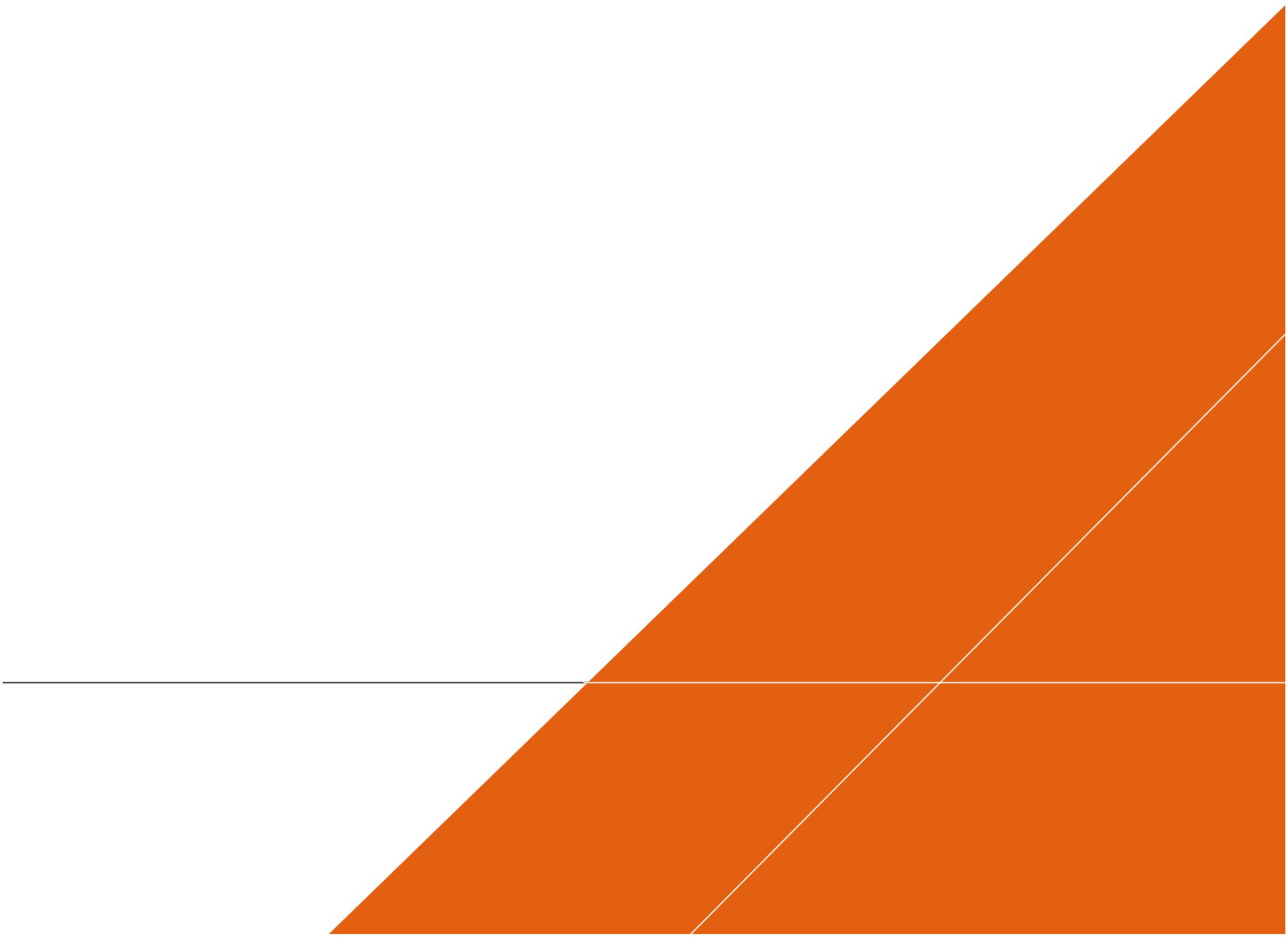
OTTERPOOL PARK

Environmental Statement Appendix 7.13 - Bat Building Assessment and Emergence / Re-entry Surveys – Update to include 2020 and 2021 Survey Data

MARCH 2022



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Executive Summary

Arcadis Consulting (UK) Limited has been commissioned on behalf of Otterpool Park LLP to undertake surveys for bat species to inform an Environmental Impact Assessment (EIA) for the proposed new development and accompany an outline planning application. The proposed Development is 'Otterpool Park', a garden settlement located within Folkestone, Kent. The development area has been identified as an 'area of search'; hereafter, the area of search is referred to as "the site". This report presents the results of bat building surveys (external assessments and emergence/re-entry surveys) conducted between 2017 and 2021.

The site is located within Folkestone, Kent within the administrative boundary of Folkestone and Hythe District Council (F&HDC) and spans a large area located immediately south of Junction 11 of the M20. The site is largely agricultural in nature with the majority of the site comprising arable and pasture fields, a disused horseracing course with an artificial lake ('Folkestone Racecourse Lake'), areas modified from historical use (airfields), existing historic settlements and relatively new industrial areas. The site area encompasses the proposed Otterpool Park Area Development application site which is approximately 589 ha in area.

The results of this study, as set out in Section 3, include:

- The results of a desk study conducted, focussing upon bat roost records;
- An assessment of the habitats within the site for bats;
- Results of the building assessments conducted (including an internal inspection of the Westenhanger Castle);
- Results of the backtracking and emergence surveys conducted;
- An assessment of important commuting, foraging and roosting areas within the site identified during the surveys.

The findings from these data, combined with data collected across other studies, will inform the impact assessment, and will also enable the comparison of the data collected pre-construction, to that collected during construction, and in the post-construction period, as appropriate.

In summary a total of 124 buildings were assessed for bat roosting potential in 2017, of which 32 were assessed as having negligible roosting potential, 47 were assessed as having low potential, 36 as having moderate potential and nine as having high roost potential. Of these structures assessed, a subset consisting of those structures with moderate or high roosting potential was selected for emergence and re-entry surveys and backtracking to identify any roosts present. Where individual structures were to be surveyed, a standard emergence / re-entry survey approach was undertaken, where multiple structures were to be surveyed together a backtracking approach was undertaken. During these surveys a total of 13 confirmed / probable roosts and three possible roosts were identified. All but one of these roosts was a small roost of common or soprano pipistrelle bats, with one roost being a likely maternity roost of brown long eared bats (within building 7j).

In the 2020 follow-up survey, one new building was assessed, 48 of these buildings could not be surveyed due to access issues and several of the 77 surveyed buildings were assessed from the public road. The new building had low bat roost potential, three buildings were found to have an increased bat roost potential compared to the previous survey, with one building being upgraded from low to moderate and one building being upgraded from negligible to low potential and one building being upgraded from moderate to high potential. Two buildings had a decreased to a lower bat roost potential with one building's potential having decreased from moderate to low and one building going from having a low to a negligible bat roost potential.

In 2020 the castle buildings at Westenhanger were inspected internally. During this inspection roosts were confirmed in three of the castle buildings using DNA analysis of droppings. The results of DNA

analysis confirmed that building 2f supports a brown long-eared roost and Building 2h supports a common pipistrelle, brown long-eared and Natterer's bat roost.

Further follow-up building assessment surveys in 2021 upgraded one building from negligible to low and downgraded one building from moderate to low. The collection and DNA analysis of droppings from building 2a confirmed that it had been used as a roost by three species of bat: common pipistrelle, brown long-eared and serotine.

