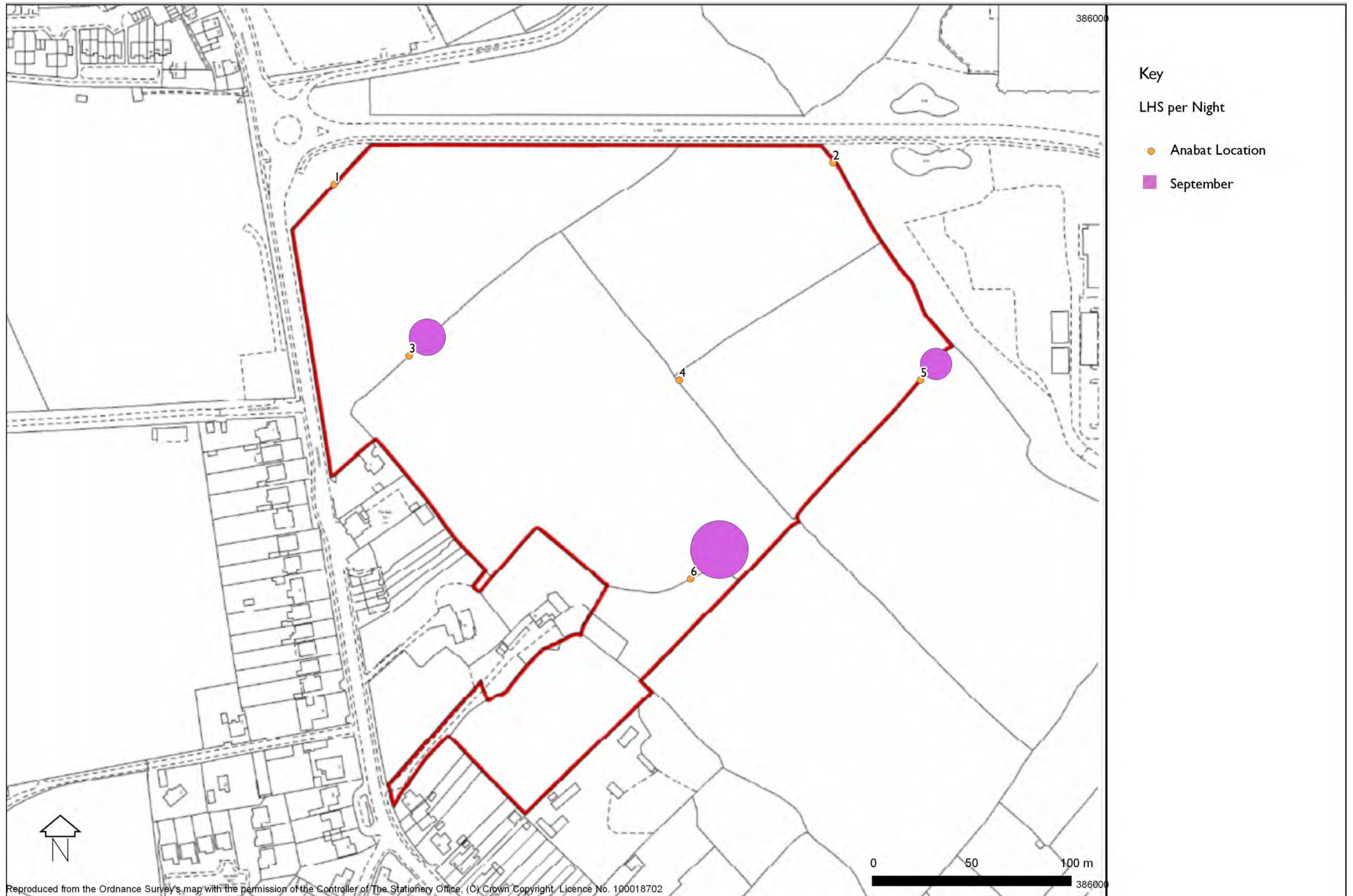
NICHOLAS PEARSON ASSOCIATES

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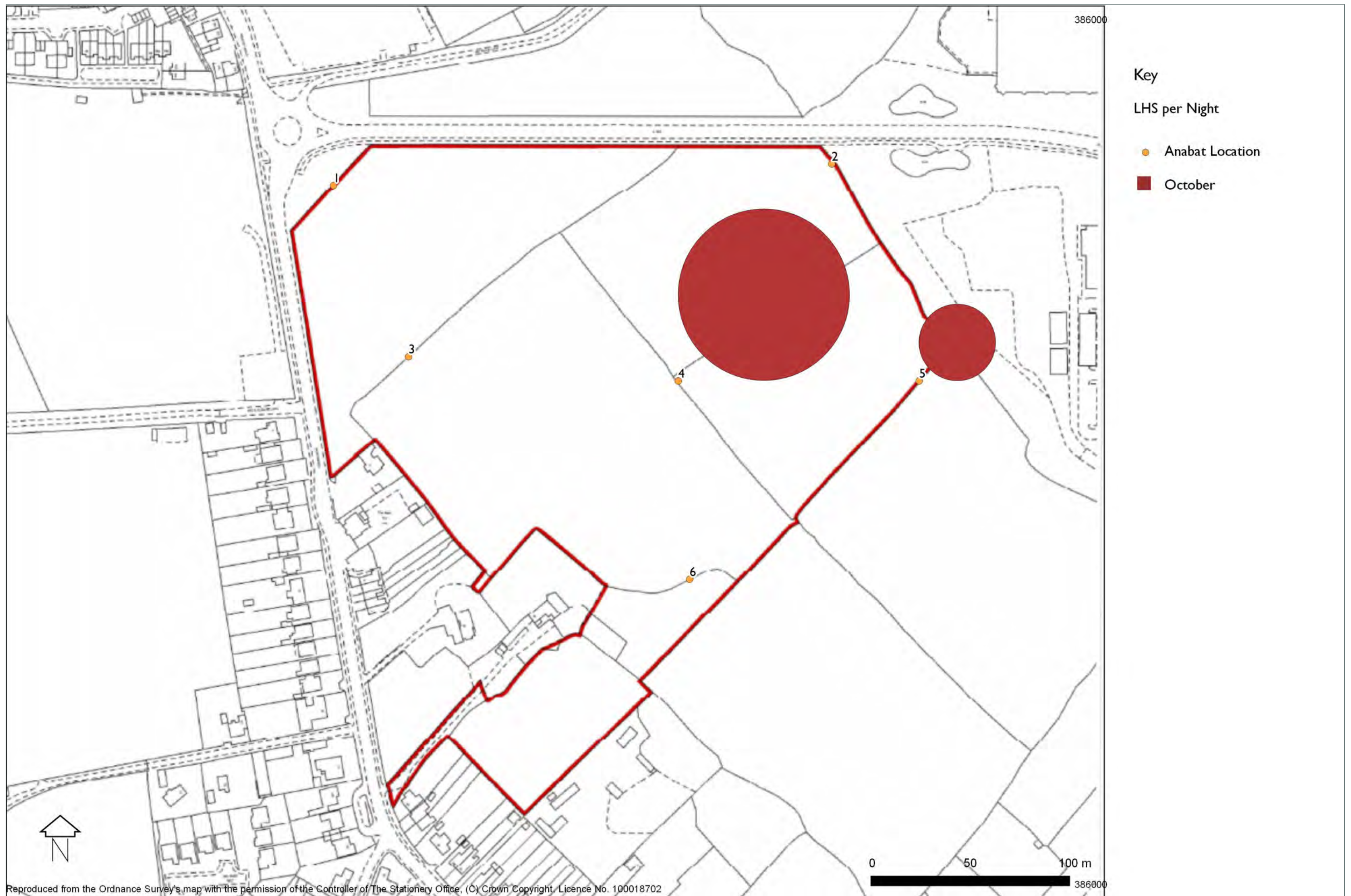
npaconsult.co.uk npavisuals.co.uk +44 (0)1225 876990