The most up to date roosting status assessment for each structure is presented in Figure 2.

In addition, the desk study revealed a number of roosts on and around the site which had been recorded previously and within surveys conducted for previous planning applications. These included a maternity roost of pipistrelle bats within Lympne Village.

Measures to reduce the impacts to bats will be incorporated with the masterplan and outline planning. Mitigation measures to be employed would include:

- Retention of roosts where practicable, and retention of connectivity between retained roosts (both on and off site) and commuting and foraging features.
- Creation of bat roosting features including bat barns and installation of tree roost boxes and roost boxes within structures;
- Creation of dark corridors within the development, that are designed to ensure that bats can continue to utilise the area;
- Retention and enhancement of foraging areas and retained and enhanced connectivity between foraging areas;
- Where roads etc. cross commuting corridors, planting / underpasses / bridges to ensure that bats can continue to traverse these features.

The survey, when combined with the other bat surveys referred to within this document, are considered sufficient to inform the EIA, allow for masterplan design and to inform outline planning. However, due to the details of the proposed development and the requirement for an extended build out, subsequent surveys are likely to be required to inform each phase of the development. These surveys will inform detailed planning and construction mitigation and avoidance.

1 Introduction

1.1 Overview

1.1.1 Arcadis Consulting (UK) Limited has been commissioned on behalf of Otterpool Park LLP to undertake surveys for bat species to inform an Environmental Impact Assessment (EIA) for the proposed new development and accompany an outline planning application. The proposed Development is 'Otterpool Park', a garden settlement located within Folkestone, Kent. The development area has been identified as an 'area of search'; hereafter, the area of search is referred to as "the site". This report presents the results of bat building surveys (external assessments and emergence/re-entry surveys) conducted between 2017 and 2021.

1.2 Site Location and Setting

1.2.1 The site is located within Folkestone, Kent within the administrative boundary of Folkestone and Hythe District Council (F&HDC) and spans a large area located immediately south of Junction 11 of the M20. The site is largely agricultural in nature with the majority of the site comprising arable and pasture fields, a disused horseracing course with an artificial lake ('Folkestone Racecourse Lake'), areas modified from historical use (airfields), existing historic settlements and relatively new industrial areas.

1.2.2 The M20 motorway, Channel Tunnel Rail Link and Westenhanger Station are located to the north of the site, beyond which lie the villages of Stanford and Postling within a largely rural setting including the Kent Downs Area of Outstanding Natural Beauty (AONB). This AONB extends to the east, beyond which lies the town of Hythe, and to the south where it includes Lympne village. The site also includes the settlements of Barrowhill, Sellindge, Westenhanger and Newingreen. Lympne Industrial Park and some areas of woodland are located immediately south of the site. In addition, East Stour River flows through the site in a north-east to west direction. The site is centred on Ordnance Survey Grid Reference TR 111 363.

1.2.3 An aerial image illustrating the site is presented in Image 1.

Image 1: Aerial imagery of the site

1.3 Proposed Development

1.3.1 The planning application seeks permission for a new garden settlement accommodating up to 8,500 homes (Use Classes C2 and C3) and Use Class E, F, B2, C1, Sui Generis development, including use of retained buildings as identified, with related infrastructure, highway works, green and blue infrastructure, with access, appearance, landscaping, layout and scale matters to be reserved.

1.4 Bat Biology

1.4.1 There are eighteen species of bat in the UK, seventeen of which are known to be breeding in the UK.

1.4.2 Fourteen of the UK bat species have been recorded within Kent.

1.4.3 British bats are insectivorous, occupying many habitat types. Habitats of particular importance for bats include, woodland, hedgerows, ponds, rivers, and trees, and structures where they roost. They require warm summer breeding roosts and temperature stable, cool hibernation sites.

1.4.4 When the weather warms up in spring, bats emerge to feed. UK bats swarm and mate in the Autumn and the females store the sperm until spring. Pregnant females tend to gather together in maternity roosts to give birth, usually giving birth to one offspring per year. The females suckle the offspring for four to five weeks, until they are developed enough to fly.

1.4.5 Table 1 below outlines the light tolerance and roost preference of the bat species recorded by the desk study or field surveys within the site.

Table 1: Basic ecological information on the bat species recorded on or in the vicinity of the site (during the desk study or field surveys)

Common name	Scientific name	Light tolerance	Roost preference
Serotine	*Eptesicus serotinus*	Light tolerant. Will forage around artificial lights	Roosts in buildings in cavities and sometimes found in trees.
Daubenton's Bat	*Myotis daubentonii*	Not tolerant of light. Artificial light may impact upon foraging and commuting.	Roosts in hollow trees, bridges and sometimes buildings close to water.
Natterers' Bat	*Myotis nattereri*	Not tolerant of light. Artificial light may impact upon foraging and commuting.	Roosts in tree holes and different types of building.
Leisler's Bat	*Nyctalus leisleri*	Light tolerant. Will forage around artificial lights	Roosts in trees, bat boxes, and buildings including houses.
Noctule	*Nyctalus noctule*	Light tolerant. Will forage around artificial lights	Roosts almost exclusively in tree holes.
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Light tolerant. Will forage around artificial lights	Hibernation roosts in hollow trees and crevices in cliffs.
Common Pipistrelle	*Pipistrellus pipistrellus*	Light tolerant. Will forage around artificial lights	Maternity colonies usually found in buildings. Will roost

Common name	Scientific name	Light tolerance	Roost preference
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Light tolerant. Will forage around artificial lights	in crevices. Males will roost in buildings and trees and in bat boxes.
Brown Long-eared Bat	*Plecotus auritus*	Not tolerant of light. Artificial light may impact upon foraging and commuting.	Maternity roosts found in trees, in the voids of large old buildings and in bat boxes in woodlands. Bats require enough space for unobstructed internal flight.

1.5 Bat Legislation

1.5.1 This section provides an overview of the legislation applicable to bats, for further information the source legislation should be reviewed.

1.5.2 All bat species are afforded full protection under UK legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act (2000) and the The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Together, this legislation makes it illegal to recklessly, intentionally or deliberately:

- Take, kill or injure a bat;
- Damage, destroy, or obstruct access to, a bat roost; and,
- Disturb a bat occupying a roost.

1.5.3 A bat roost is defined in the legislation as “any structure or place which a bat uses for shelter or protection”.

1.5.4 Annexe II bats are those species listed on Annexe II of the Habitats Directive, which lists animal and plant species of Community interest whose conservation requires the designation of Special Areas of Conservation (SAC’s).

1.6 Policy

1.6.1 The loss of existing roost and foraging sites is an important factor in the decline in bat populations and national planning policy has been devised to halt or reverse this decline.

1.6.2 The NPPF National Planning Policy Framework (2021)) (HMSO 2021) has three overarching objectives to deliver net gains:

“Achieving sustainable development means that the planning system has 3 overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and

- an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

1.6.3 It also states:

"To protect and enhance biodiversity and geodiversity, plans should:

- 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[61]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[62]; and
- 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.

1.6.4 When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons 63 and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."

1.6.5 In addition to the NPPF, the NERC Act 2006 (HMSO 2006) lists priority species which are a material consideration within planning decisions, on Section 41 (S41) of the Act (this supersedes the UK BAP species list). Seven of the British bats are listed as Priority Species. Species listed on Section 41 are presented in Table 2 below.