Project No: 11020 CPV
Client: Castlewood Properties Ventures Ltd
Status: Planning

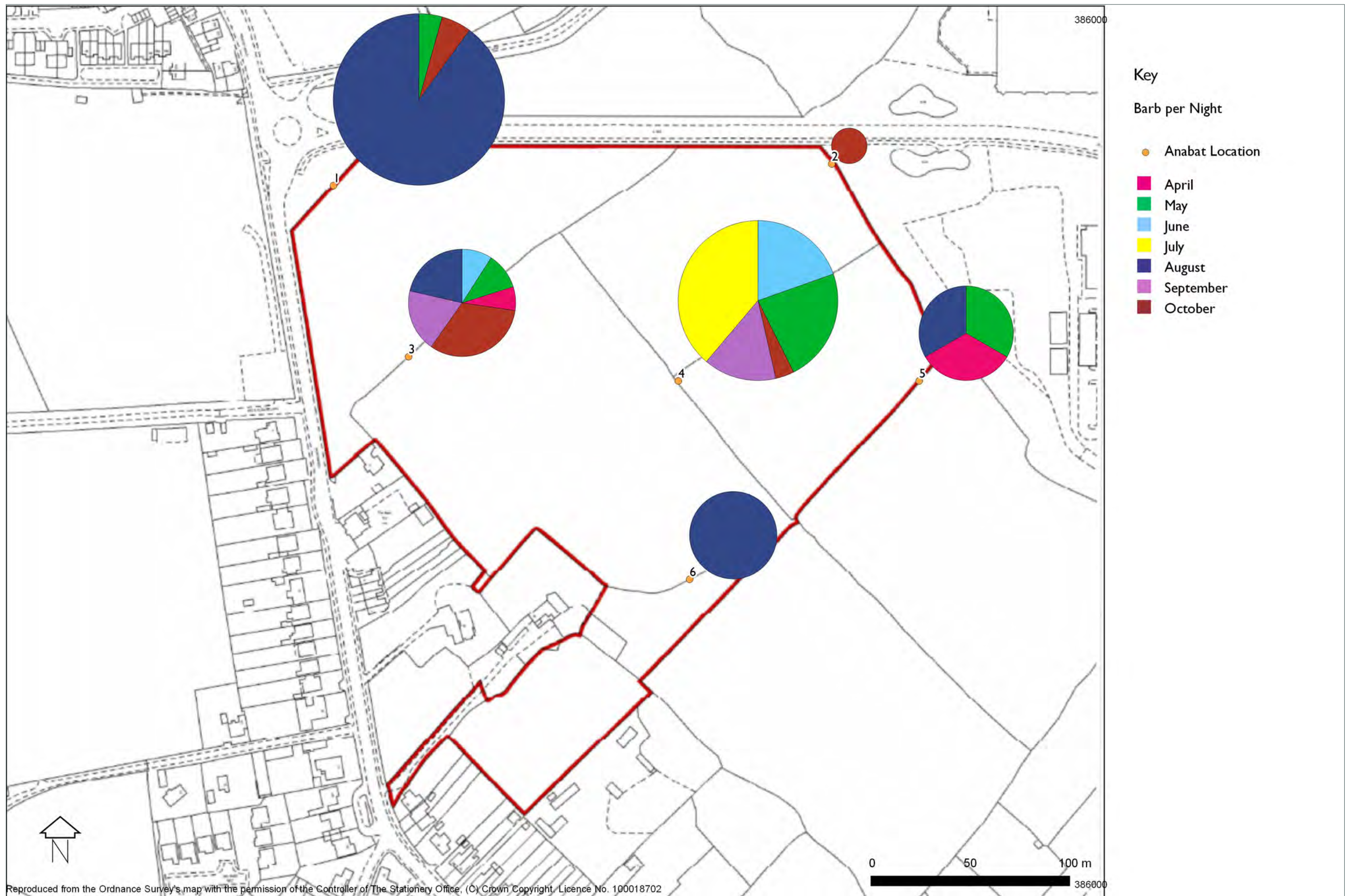
Date: April 2020
Project: Land at White Horse Business Park, Trowbridge
Figure: Lesser Horseshoe Bat by night, August

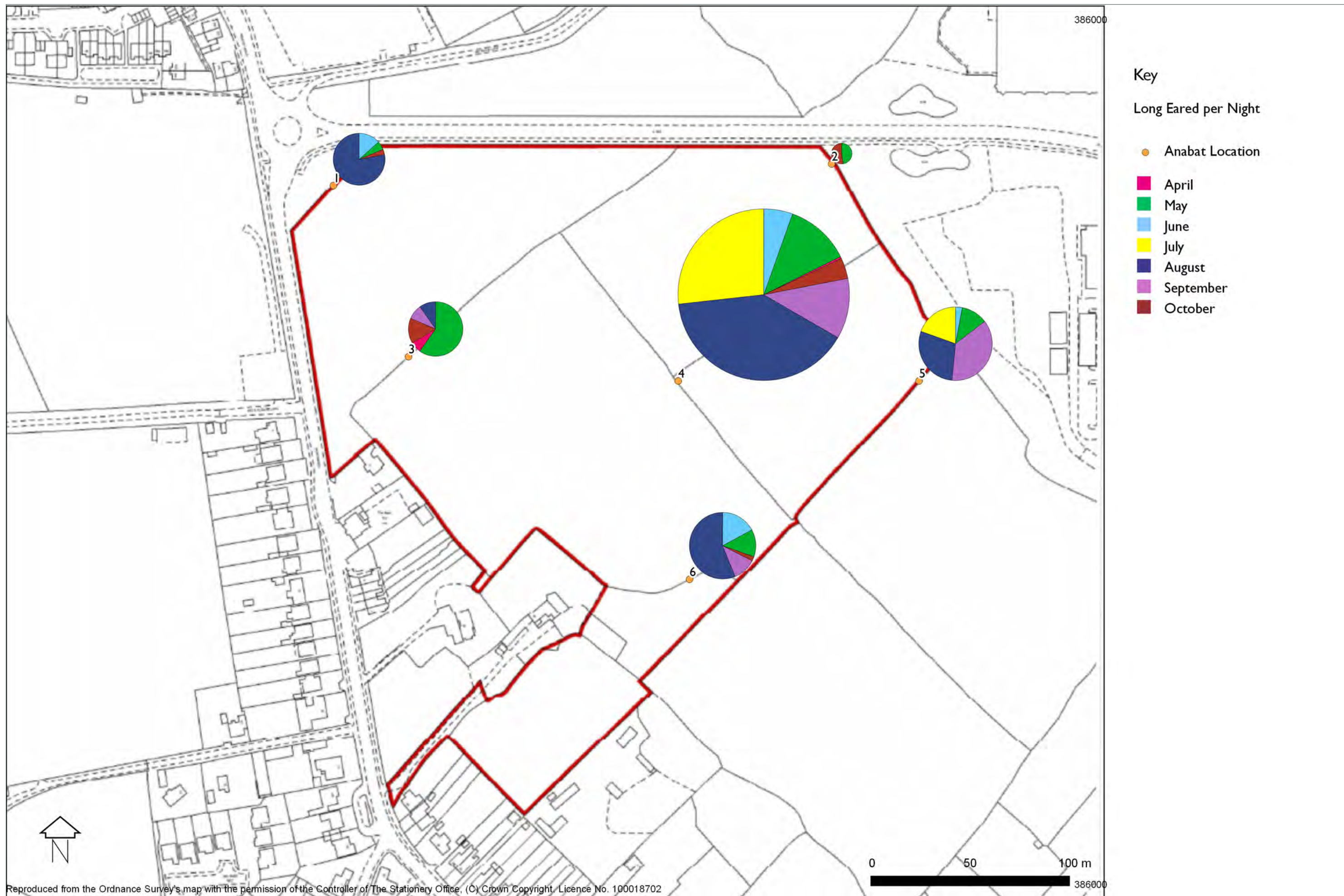


Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Lesser Horseshoe Bat by night, September



Project No:	11020 CPV	Date:	April 2020
Client:	Castlewood Properties Ventures Ltd	Project:	Land at White Horse Business Park, Trowbridge
Status:	Planning	Figure:	Lesser Horseshoe Bat by night, October





APPENDIX 1: Target Notes

Target Notes

Target Note	Description
1	Brown Hare droppings.
2	Potential Badger snuffle hole.
3	Badger latrine (fresh droppings) and lots of associated mammal paths.
4	Rubbish burning pile. Potential for reptiles and Hedgehogs depending on frequency of burning.
5	Spoil/ mud/ hardcore piled up in top edge of field. Potential reptile habitat.
6	Virginia Creeper (schedule 9 WCA) escaping from residential gardens on to Site.
7	Probable active sett. One entrance in field, another on fence line. At least 2 more within dense hedge understorey and within field.
8	Main sett within treebank. At least 10 entrances.

APPENDIX II: Site Photos

Plate No.	
1	 Field 5 looking west
2	 Field 1 looking north

Plate No.	
3	 Field 2 looking north
4	 Field 3 looking south

Plate No.	
5	 Field 3 looking south-west
6	 Field 4 looking south

Plate No.	
7	 Field 4 looking south-east

Plate No.	
8	A photograph showing a gravel access track leading through a wooded area. The track is made of light-colored gravel and is flanked by dense green trees and bushes. The sky is clear and blue. Existing access track

APPENDIX III: Automated Bat Data Pivot Tables

Location	Month	Night	Date	Barb	GHS	LHS	Long_Ear	Myotis Sp	NLS	Pip_Sp	Vesper	All_Bats
A1	Jul-18	1	20180719	0	0	0	0	0	10	8	0	18
A1	Jul-18	2	20180720	0	0	0	0	0	7	31	0	38
A1	Jul-18	3	20180721	0	0	0	0	0	3	5	0	8
A1	Jul-18	4	20180722	0	0	0	0	0	2	6	0	8
A1	Jul-18	5	20180723	0	0	0	0	1	16	28	0	45
A1	Jul-18	6	20180724	0	0	0	0	0	6	7	0	13
A1	Jul-18	7	20180725	0	0	0	0	1	7	3	0	11
A1	Jul-18	8	20180726	0	0	0	0	0	12	10	0	22
A2	Jul-18	1	20180719	0	1	0	0	1	11	36	0	49
A2	Jul-18	2	20180720	0	0	0	0	0	4	151	0	155
A2	Jul-18	3	20180721	0	0	0	0	1	8	86	0	95
A2	Jul-18	4	20180722	0	0	0	0	1	4	183	0	188
A2	Jul-18	5	20180723	0	0	0	0	2	3	141	0	146
A2	Jul-18	6	20180724	0	1	0	0	1	4	80	0	86
A2	Jul-18	7	20180725	0	1	0	0	1	4	70	0	76
A2	Jul-18	8	20180726	0	0	0	0	2	13	113	0	128
A3	Jul-18	1	20180719	0	0	0	0	0	0	1	0	1
A3	Jul-18	2	20180720	0	0	0	0	0	0	3	0	3
A3	Jul-18	3	20180721	0	0	0	0	0	5	4	0	9
A3	Jul-18	4	20180722	0	0	0	0	0	2	1	0	3
A3	Jul-18	5	20180723	0	0	0	0	0	2	2	0	4
A3	Jul-18	6	20180724	0	0	0	0	0	1	3	0	4
A3	Jul-18	7	20180725	0	0	0	0	0	1	2	0	3
A3	Jul-18	8	20180726	0	0	0	0	0	4	5	0	9
A4	Jul-18	1	20180719	0	0	0	8	11	7	75	0	101
A4	Jul-18	2	20180720	1	0	0	8	117	11	443	0	580
A4	Jul-18	3	20180721	1	0	0	9	15	14	42	0	81
A4	Jul-18	4	20180722	0	0	0	8	10	15	30	0	63
A4	Jul-18	5	20180723	5	1	0	6	29	18	40	0	99
A4	Jul-18	6	20180724	1	0	0	2	22	9	36	0	70
A4	Jul-18	7	20180725	1	1	0	6	57	7	39	0	111
A4	Jul-18	8	20180726	0	0	0	20	73	25	36	0	154
A5	Jul-18	1	20180719	0	0	0	2	3	6	41	0	52
A5	Jul-18	2	20180720	0	0	3	0	4	7	19	0	33
A5	Jul-18	3	20180721	0	1	3	2	11	8	31	0	56

A5	Jul-18	4	20180722	0	0	2	1	3	13	29	0	48
A5	Jul-18	5	20180723	0	0	0	0	12	10	36	0	58
A5	Jul-18	6	20180724	0	0	2	2	3	3	24	0	34
A5	Jul-18	7	20180725	0	0	2	0	6	3	26	0	37
A5	Jul-18	8	20180726	0	0	3	2	7	12	45	0	69
A6	Jul-18	1	20180719	0	0	0	0	3	5	26	0	34
A6	Jul-18	2	20180720	0	0	0	0	1	1	19	0	21
A6	Jul-18	3	20180721	0	0	0	0	1	6	19	0	26
A6	Jul-18	4	20180722	0	0	0	0	1	18	9	0	28
A6	Jul-18	5	20180723	0	0	0	0	4	22	20	0	46
A6	Jul-18	6	20180724	0	0	0	0	2	3	16	0	21
A6	Jul-18	7	20180725	0	1	0	0	0	3	11	0	15
A6	Jul-18	8	20180726	0	0	0	0	1	22	16	0	39
A1	Aug-18	1	20180814	1	0	0	2	101	7	186	0	297
A1	Aug-18	2	20180815	0	0	0	0	8	2	8	0	18
A1	Aug-18	3	20180816	3	1	0	1	4	5	52	0	66
A1	Aug-18	4	20180817	9	0	0	3	19	6	22	0	59
A1	Aug-18	5	20180818	0	0	0	5	45	1	21	0	72
A1	Aug-18	6	20180819	8	3	0	4	17	7	176	0	215
A2	Aug-18	1	20180814	0	2	0	0	1	0	2	0	5
A2	Aug-18	2	20180815	0	1	0	0	2	1	4	0	8
A2	Aug-18	3	20180816	0	1	0	0	0	1	3	0	5
A2	Aug-18	4	20180817	0	1	0	0	4	0	3	0	8
A2	Aug-18	5	20180818	0	0	0	0	3	2	6	0	11
A2	Aug-18	6	20180819	0	0	0	0	0	1	6	0	7
A3	Aug-18	1	20180814	1	1	1	0	5	5	56	1	70
A3	Aug-18	2	20180815	1	2	1	1	19	2	22	1	49
A3	Aug-18	3	20180816	0	0	0	0	2	0	5	0	7
A3	Aug-18	4	20180817	0	1	0	1	3	1	27	0	33
A3	Aug-18	5	20180818	0	1	0	0	4	5	21	0	31
A3	Aug-18	6	20180819	0	0	0	0	4	4	35	0	43
A4	Aug-18	1	20180814	0	3	0	11	2	12	21	0	49
A4	Aug-18	2	20180815	0	0	0	4	0	11	20	0	35
A4	Aug-18	3	20180816	0	0	0	8	2	6	9	6	31
A4	Aug-18	4	20180817	0	0	0	12	2	7	15	0	36
A4	Aug-18	5	20180818	0	0	0	12	4	8	18	0	42
A4	Aug-18	6	20180819	0	0	0	28	3	28	38	0	97