Table 2: Bat species listed on S41 of the NERC Act 2006

Common name	Scientific name
Barbastelle bat	*Barbastella barbastellus*
Bechstein`s bat	*Myotis bechsteinii*
Noctule	*Nyctalus noctula*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Brown long-eared bat	*Plecotus auritus*
Greater horseshoe bat	*Rhinolophus ferrumequinum*
Lesser horseshoe bat	*Rhinolophus hipposideros*

1.7 Conservation Status of Bats

1.7.1 Of the 14 bat species that have been recorded in Kent, only four of these are considered 'common'. Daubenton's bats are relatively common near water, common and soprano pipistrelle and brown long-eared bats are common and widespread throughout the county. Noctule, serotine, Natterer's and Leisler's bats are uncommon and the other species recorded within the county scarce or rare. A summary of the status of the bats in Kent is presented in Table 3.

1.7.2 The main threats to bats in the UK are thought to include:

- Building and development work, leading to loss or damage of roosts;
- Loss of habitat through development and land use change; and
- The intensification of agriculture, inappropriate riparian management and changes in land use; leading to a decline of insect prey and loss of connectivity for feeding and commuting (BCT 2018).

Table 3: Conservation status of bat species in Kent and the UK (information obtained from Kent Bat Group (Kent Bat Group 2018) Edited and compiled by Jessamy Battersby 2005 and Mammals of Kent Atlas 2001 - 2012.

Common name	Scientific name	UK status	Kent status
Greater horseshoe bat	*Rhinolophus ferrumequinum*	Native, very rare and endangered	Not considered present
Lesser horseshoe bat	*Rhinolophus hipposideros*	Native, rare and endangered	Not considered present
Whiskered bat	*Myotis mystacinus*	Native, locally distributed	Scarce and elusive
Brandt's bat	*Myotis brandtii*	Native, common in west and north England, rare or absent elsewhere	Rare and elusive

Common name	Scientific name	UK status	Kent status
Bechstein's bat	*Myotis bechsteinii*	Native, very rare	Very rare (see ES Appendix 7.14 for further information)
Daubenton's bat	*Myotis daubentonii*	Native, common throughout much of the UK	Common near water
Natterer's bat	*Myotis nattereri*	Generally scarce	Scarce
Serotine	*Eptesicus serotinus*	Native, widespread in southern Britain	Widespread but declining
Noctule	*Nyctalus noctula*	Native, generally uncommon, but more numerous in well- wooded areas	Generally uncommon, declining
Leisler's bat	*Nyctalus leisleri*	Native, widespread, scarce in GB, common in Northern Ireland	Scarce, may be under-recorded
Common pipistrelle	*Pipistrellus pipistrellus*	Native, common across the UK	Common
Soprano pipistrelle	*Pipistrellus pygmaeus*	Native, common across the UK	Common
Nathusius' pipistrelle	*Pipistrellus nathusii*	Native, rare	Scarce, often migrant
Barbastelle	*Barbastella barbastellus*	Native, widespread but rare	Not present or very rare (see ES Appendix 7.14 for further information)
Brown long-eared bat	*Plecotus auritus*	Native, common	Common
Grey long-eared bat	*Plecotus austriacus*	Native, very rare	Not present or very rare
Alcathoe's bat	*Myotis alcathoe*	Native, uncertain distribution	Insufficient data, status uncertain, probably rare

2 Approach and Methodology

2.1 Introduction and Overview

2.1.1 This report outlines the results of the bat roost assessments of the buildings on and around the site, and subsequent backtracking and emergence /re-entry surveys conducted across the site. This report should be read alongside the following reports:

- Otterpool Park EIA bat activity transect surveys report (ES Appendix 7.12);
- Otterpool Park EIA bat static detector surveys report (ES Appendix 7.14); and
- Otterpool Park EIA bat survey summary and impact assessment (ES Appendix 7.11).

2.1.2 This report also provides information on the habitat assessment and desk study conducted to inform the surveys.

2.2 Survey Scoping and Proportionality

2.2.1 The purpose of the building assessments and subsequent emergence and re-entry surveys was to identify key roosts within the zone of influence of the Otterpool Park development. It was not the intention of the surveys to identify all roosts within the zone of influence of the development.

2.2.2 As the purpose of the surveys was to identify key roosts, in order to maintain proportionality only structures which were assessed as having moderate or high potential to support roosts were surveyed with emergence / re-entry surveys. Within this group, only those structures which are likely to be directly impacted by the development were surveyed. The potential to impact upon foraging and commuting bats which roost nearby to the development but utilise areas of the site will be assessed through the desk study and information on the use of the site obtained during the activity transects and the static detector surveys.

2.2.3 It is considered likely that within the site there will be multiple small roosts which were not identified within the surveys. It will be appropriate to conduct further surveys throughout the planning and buildout programme for the development to ensure that these roosts are adequately identified and mitigated within the Otterpool Park development.

2.2.4 The potential for additional roosts within the site will be acknowledged within the EIA and it will be ensured that there is adequate scope for mitigation within the design.

2.2.5 Internal inspections of the buildings which will require removal were not conducted. Many of the structures assessed were in a poor state of repair or may have contained asbestos and it was considered a disproportionate health and safety risk to inform the masterplanning and EIA stage of the development process. However, it is considered that where health and safety constraints allow it would be appropriate to conduct internal inspections prior to the development of each phase in order inform additional mitigation (for instance provision of alternative roosts).

2.2.6 Surveys of potential tree roosts were not undertaken as the masterplan design is being iterated to retain the majority of the trees within the site. In addition, bat tree roosts are difficult to detect, and the majority of bat species move between multiple tree roosts throughout the year. Therefore, it will be more appropriate to conduct these surveys at a later stage in the planning process.

2.2.7 Full details of additional surveys which are recommended to be conducted at a later stage of the planning process are presented in section 5.4.

2.2.8 In addition to identifying roosts, the emergence surveys also obtained the following information:

- Areas important for foraging bats;
- Areas important for commuting bats;
- The assemblage of bats utilising the areas of the site where emergence and re entry surveys were conducted.

2.3 Habitat Assessment

2.3.1 In order to inform the survey design, a habitat assessment was undertaken to identify habitats and areas likely to be if value for bats. This assessment was undertaken on 4, 5 and 6 October 2016 by Arcadis ecologists Guy Stone and Brandon Murray, combined with a Phase 1 habitat survey. During this survey, key habitat areas, including likely commuting routes, foraging areas and roosting locations were identified. These assessments were utilised to design and scope the bat surveys.

2.3.2 Update surveys across the site have been conducted throughout 2017 – 2021, with the most recent comprehensive habitat assessment conducted in May 2020, In addition, any habitat changes noted during the bat surveys were recorded.

2.4 Desk Study

2.4.1 A desk study was conducted to collate and review existing information regarding bats within the site and the surrounding area. A selection of resources was utilised to inform the desk study, including publicly available data sets, previous survey information regarding the site obtained from previous planning applications and from local record centres. Initially, records centre data from a desk study requested in May 2016 was utilised to inform the surveys, with an updated information request for records within a 2km radius of the site from Kent and Medway Biological Records Centre (KMBRC) obtained in March 2018 and an update obtained in April 2020.

2.4.2 The following data was reviewed to inform the desk study:

- Aerial photography (e.g. google mapping);
- WYG (2016) Shepway District Council, Folkestone Kent, Extended Phase 1 Habitat Survey Ecology Report;
- Highways England (2016) M20 Lorry Area Stanford West Interim Environmental Assessment Report;
- Ecotricity (2012) Harringe Brooks Wind Park Environmental Statement;
- Peter Brett Associates LLP (2015) Link Park Phase 2 Supplementary Environmental Statement Non Technical Summary;
- CSa Environmental Planning (2013) Ecological Appraisal – Lympne, Former Lympne Airfield – Proposed Housing Development;
- Ecology Solutions Ltd (2014) Ecological Assessment, Land at Sellindge, Kent;
- NBN Atlas https://nbn.org.uk/.

2.5 External Building Assessment

External building assessment dates

2.5.1 The assessment comprised an external inspection of the buildings within the study area (where access permitted) to identify features with potential to support roosting bats (Preliminary Roost Assessments – PRA) in 2016-2018. The buildings assessment was undertaken over multiple days and visits, as shown in Table 4 below. It was not possible to visit all buildings in a single period due to access restrictions and changes as the design evolved. Details of the dates on which each structure were assessed are shown in Table 20. In 2020 a follow-up survey was conducted at all buildings where access was granted, to detect any changes in bat roost potential.

Table 4: Dates of bat assessment surveys

Date	Surveyors	Overview of survey coverage
4, 5 and 6 October 2016	Brandon Murray and Guy Stone	Buildings within and adjacent to the Racecourse, general site overview survey.
31 May 2017	Brandon Murray and Ewan Gibson	Areas adjacent to Holiday Extras, Newingreen
27 and 28 June 2017	Aline Brodzinski and Ewan Gibson	Buildings across the Study Area
12 July 2017	Brandon Murray and Ewan Gibson	Bunkers to the west of Otterpool Lane, Hilhurst Farm
4 August 2017	Brandon Murray and Alex Ward	Buildings along the A20, Upper Otterpool
14 August 2017	Hannah Tracey and Jon Carter	Building within the lorry park south of the A20
20 February 2018	Brandon Murray and Ewan Gibson	Bunkers within Lympne Airfield, Buildings within Otterpool Manor
14 June 2018	Brandon Murray and Rebecca Beale	Buildings along the A20 (where access was not previously possible).
15 June 2018	Brandon Murray and Rebecca Beale	Buildings along the A20 (where access was not previously possible)
21 June 2018	Brandon Murray	Buildings along Stone Street Westenhanger
28 June 2018	Brandon Murray and Katy Smart	'Killymoon' north of the A20
8 August 2018	Brandon Murray	Buildings adjacent to the A20
25 March 2020	Marielle James	Westenhanger Castle and surrounding buildings (2A and 2B)
15 May 2020	Brandon Murray and Liam Price	All buildings that could be accessed. 48 buildings throughout the site could not be assessed even from distance.
27 July 2020	Marielle James and Rory Roche	Buildings within Red House Farm complex, south of A20

Date	Surveyors	Overview of survey coverage
18 and 19 August 2021	Claire Wiggs and Ewan Gibson	All buildings that could be accessed. 36 buildings throughout the site could not be assessed even from distance.

Building assessment scoping

2.5.2 All buildings potentially within the zone of influence of the masterplan were assessed using aerial imagery for their potential to support roosting bats and their likelihood to be affected by the masterplan. Buildings located within close proximity and of the same construction type and description were combined into 'areas'. Where the number of buildings within an 'area' was large, smaller clusters were identified, named with an upper case letter. Each individual building was also assigned a building number, followed by a lower case letter to identify the actual building.

Building Areas, clusters and buildings

2.5.3 A total of 126 buildings/structures were assessed for their potential to support roosting bats. These buildings were separated across 17 building 'areas'. These areas were divided further into a total of 27 'clusters'. This was conducted in order to make locating the buildings within the mapping easier, and in order to group the buildings so that multiple buildings could be surveyed together through backtracking.

2.5.4 See the table below (Table 5) for building areas and clusters as well as the associated building / structure codes, and Figure 1 and Figure 2 for building locations.

Table 5: Building areas, clusters and buildings assessed

Area	Cluster	Buildings
1	1A	1a, 1a(a), 1b, 1c, 1d
	1B	1e, 1f(a), 1f(b), 1g, 1h, 1i, 1j
	1C	1k, 1l
2	2A	2f, 2g, 2h, 2i, 2j
	2B	2a, 2b, 2c(a), 2c(b), 2c(c), 2c(d), 2c(e), 2d(a), 2d(b), 2d(c), 2e
3	3A	3b, 3c, 3d, 3e, 3f, 3g
	3B	3a
4	4A	4a
	4B	4b
5	5A	5a, 5b, 5c, 5d, 5e, 5f
6	6A	6a, 6b, 6c, 6d
7	7A	7a, 7b, 7c(a), 7c(b), 7c(c), 7d, 7e(a), 7e(b), 7e(c), 7e(d), 7e(e), 7e(f), 7e(g), 7e(h), 7f, 7g, 7h, 7i, 7o, 7p, 7q,

Area	Cluster	Buildings
	7B	7k
	7C	7j, 7l, 7m
	7D	7n
8	8A	8e(a), 8e(b), 8f, 8g
	8B	8a, 8b, 8c, 8d
9	9A	9a, 9b, 9c, 9d, 9e, 9f
10	10A	10a, 10b/c
11	11A	11a, 11b/c, 11d, 11e/g, 11f, 11h, 11i, 11j
12	12A	12a, 12b, 12c, 12d
13	13A	13a, 13b, 13c, 13d, 13e, 13f, 13g, 13h, 13i, 13j, 13k, 13l, 13m, 13n, 13o, 13p, 13q, 13r, 13s
	13B	13t
14	14A	14a
15	15A	15a, 15b
16	16A	16a, 16b, 16c*
17	17A	17a
Total	27	130

*16c was a new building that was not present during the surveys prior to 2020.

Building External Assessment Survey methodology (conducted from the ground)

2.5.5 Buildings on site were externally assessed from the ground for their potential to support roosting bats following the Bat Conservation Trust (BCT) Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016). The assessments were undertaken between October 2016 and August 2021 as access was obtained, including the later update surveys.

2.5.6 The external visual inspection assessed the buildings according to features present that may have the potential for use by bats. These included recording potential roosting features such as holes, apertures and other opportunities for bats to roost including the type, quality and connectivity of the surrounding habitat.

2.5.7 These were then categorised according to their potential as detailed in the BCT guidelines. Categories as follows are presented in detail in Appendix A:

- negligible;
- low;
- moderate; and

- high.

2.5.8 Where possible, evidence of bat activity or features with roosting potential were confirmed by the presence of the following signs:

- bat droppings (these may accumulate under an established roost);
- droppings collected from building 2a in 2021 were sent to Swift Ecology ltd for DNA analysis to identify species.
- insect wings (from feeding);
- oil (from fur) and urine stains;
- scratch marks;
- actual sightings (including corpses).

2.5.9 Results of the initial building assessment are presented in Table 14 and Figure 2.

Hibernation assessment

2.5.10 A hibernation potential assessment was also undertaken. This was a high-level assessment assessing the building likelihood to support hibernating bats. The criteria utilised is presented in Table 6. No internal inspections were undertaken on any structures due to access restrictions and health and safety concerns. The results of the hibernation assessments are shown in Table 18. In the absence of any definitive good practice guidance, bespoke assessment criteria were utilised to describe hibernation potential. This assessment was based upon the potential for the structure to offer areas of shelter with a stable temperature regime during the winter. This assessment should be viewed as a preliminary assessment only and further surveys will be required to inform detailed design (as presented in section 5.4).