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A6	Aug-18	1	20180814	3	2	10	2	0	7	93	0	117
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A4	Sep-18	1	20180924	0	1	0	1	3	3	10	0	18
A4	Sep-18	2	20180925	1	0	0	5	22	7	8	0	43
A4	Sep-18	3	20180926	1	3	0	5	32	5	38	1	85
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A6	Sep-18	2	20180925	0	0	0	0	0	4	0	0	4
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A6	Sep-18	7	20180930	0	2	0	0	1	1	40	0	44
A1	Oct-18	1	20181009	0	0	0	0	4	16	3	1	24
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A1	Oct-18	3	20181011	1	0	0	0	1	12	2	0	16
A1	Oct-18	4	20181012	0	0	0	0	0	9	0	0	9
A1	Oct-18	5	20181013	0	0	0	0	0	6	14	0	20
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A1	Oct-18	7	20181015	0	0	0	0	2	10	2	0	14
A1	Oct-18	8	20181016	0	0	0	0	3	26	8	0	37
A1	Oct-18	9	20181017	0	0	0	0	6	19	11	0	36
A2	Oct-18	1	20181009	0	1	0	0	4	10	10	0	25
A2	Oct-18	2	20181010	0	0	0	1	3	7	362	0	373
A2	Oct-18	3	20181011	1	0	0	0	6	3	1	0	11
A2	Oct-18	4	20181012	0	0	0	0	0	4	0	0	4
A2	Oct-18	5	20181013	0	0	0	1	1	5	11	0	18
A2	Oct-18	6	20181014	0	0	0	0	0	0	0	0	0
A2	Oct-18	7	20181015	0	0	0	0	0	0	0	0	0
A2	Oct-18	8	20181016	0	0	0	0	0	0	0	0	0
A2	Oct-18	9	20181017	0	0	0	0	0	0	2	0	2
A3	Oct-18	1	20181009	0	1	0	0	11	32	11	0	55
A3	Oct-18	2	20181010	1	0	0	1	5	26	106	0	139

A4	Oct-18	1	20181009	0	0	0	4	89	4	11	0	108
A4	Oct-18	2	20181010	0	1	1	1	45	10	212	1	271
A4	Oct-18	3	20181011	0	1	0	0	2	1	2	0	6
A4	Oct-18	4	20181012	0	0	0	0	0	0	1	0	1
A4	Oct-18	5	20181013	0	0	0	3	1	4	12	0	20
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A4	Oct-18	7	20181015	0	0	4	1	123	1	95	0	224
A4	Oct-18	8	20181016	1	0	1	0	25	10	5	1	43
A4	Oct-18	9	20181017	0	1	2	2	505	3	312	1	826
A5	Oct-18	1	20181009	0	0	0	0	1	0	4	0	5
A5	Oct-18	2	20181010	0	0	0	0	10	0	14	0	24
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A5	Oct-18	4	20181012	0	0	0	0	3	0	4	0	7
A5	Oct-18	5	20181013	0	0	0	0	11	0	6	0	17
A5	Oct-18	6	20181014	0	0	0	0	0	0	0	0	0
A5	Oct-18	7	20181015	0	0	1	0	5	0	0	0	6
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A5	Oct-18	9	20181017	0	0	0	0	1	0	1	0	2
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A6	Oct-18	3	20181011	0	0	0	1	160	0	36	0	197
A6	Oct-18	4	20181012	0	0	0	0	217	0	97	0	314
A6	Oct-18	5	20181013	0	0	0	0	56	0	10	0	66
A6	Oct-18	6	20181014	0	0	0	0	0	0	0	0	0
A6	Oct-18	7	20181015	0	0	0	0	16	0	2	0	18
A6	Oct-18	8	20181016	0	0	0	0	179	0	14	0	193
A6	Oct-18	9	20181017	0	0	0	0	24	0	0	0	24
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A1	Apr-19	2	20190425	0	0	0	0	0	2	2	0	4
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A1	Apr-19	4	20190427	0	0	0	0	0	3	0	0	3
A1	Apr-19	5	20190428	0	0	0	0	1	3	3	0	7
A1	Apr-19	6	20190429	0	0	0	0	1	4	10	0	15
A1	Apr-19	7	20190430	0	0	0	0	0	3	9	0	12
A1	Apr-19	8	20190501	0	0	0	0	0	2	14	0	16
A1	Apr-19	9	20190502	0	0	0	0	0	0	7	0	7
A2	Apr-19	1	20190424	0	0	0	0	0	0	2	0	2

A2	Apr-19	2	20190425	0	2	0	0	0	0	0	0	2
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A2	Apr-19	4	20190427	0	0	0	0	0	0	0	0	0
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A2	Apr-19	6	20190429	0	0	0	0	0	1	0	0	1
A2	Apr-19	7	20190430	0	0	0	0	0	0	0	0	0
A2	Apr-19	8	20190501	0	0	0	0	0	0	0	0	0
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A3	Apr-19	3	20190426	0	0	0	0	0	5	4	0	9
A3	Apr-19	4	20190427	0	0	0	0	0	0	0	0	0
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A5	Apr-19	8	20190501	0	0	0	0	1	2	0	0	3
A5	Apr-19	9	20190502	0	0	0	0	0	0	0	0	0
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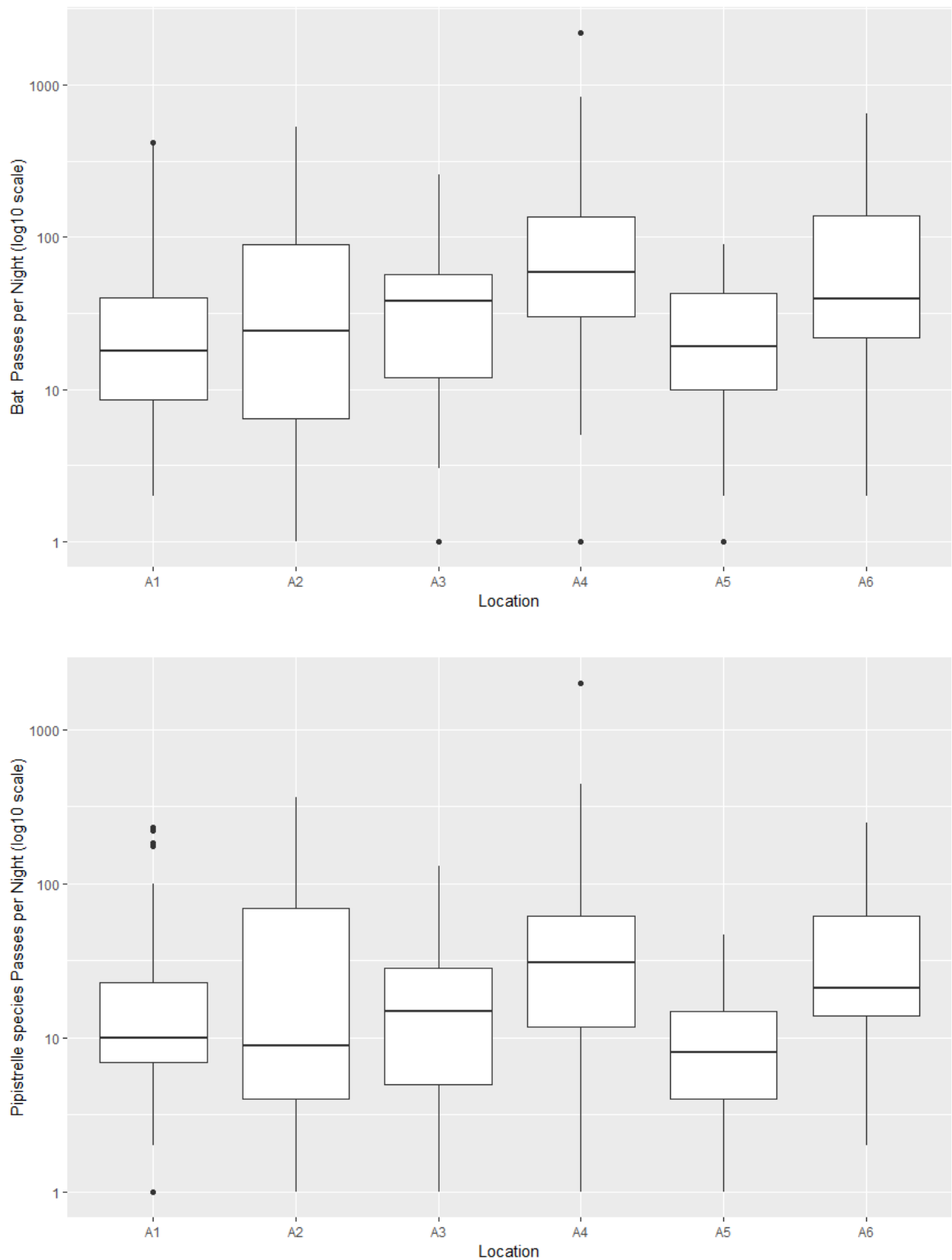
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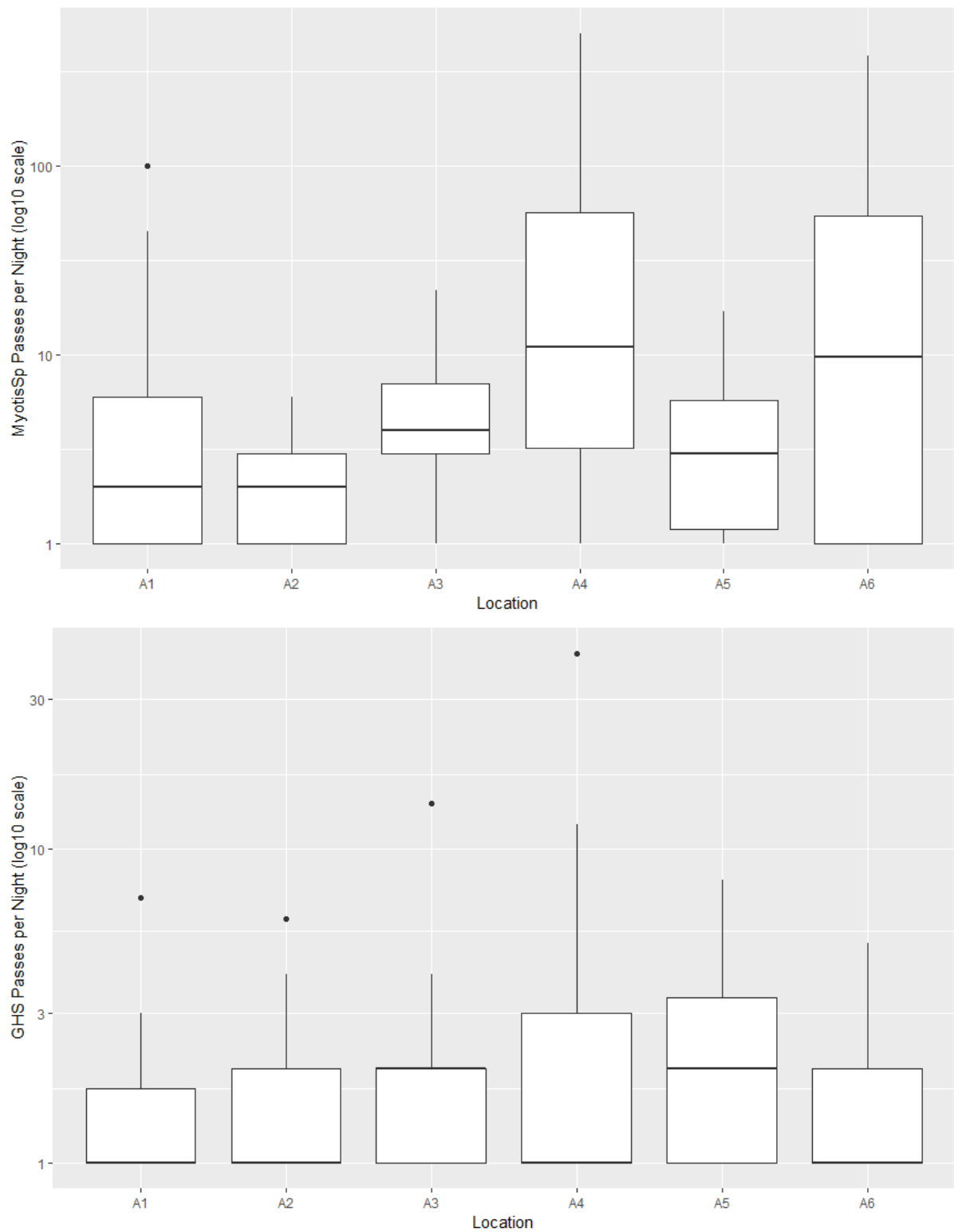
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A1	Jun-19	1	20190626	0	7	0	3	0	11	8	0	29
A1	Jun-19	2	20190627	0	1	0	0	0	10	23	0	34
A1	Jun-19	3	20190628	0	1	0	0	0	11	30	0	42
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A1	Jun-19	5	20190630	0	0	0	0	0	200	74	3	277