Table 6: details of the hibernation potential criteria utilised within the reporting.

Hibernation Category	Explanation
Negligible	Structure has no Potential Roost Features which are likely to offer a bat a location for shelter with a stable temperature regime, suitable for hibernation.
Unknown	The structure cannot be assessed at this time. Access for internal inspection will be required. Within the EIA, a precautionary approach will be undertaken (hibernation potential is assumed).
Potential	The structure is likely to offer hibernation opportunities. This potential will likely need to be investigated at the appropriate stage of the planning process. Within the EIA, a precautionary approach will be undertaken.

2.6 Bat building Emergence / Re-entry Surveys and Backtracking to Locate Roosts

Overview and Survey Scoping

2.6.1 Once the building assessments were completed, a subset of structures which required more detailed emergence / re-entry surveys were identified. As the purpose of the surveys was to identify key roosts, in order to maintain proportionality only structures which were assessed as having moderate or high potential to support roosts were surveyed with emergence / re-entry surveys. The exception to this was when these structures were within clusters, in this instance these buildings were surveyed simultaneously with higher roost potential buildings (although these buildings were not the target of the survey). In addition, only those buildings which are likely to be directly impacted by the development were surveyed. The potential to impact upon foraging and commuting bats which roost nearby to the development, but utilise areas of the site, will be assessed through the desk study and information on the use of the site obtained during the activity transects and the static detector surveys.

2.6.2 Full details of the process through which further emergence / re-entry surveys were identified is presented within a decision tree in Appendix E. The emergence / re-entry and backtracking surveys were undertaken between July and September 2017, July and August 2018 and July and August 2020. Full details of the dates of the surveys, the weather during the surveys is presented in Table 22 in Appendix D.

2.6.3 Those buildings which had their category upgraded by subsequent external assessment surveys did not require further emergence / re-entry surveys as they had already been surveyed sufficiently as part of the larger cluster surveys (buildings 1e, 2f and 9a) or were only upgraded to Low (building 1k) and did not therefore require a further survey at this stage (as explained in the decision tree in Appendix E).

2.6.4 Within the emergence/ re-entry surveys, two approaches were undertaken, a standard survey protocol, with static surveyors positioned around structures and a ‘backtracking;’ approach. The backtracking approach was utilised where buildings were clustered in a restricted area, and the buildings could be covered more efficiently by fewer surveyors. Backtracking locates roosts through following commuting bats. In instances where backtracking was conducted, the buildings surveyed are identified by the ‘cluster’ number of the area surveyed. The sections below provide details of the methodologies utilised within the surveys.

2.6.5 The table below (Table 7) outlines the number of surveys conducted for buildings within each assessment category

Table 7: Number of emergence / re-entry or backtracking surveys conducted for structures of each roosting category.

Category	Number of surveys	Notes
Negligible	None*	No surveys were required and no surveys are likely to be required during the planning process.
Low	None*	These were not surveyed as only key roosts were to be located at this stage of the planning process. Surveys are likely to be required later in the planning process.
Moderate	Minimum of two surveys*	Additional update surveys are likely to be required later in the planning process.

Category	Number of surveys	Notes
High	Minimum of three surveys	Additional update surveys are likely to be required later in the planning process.

* where backtracking was undertaken a greater number of surveys may have been undertaken.

Emergence / re-entry surveys (non-backtracking)

2.6.6 Emergence/ re-entry surveys were undertaken on buildings with a BCT rating potentials at moderate or high. The emergence / re-entry surveys were carried out by experienced surveyors strategically positioned to cover the main features identified during the initial assessments. Elekon Batlogger which is a hand-held device used to detect bats was used across all surveys by each surveyor.

2.6.7 The dusk surveys began approximately 15 minutes before sunset and finished approximately 90 minutes after sunset. The dawn surveys began a minimum of 90 minutes before sunrise and finished 15 minutes after sunrise.

2.6.8 It can be difficult to definitively determine if a bat observed emerged from a particular structure, particularly when it is dark. In instances where surveyors were unsure whether a bat emerged from a particular location, the subsequent surveys were designed to provide closer surveys upon these areas. This was particularly applicable in areas 1 and 2, where subsequent surveys were able to focus on potential emergence / re-entry locations.

Backtracking roost surveys

2.6.9 The following section from the Bat Survey Guidelines (Collins 2016) outline the purpose and methodology of backtracking surveys.

2.6.10 “Back tracking surveys involve ecologists making visual observations of bats commuting away from their roosts at sunset or commuting back to their roosts at sunrise then attempting to track back to the roost based on these observations. Bat detectors are also used to record echolocation for identification of species, where possible. This technique was first developed in the Netherlands and is based on 4 principles:

- The earlier a bat is seen after sunset or the later it is seen before sunrise, the closer it is likely to be to its roost (the exact time depends upon the species).
- Bats fly away from the roost at sunset, so ecologists should move in the opposite direction as the bats at this time to locate the roost.
- Bats fly towards their roost at sunrise, so ecologists should move in the same direction as the bats at this time to locate the roost.
- At sunrise, some bats species swarm at roost access points for between 10 and 90 minutes before entering.

2.6.11 The aim is to find roosts by making observations of commuting bats. These surveys are often used after a bat activity survey if numbers of bats were seen all commuting in one direction and follow-up is required or in situations with lots of potential roosts sites that are difficult to survey using alternative methods (e.g. in woodlands or highly urbanised areas).”

2.6.12 Backtracking surveys at dusk started 15 minutes before sunset and ended once it was too dark to observe bats, usually 1.5 – 2 hours after sunset. Backtracking surveys at dawn started 2 hours before sunrise and ended when bat activity ceased, usually within 15 minutes after sunrise.

2.6.13 Observations between surveyors were communicated with walkie-talkies to increase the efficacy of the surveys.

Data Analysis

2.6.14 Where a roost or potential roost was identified, or particularly notable bat activity was recorded, the calls recorded on the bat detectors were analysed using Bat Explorer analysis software. Calls were assessed using the guidelines within the relevant guidance documents (Russ 2012).

Roost valuation

2.6.15 The valuation of roosts within the site was assessed upon the system outlined within the bat mitigation guidelines (Collins, 2016), to inform the EIA process. The bandings utilised are present within the table below (Table 8).

Table 8: Table showing the categorisation bandings of roosts within the site.

Geographic	Roost types
District, Local or Parish	Feeding perches (common species) Individual bats (common species) Small numbers of non-breeding bats (common species) Mating sites (common species)
County	Maternity sites (common species) Small numbers of hibernating bats (common and rarer species) Feeding perches (rarer/rarest species) Individual bats (rarer/rarest species) Small numbers of non-breeding bats (rarer/rarest species)
Regional	Mating sites (rarer/rarest species) including well- used swarming sites Maternity sites (rarer species) Hibernation sites (rarest species) Significant hibernation sites for rarer/rarest species or all species assemblages
National/UK	Maternity sites (rarest species) Sites meeting Sites of Special Scientific Importance (SSSI) guidelines
International	Special Area of Conservation (SAC) sites

2.7 Westenhanger Castle External and Internal Building Assessment

2.7.1 Further detailed surveys of Westenhanger Castle were undertaken on 25 March 2020 by Marielle James (Senior Ecologist) and Rory Roche (Ecologist). These were required because, at the time of the surveys, the exact scope and extent of the works was unknown, however, it was considered that these works would likely involve refurbishment and/or removal works on structures and the removal of trees within the moat of the castle.