A1	Jun-19	6	20190701	0	0	0	0	2	190	223	0	415
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A2	Jun-19	4	20190629	0	0	0	0	2	23	6	0	31
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A2	Jun-19	6	20190701	0	0	0	0	4	42	50	0	96
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A4	Jun-19	1	20190626	0	12	3	1	173	3	2012	0	2204
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A4	Jun-19	4	20190629	0	0	0	0	4	5	29	0	38
A4	Jun-19	5	20190630	1	0	0	1	3	8	18	0	31
A4	Jun-19	6	20190701	2	42	0	1	126	3	272	2	448
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A5	Jun-19	4	20190629	0	0	0	1	1	12	7	0	21
A5	Jun-19	5	20190630	0	1	0	0	1	1	7	0	10
A5	Jun-19	6	20190701	0	1	0	0	0	11	7	0	19
A6	Jun-19	1	20190626	0	0	0	0	1	10	11	0	22
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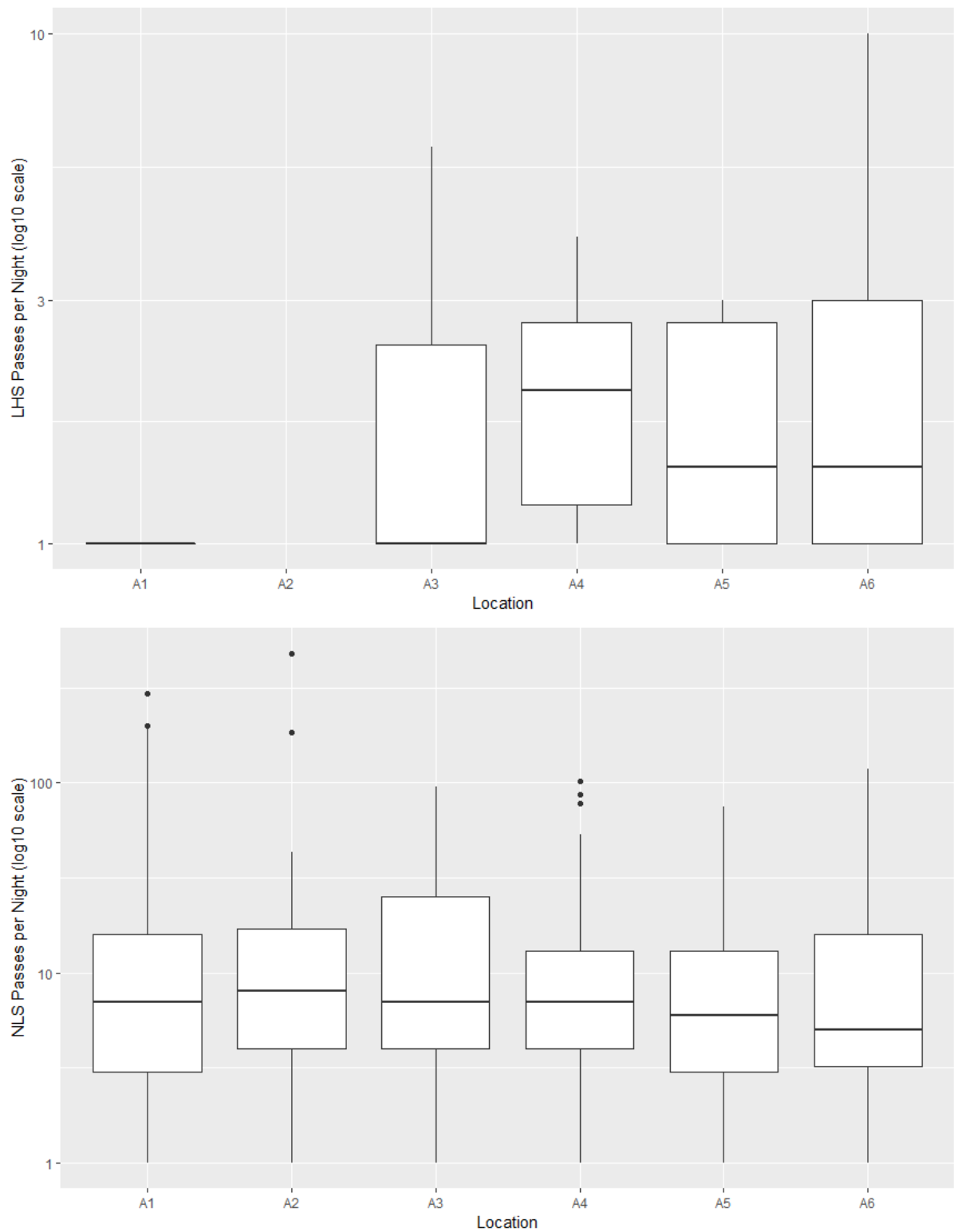
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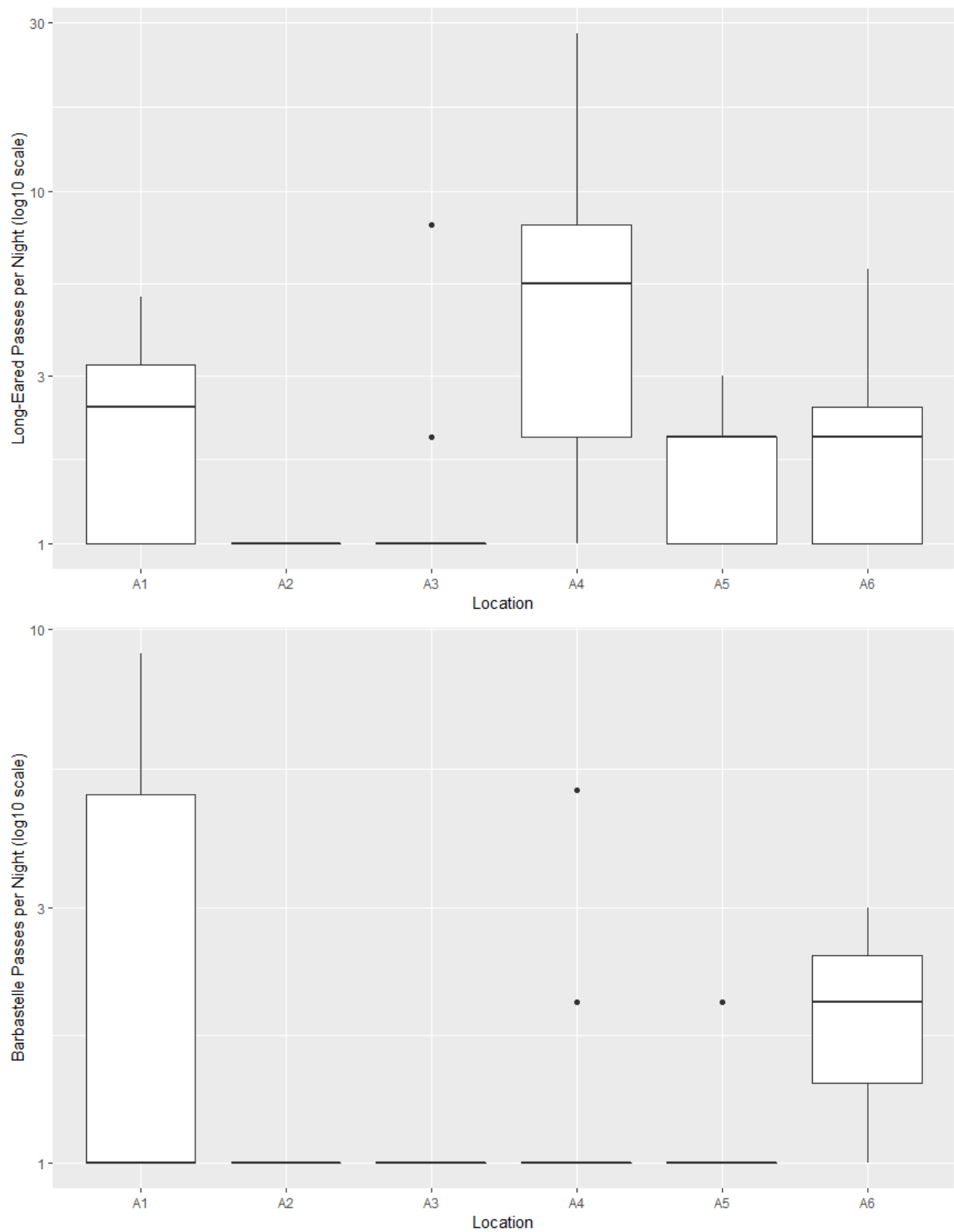
APPENDIX IV: Bat Box Plots