2.7.2 The surveys involved external and internal inspections of buildings within clusters 2A and 2B where access was possible.

2.7.3 Full details of the methods are described in Appendix G.

2.8 Other Bat Surveys Conducted

2.8.1 Alongside the building assessments and emergence / re-entry surveys, a range of other surveys were conducted, to thoroughly assess the usage of the Otterpool Park site by bats.

2.8.2 The results from the surveys are compiled and assessed holistically in the associated EIA, Bat survey results summary and impact assessment (ES Appendix 7.11) and in the Bat Mitigation Strategy (within ES Appendix 7.18).

2.8.3 The following surveys were conducted, and the results of these surveys can be seen in the appropriate reports.

Activity (transect) Surveys

2.8.4 Alongside the static (automated) surveys, transect surveys were conducted. These assessed the assemblage of bats present within and around the site and also provided a qualitative assessment of bat behaviour and usage of the site. The details of these surveys are presented in the Activity Transect Surveys report (ES Appendix 7.12).

Static automated surveys

2.8.5 Alongside the transect surveys, static (automated) detector surveys were conducted. These assessed the assemblage of bats present within and around the site. The details of these surveys are presented in the Static Automated Surveys report (ES Appendix 7.14).

2.9 Survey limitations

2.9.1 Due to access, several buildings identified within the zone of influence of the development were only partially externally assessed from a vantage point. A BCT assessment for its likelihood to support roosting bats was only based on partial view and assessment of buildings. Buildings assessed by the roadside with restricted / partial view were identified in Appendix B with an asterisk, and areas listed in Table 9.

2.9.2 Where this was the case, the likelihood of roosts was assessed from the (restricted) BCT assessment and the data recorded from adjacent static detector surveys and activity transects.

Table 9: Buildings where full external survey could not be conducted

Area Number	Cluster	Building	Assessment Conducted	Reason for survey limitations
6	6A	6b		
		6c		
		6d		
7	7A	7i	Roadside / from public right of way	Access requested via letter drop, no access permitted.
		7l		
		7m		
8	8B	8a		

2.9.3 It can be difficult to determine definitively that a bat emerged from a structure, especially during the darker periods of the surveys. As such, when a surveyor recorded that an emergence / re-entry to a structure was 'probable', subsequent surveys were designed to cover this area. In some instances, it was still not possible to confirm a roost, and in these instances, a precautionary assessment was undertaken, where 'probable' roosts were treated as confirmed roosts within the EIA.

2.9.4 No access was granted to survey 48 buildings in the 2020 follow-up building assessments. The details of which can be found in Table 15.

2.9.5 No access was granted to survey 36 buildings in the 2021 follow-up building assessments. The details of which can be found in Table 15.

3 Results

3.1 Reporting Outline

3.1.1 The summary of the results of the desk study, habitat assessment, building assessment and bat emergence / re-entry surveys are presented in this section. Detailed results from each survey are presented in Appendices A to D. Figures are presented as follows:

- An overview of the structures on site is presented in Figure 1;
- The results of the building assessments are presented in Figure 2;
- An overview of al roost identified in the desk study and during the surveys is presented in Figure 3; and
- The results of each of the bat emergence surveys conducted is presented in Figure 4.

3.1.2 Bat related appendices within the EIA are outlined below, in Table 10.

Table 10: Bat related appendices and information within the ES

Appendix	Title	Description
7.11	Bat survey results summary and impact assessment	This appendix includes a summary of all of the bat surveys conducted, a valuation of the bats present within and around the site (where appropriate) and outlines the potential impacts from the development.
7.12	Bat Activity Survey (Transects)	This appendix includes the results of the bat activity transects conducted across the site in 2017 and 2021.
7.13	Bat Building Assessment and Emergence / Re-entry Surveys	This appendix includes the results of the building assessments conducted across the site in 2017 and 2018 and the follow-up surveys in 2020 and 2021 as well as the emergence/ re-entry surveys conducted across the site in 2017 and 2018.
7.14	Bat static detector surveys	This appendix includes the results of the static (i.e. automated) detector surveys conducted across the site in 2017 and 2021.

3.2 Desk Study

3.2.1 A desk study undertaken revealed that no designated sites are present within 2km of the Project and no Special Areas of Conservation (SACs) where bats are a qualifying feature occur within 30km of the proposed Development. Due to the long lived and site loyal nature of bat species no time limit was placed on the data examined (all data received from KMBRC was reviewed).

3.2.2 The information from KMBRC (which included information from Kent Bat Group) returned records of seven bat species within 5km of the site. The table below (Table 11) presents a summary of the desk study data obtained from the KMBRC. Basic ecological information on each of the species is also presented.

Table 11: Summary of Desk Study Data

Species	Records (non-roost)	Records (Roosts)
Soprano pipistrelle	21	12
Common pipistrelle	97	12
Nathusius' pipistrelle	1	0
Noctule	11	1
Serotine bat	20	4
Brown long-eared bat	6	31
Daubenton's bat	15	0

3.2.3 Multiple records of roosts were returned from within 5km of the site. Where sufficient accuracy for these results was provided, these locations are presented on Figure 1. In summary, the roosts listed within Table 12 are located within the vicinity of the Otterpool Park site. Only those within the site or in the immediate vicinity of the site are listed. Within this table the 'valuation' of these roosts is also presented (based upon the criteria presented in Table 8.

Table 12: Bat roosts recorded within the vicinity of the Otterpool site

Roost Location	Species	Roost Type	Notes	Year recorded	Roost valuation
Within Barrow Hill, Sellindge TR108375	Unknown	Unknown	Droppings only	1992	Unknown
Within Westenhanger Village TR127368	Pipistrelle	Unknown roost	1 bat	2000	Unknown
By Railway station building TR128372	Unknown	Unknown	N/A	1989	Unknown
Two Chimneys, Westenhanger Village TR128365	Pipistrelle	Unknown	1 bat	1988	District, Local or Parish
Within Lympne village TR119350	Pipistrelle	Maternity	One bat recorded	2007	County
Within Lympne village TR119350	Pipistrelle	Maternity Roost	Maternity roost recorded on multiple dates peak count 114 bats in 1995.	1995, 1999, 2007, 2008	County

Roost Location	Species	Roost Type	Notes	Year recorded	Roost valuation
Within Otterpool Manor TR109365	Common pipistrelle	Summer roost	2 bats (see notes from wind farm surveys below)	2009	District, Local or Parish
South of the site by Lympne Castle TR119347	Serotine	Unknown	Droppings only	2001	Unknown
Within Stanford TR129377	Long-eared species	Hibernating bat	1 bat	2010	County

3.2.4 In addition, information was also obtained from previous surveys conducted on the site. This data was collected from previous surveys conducted on and around the site in order to inform other planning decisions. The results of the assessments of previous planning applications are presented in Table 13.