By Location

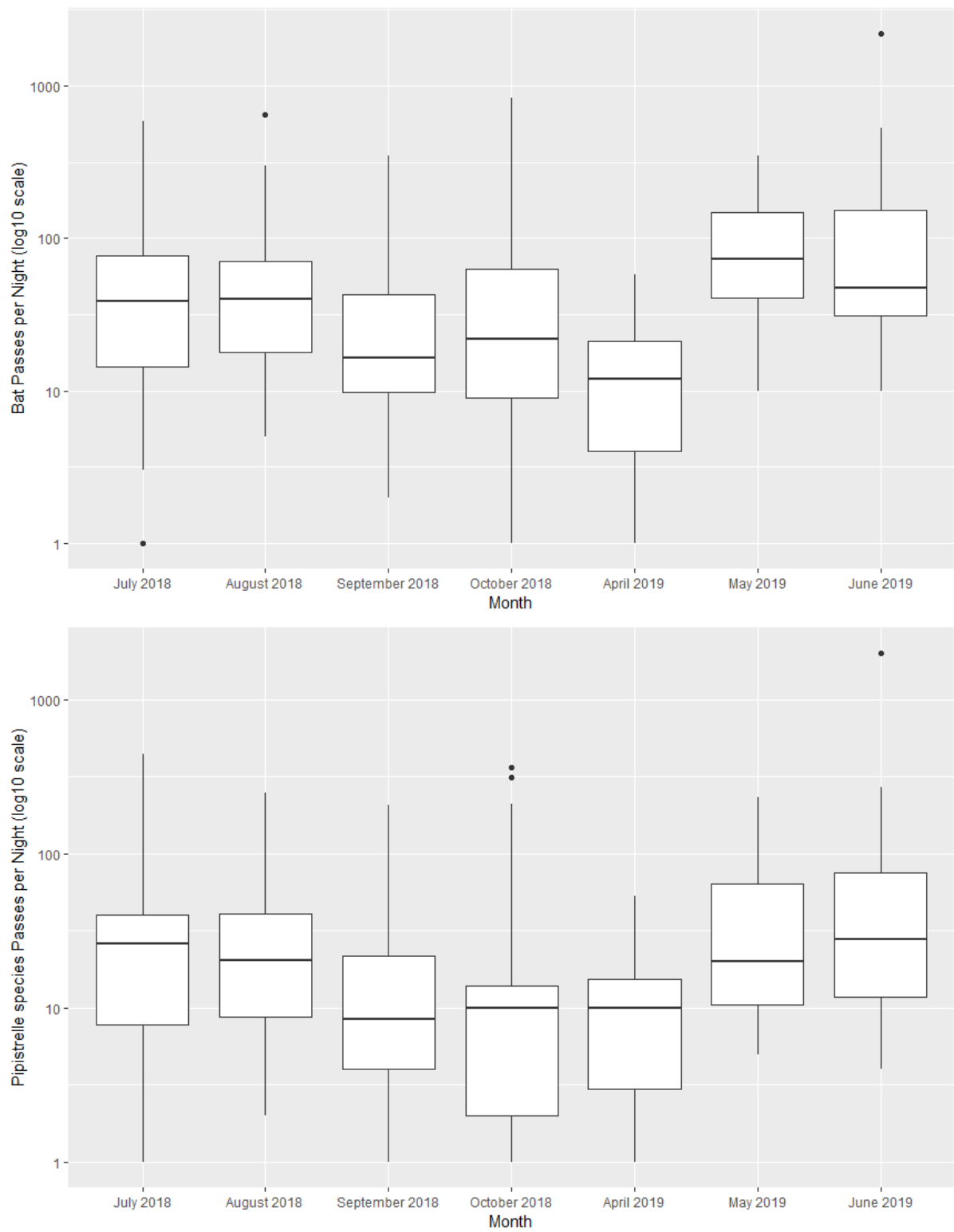


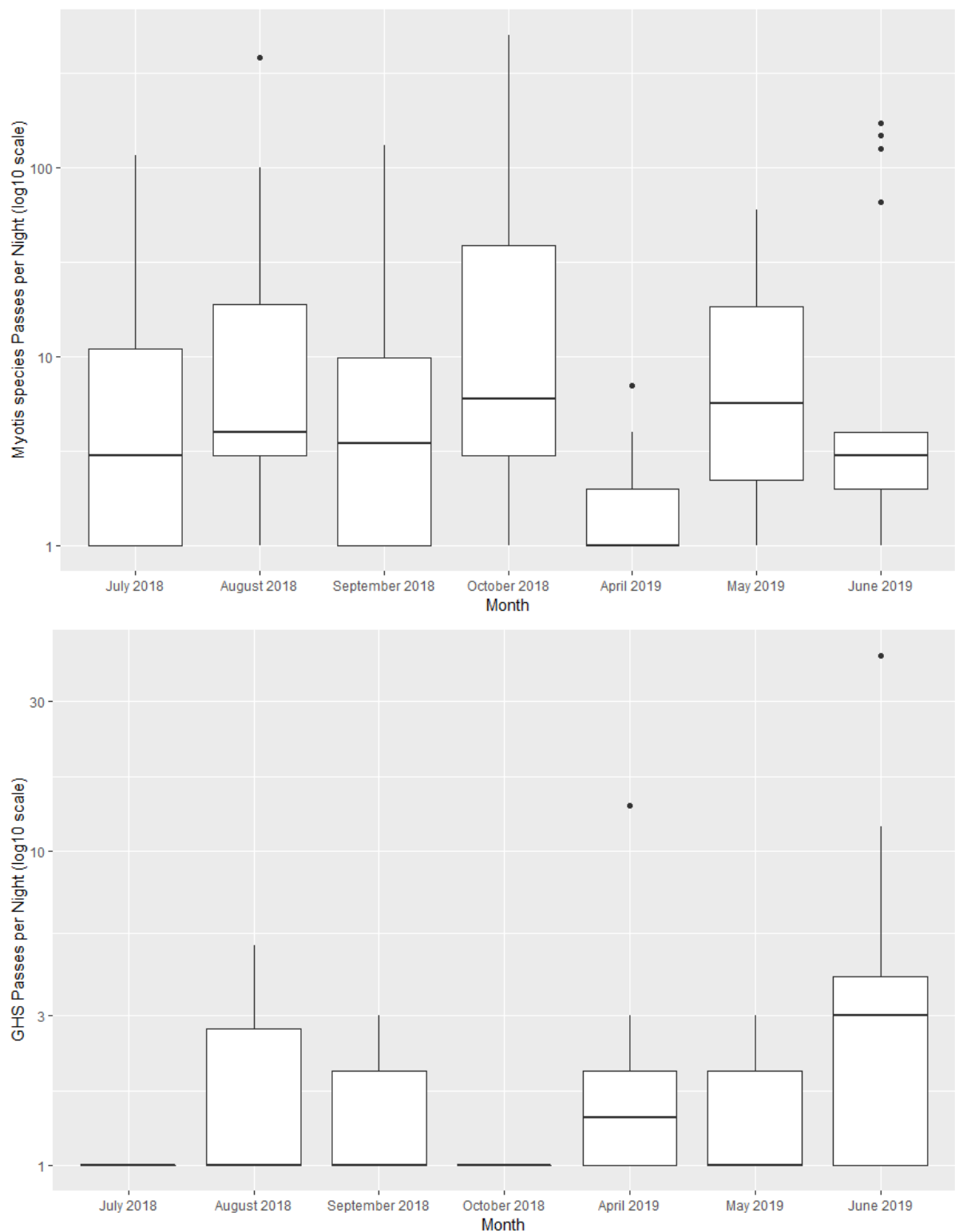


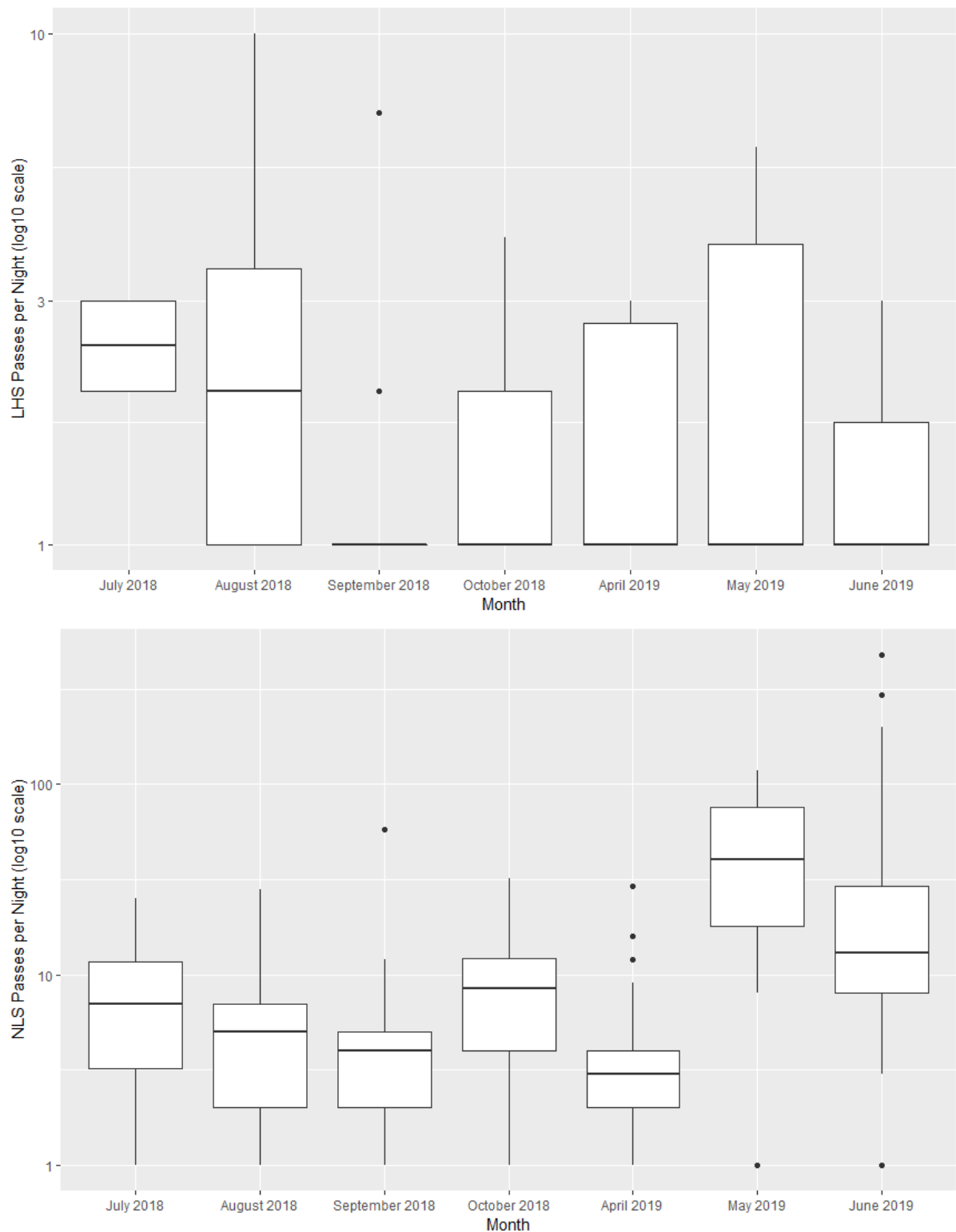


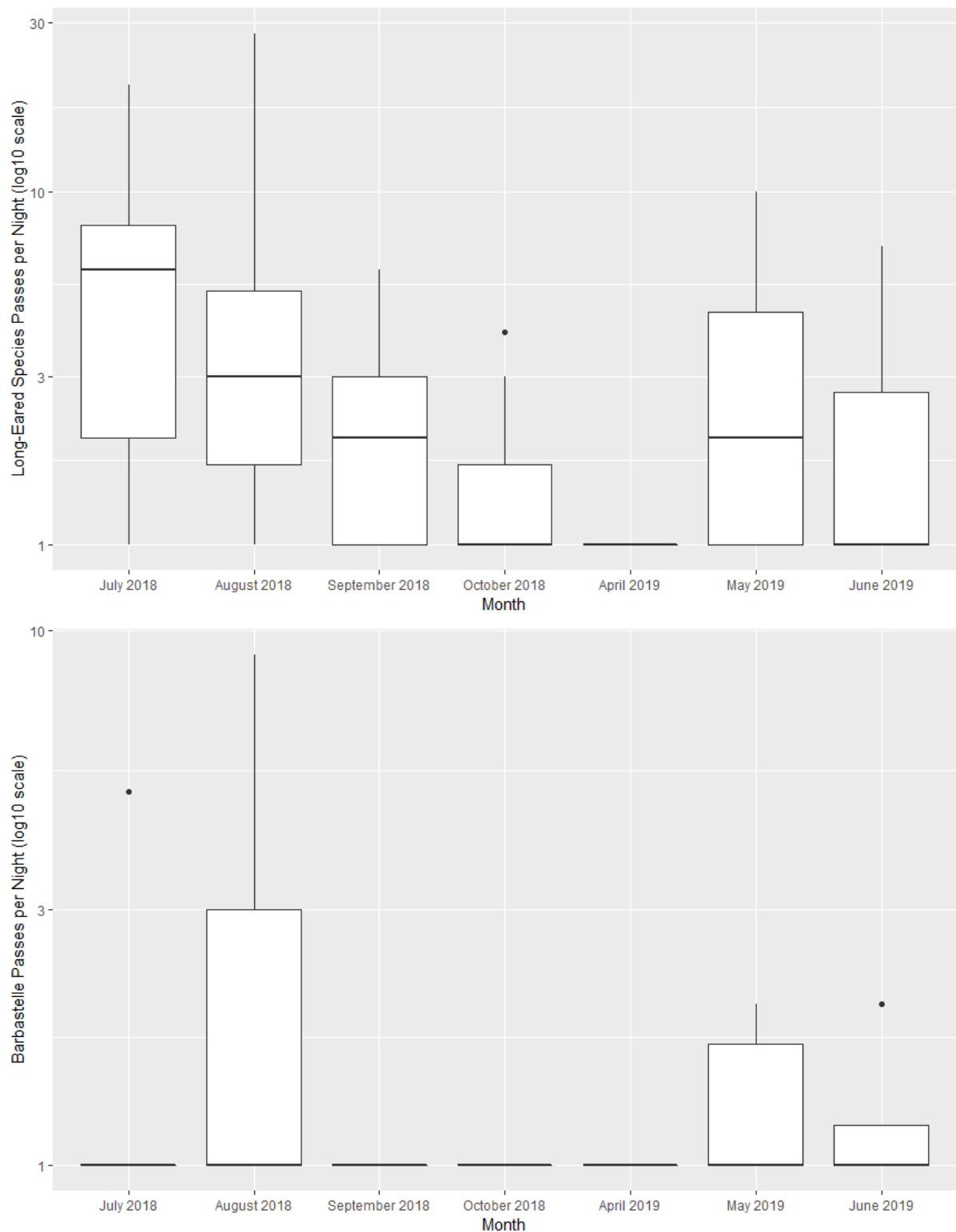


By Month









APPENDIX V: Biodiversity Net Gain

Headline Results

On-site baseline	Habitat units	66.00
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	47.95
	Hedgerow units	0.00
	River units	0.00
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units	-18.05
	Hedgerow units	0.00
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	Habitat units	-27.35%
	Hedgerow units	0.00%
	River units	0.00%

Habitat Baseline

		Habitats and areas				Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Suggested action to address habitat losses	Ecological Total habitat units	Retention category biodiversity value						Bespoke compensation agreed for unaccounted
Ref	Broad Habitat	Habitat type		Area (hectare)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Area retained			Area enhanced	Area succession	Baseline units	Baseline units success	Area lost	Units lost	
1	Grassland	Grassland - Other neutral grassland		7.5	Medium	4	Moderate	2	Low	Unconnected habitat	1	Location ecologically desirable but not in local strategy	Medium strategic significance	11	Same broad habitat or a higher distinctiveness habitat required	66.00	3.05	0.00	26.84	0.00	4.45	39.16		
2																								

Habitat Creation

Post development/ post intervention habitats																	
Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Score	Ecological connectivity			Strategic significance			Temporal multiplier		Difficulty multipliers		Habitat units delivered	Comment
						Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Time to target condition/years	Time to target multiplier	Difficulty of creation category	Difficulty of creation multiplier		
Grassland - Other neutral grassland	0.53	Medium	4	Fairly Good	2.5	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	12	0.652	Low	1	3.46	SUDs Area
Urban - Suburban/ mosaic of developed/ natural surface	3.1	Low	2	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	3	0.899	Low	1	11.14	
Woodland and forest - Other woodland; broadleaved	0.65	Medium	4	Fairly Good	2.5	Low	Unconnected habitat	1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	32+	0.320	Medium	0.67	1.53	
Woodland and forest - Wood-pasture and parkland	0.15	High	6	Fairly Good	2.5	Medium	Moderately connected habitat	1.1	Location ecologically desirable but not in local strategy	Medium strategic	1.1	32+	0.320	Very High	0.1	0.09	
Lakes - Ponds (Priority Habitat)	0.02	High	6	Fairly Good	2.5	Medium	Moderately connected habitat	1.1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	7	0.779	Medium	0.67	0.19	
Totals	4.45															Total Units	16.41

Habitat Enhancement

Main Menu		Instructions		Post development/ post intervention habitats									
Baseline habitats		Change in distinctiveness and condition				Area (hectares)	Distinctiveness	Condition	Ecological connectivity Ecological connectivity score	Strategic significance	Temporal multiplier	Difficulty multipliers Difficulty of enhancement category	Habitat units delivered
Baseline ref	Baseline habitat	Proposed habitat (Pre-populated but can be overridden)	Distinctiveness change	Condition change									
1	Grassland - Other neutral grassland	Grassland - Other neutral grassland	Medium - Medium	Moderate - Fairly Good	3.05	Medium	Fairly Good	Low	Location ecologically desirable but not in local strategy	10	Low	31.54	

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