Table 13: Data from other sources (previous planning applications)

Information Source	Data obtained
CSa – Former Lympne Airfield – Proposed Housing Development, Ecological Appraisal, January 2013.	Static surveys conducted in July, August and September 2012 on Lympne Airfield site (TR 114 353). 'Low' bat activity recorded across the site, higher activity recorded in certain locations. Species recorded were common pipistrelle and pipistrelle species. Static detectors were placed onsite in July 2012 and September 2012. Species recorded were common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, pipistrelle species (not identified to species), long-eared bat species (not identified to species), noctule, serotine, 'big bat' species (not identified to species), and Myotis bat (not identified to species). Structures with low potential for roosting bats were identified around the periphery of the site including bunkers.
TEP, Link Park Green Energy, ES volume 1 Chapter 7, Ecology and Biodiversity, Surveys conducted in 2013	Transect and static surveys conducted in 2013 on a former quarry site around TR 112 366 Low levels of commuting and foraging by common pipistrelle bats recorded across the site. Soprano pipistrelle, serotine and myotis bats (not identified to species) were also recorded. Static surveys showed steady moderate levels of bat foraging along the woodland edge.
Ecotricity, Harringe Brooks Wind Park Environmental Statement April 2012.	Bat roost assessments conducted in 2009. Bat static and transect surveys conducted in 2009. Fifty-five trees around the proposed wind farm location were identified as having medium bat roost potential. Bat roost assessments found three structures with bat roosting potential within Otterpool Manor (TR 109 365) had High bat roost potential. One building was confirmed as having a common pipistrelle roost.

Information Source	Data obtained
	At Harringe Court (TR 094 370) three buildings were identified as having medium bat roost potential. Activity surveys were conducted in 2009. During the survey 253 bat passes were recorded. Species recorded included Daubenton's bats, common pipistrelle bats, soprano pipistrelle bats and Leisler's bats. The largest number of bat passes were recorded within or adjacent to Harringe Brooks Woods or towards the East Stour River.
Ecology Solutions Ltd, Land at Sellindge, Kent, Ecological Assessment July 2014.	Surveys conducted in 2013 included tree assessments and bat activity transects around the Sellindge extension site (TR103380). The tree assessments found no confirmed bat roosts. The activity transects recorded low levels of activity within higher levels of activity along hedgerows, near tree belts and water bodies. The only species recorded within the transect surveys was common pipistrelle.
Highways England, Collaborative Delivery Framework M20 Lorry Area – Stanford West Bat Report	Surveys were conducted around TR123377. Tree and building assessments, transects and habitat assessments were conducted. The tree and building assessments conducted in 2016 found three trees with a high potential roosting features; six trees and one building with moderate roosting potential and one tree and one building with low roosting potential. A transect survey conducted in 2016 recorded common pipistrelle, soprano pipistrelle and Myotis bats (not identified to species level).

3.3 Habitat assessment

3.3.1 The habitat assessment conducted in October 2016 identified multiple habitats with value for bats. These areas included:

- Hedgerows likely to be utilised for foraging and commuting;
- Trees and buildings suitable for roosting;
- Streams, rivers and ponds likely to be utilised for foraging and commuting;
- Woodlands likely to be valuable for foraging and roosting;
- Grasslands and arable habitats likely to be utilised for foraging.

3.3.2 Overall, when the site was considered as a whole, it was assessed that it offers moderate habitat for bats consisting of good habitat connected to the wider landscape that could be used by bats, with large areas of lower value habitats (such as the intensively farmed arable fields). However, certain areas of the site offer higher value for bats, including the woodlands, river and tree lined stream corridors, and water bodies.

3.3.3 The overall assessment of the value of the site was used to determine the required surveys required to inform the EIA, design the masterplan and inform the required mitigation.

3.3.4 The habitat assessment update conducted through 2021 identified no significant changes to the habitats with value for bats.

3.4 Building assessment results

3.4.1 A total of 17 building clusters were assessed for their potential to support roosting bats across the site, formed of a total of 131 individual structures. Clusters were created to breakdown the large number of buildings within a given area. These cluster identification

codes are also used to identify the backtracking clusters surveyed within the backtracking surveys. The table below (Table 14) outlines the areas assessed, the clusters within these areas and the buildings within each of these clusters. It also presents the roosting potential assessment made during the surveys. The location of these buildings and the assessment results are presented in Figure 2.

Table 14: Summary of building assessment results 2016-2018

Area	Cluster	Building category				
		Negligible	Low	Moderate	High	No.
1	1A		1a(a)	1a, 1b, 1c,	1d	5
	1B		1e, 1f(b), 1h, 1i, 1j	1f(a)	1g	7
	1C	1k		1l		2
2	2B	2b	2c(a), 2c(b), 2c(c), 2c(d), 2c(e)	2d(a), 2d(b), 2d(c), 2e,	2a	11
	2A		2i, 2j	2f, 2g	2h	5
3	3A	3e, 3g	3d, 3f,	3b	3c	6
	3B			3a		1
4	4A			4a		1
	4B		4b			1
5	5A	5d, 5e	5b, 5f, 5c	5a		6
6	6A		6a, 6b, 6c, 6d			4
7	7A	7b	7d, 7f, 7h, 7i	7a, 7c(a), 7c(b), 7c(c), 7e(a), 7e(b), 7e(c), 7e(d), 7e(e), 7g, 7o		16
	7B			7k		1
	7C		7l, 7m		7j	3
	7D			7n		1
8	8A	8f	8e(a), 8e(b)	8g		4
	8B	8c, 8d	8a, 8b,			4
9	9A	9a, 9b, 9c, 9d, 9e		9f		6
10	10A	10b/c	10a			2
11	11A	11d, 11f, 11h, 11i, 11j		11b/c, 11e/g	11a	8
12	12A			12b, 12d	12a, 12c	4
13	13A	13i, 13j, 13k, 13l, 13m, 13n, 13o, 13p, 13q, 13r	13a, 13b, 13c, 13d, 13e, 13f, 13g, 13h, 13s			19
	13B		13t			1
14	14A	14a				1
15	15A		15b	15a		2
16	16A		16b	16a		2
17	17A		17a			1
TOTAL		**32**	**47**	**36**	**9**	**124**

3.4.2 Clusters containing one or more buildings with BCT rating of moderate or high were 1A, 1B, 1C, 2A, 2B, 3A, 3B, 4A, 5A, 7A, 7B, 7C, 7D, 8A, 9A, 11A, 12A, 15A and 16A. Where the structures within these clusters were likely to be directly impacted by the development and access was possible, these structures were surveyed with backtracking or emergence / re-entry surveys. Details of the selection decisions for scoping the buildings to be surveyed is presented in Appendix E.

3.4.3 In 2020 the buildings were assessed for their bat roost potential again. 48 out of 130 buildings could not be assessed due to access issues. One new building (16c) was assessed for the first time, three buildings had their bat roost potential upgraded (1e, 2f and 9a) and two buildings had their potential downgraded (2g and 2j). The table below (Table 15) outlines the areas assessed, the clusters within these areas and the buildings within each of these clusters. It also presents the roosting potential assessment made during the surveys. The location of these buildings and the assessment results are presented in Figure 2.

3.4.4 Further detailed assessments were undertaken on clusters 2A and 2B (Westenhanger Castle) and are included in Table 15. The full results are described in Appendix G.

Table 15 Summary of building assessment results 2020

Area	Cluster	Not accessed	Building category				
			Negligible	Low	Moderate	High	No.
1	1A			1a(a)	1a, 1b, 1c,	1d	5
	1B			1f(b), 1h, 1i, 1j	**1e**, 1f(a)	1g	7
	1C		1k		1l		2
2	2B		2b	2c(a), 2c(b), 2c(c), 2c(d), 2c(e)	2d(a), 2d(b), 2d(c), 2e,	2a	11
	2A		**2j**	2i, **2g**		2h, **2f**	5
3	3A		3e, 3g	3d, 3f,	3b	3c	6
	3B				3a		1
4	4A	4a					1
	4B	4b					1
5	5A		5d, 5e	5b, 5f, 5c	5a		6
6	6A	6b, 6d		6a, 6c			4
7	7A	7a, 7b, 7c(a), 7c(b), 7c(c), 7d, 7f,	7e(a), 7e(h), 7p, 7q	7h, 7i, 7o, 7e(b), 7e(c), 7e(e), 7e(d)	7e(f), 7e(g), 7g		22
	7B	7k					1
	7C	7l		7m		7j	3
	7D			7n			1
8	8A	8f		8e(a), 8e(b)	8g		4
	8B		8c, 8d	8a, 8b,			4
9	9A		9b, 9c, 9d, 9e	9a	9f		6
10	10A		10b/c	10a			2
11	11A	11a, 11b/c, 11d, 11e/g, 11f, 11h, 11i, 11j					8
12	12A				12b, 12d	12a, 12c	4
13	13A	13a, 13b, 13c, 13d, 13e, 13f, 13g, 13h, 13i, 13j, 13k, 13l, 13m, 13n, 13o, 13p, 13q,13r, 13s					19
	13B			13t			1
14	14A		14a				1
15	15A			15b	15a		2
16	16A			16b, 16c	16a		3
17	17A	17a					1
TOTAL		**42**	**19**	**38**	**22**	**9**	**130**

*Structure names in orange indicate changes in status compared to the previous assessment or a new structure.

3.4.5 In 2021 the buildings were reassessed for their bat roost potential. 39 out of 130 buildings could not be assessed due to access issues. One building had its bat roost potential upgraded (1k) and one building had its potential downgraded (2k). Three buildings were found to have been removed and have therefore been removed from Table 16 (buildings 7e(a), 7e(b) and 7e(c)). The table below (Table 16) outlines the areas assessed, the clusters within these areas and the buildings within each of these clusters. It also presents the roosting potential assessment made during the surveys.

3.4.6 Bat droppings were collected from Building 2a and sent for DNA analysis. The analysis showed that the following species had used the building as a roost: common pipistrelle, brown long-eared and serotine bats.

3.4.7 The location of these buildings and the assessment results are presented in Figure 2.

Table 16 Summary of building assessment results 2021

Area	Cluster	Not accessed	Building category				
			Negligible	Low	Moderate	High	No.
1	1A			1a(a)	1a, 1b, 1c,	1d	5
	1B			1f(b), 1h, 1i, 1j	1e, 1f(a)	1g	7
	1C			**1k***	1l		2
2	2B		2b	2c(a), 2c(b), 2c(c), 2c(d), 2c(e)	2d(a), 2d(b), 2d(c), 2e	2a	11
	2A		2j	2g, 2i		2h, 2f	5
3	3A		3e, 3g	3d, 3f,	3b	3c	6
	3B				3a		1
4	4A	4a					1
	4B	4b					1
5	5A	5b, 5f	5d, 5e	5c	5a		6
6	6A	6b, 6d		6a, 6c			4
7	7A	7e(e)	7b, 7e(h), 7p, 7q	7d, 7h, 7f, 7i, 7o, 7e(d)	7a, 7c(a), 7c(b), 7c(c), 7e(f), 7e(g), 7g		22
	7B			**7k***			1
	7C			7l, 7m		7j	3
	7D			7n			1

Area	Cluster	Not accessed	Building category				
			Negligible	Low	Moderate	High	No.
8	8A	8f		8e(a), 8e(b)	8g		4
	8B		8c, 8d	8a, 8b,			4
9	9A		9b, 9c, 9d, 9e	9a	9f		6
10	10A		10b/c	10a			2
11	11A	11a, 11b/c, 11d, 11e/g, 11f, 11h, 11i, 11j					8
12	12A				12b, 12d	12a, 12c	4
13	13A	13a, 13b, 13c, 13d, 13e, 13f, 13g, 13h, 13i, 13j, 13k, 13l, 13m, 13n, 13o, 13p, 13q,13r, 13s					19
	13B			13t			1
14	14A		14a				1
15	15A			15b	15a		2
16	16A	16a, 15b, 16c					3
17	17A	17a					1
TOTAL		**39**	**19**	**38**	**25**	**9**	**130**

*Structure names in orange indicate changes in status compared to the previous assessment or a new structure.

3.5 Emergence/ Re-entry Surveys / Internal Inspections

Bat roosts

3.5.1 Emergence and re-entry surveys were conducted on a total of eight clusters and seven individual buildings, covering a total of 43 structures. The table below (Table 17) outlines the roosts found during these surveys and roosts found during building assessments.

3.5.2 Details of the weather during the surveys is presented in Table 22 in Appendix D.

3.5.3 Full results of all of the surveys conducted is presented in Appendix C and in Figure 4.

Table 17: Summary of bat roosts found by Arcadis in 2017/2018/2020/2021 per area / cluster / building

Area	Cluster	Building	Species	Roost type	Confirmed or Probable	Valuation	Notes
1	1A	1c	Common pipistrelle (two roosts)	Summer roost, low numbers of bats, common species	Probable and Confirmed	District, Local or Parish	
		1b	Common pipistrelle / pipistrelle species (recorded on multiple occasions, 2x bats)		Confirmed and Probable		
	1B	1h	Common pipistrelle and Pipistrelle species (2 roosts)		Probable and Confirmed		
		1f(a)	Soprano pipistrelle		Possible		Not counted – subsequent surveys and inspections found no Potential Roost Features.
	1C	1l	Pipistrelle species		Confirmed		Bat not echolocating
2	2A	2f	Brown long-eared bat (DNA Sample)		Confirmed (DNA Sample)		2020 DNA Sample
		2h	Soprano pipistrelle and Unknown (likely soprano pipistrelle) Common pipistrelle (DNA sample) brown long-eared (DNA sample) Natterer's bat roost (DNA sample)		Confirmed (x5)		2020 DNA Sample identified multiple species roosts within this structure
	2B	2a	Common pipistrelle, brown long-eared and serotine (DNA sample)		Confirmed (x3)		2021 DNA Sample identified multiple species roosts within this structure

Area	Cluster	Building	Species	Roost type	Confirmed or Probable	Valuation	Notes
3	3A	3c	Common pipistrelle (recorded on 2 occasions)		Confirmed		Likely to be the same roost recorded twice - counted as one roost.
7	7A	7a	Common pipistrelle		Possible		
		7c(c)	Common pipistrelle		Possible		
		7e(d)	Soprano pipistrelle		Probable		
	7C	7j	Common pipistrelle		Probable		
			Common pipistrelle		Confirmed		
			Long-eared Bat Species	Maternity roost	Confirmed	County	Recorded on two occasions
8	8B	8e(b)	Common pipistrelle	Summer roost (unlikely to be present)	Possible	District, Local or Parish	Considered unlikely once a detailed building inspection could be conducted.
12	12A	12a	Common pipistrelle (three potential emergences, one probable, two possible)	Summer roost, low numbers of bats, common species	Probable, possible		One roost recorded.
		12c	Common pipistrelle / pipistrelle species		Possible		
		Tree adjacent to 12a	Soprano pipistrelle (tree roosts)		Probable		

Bat activity and species assemblage

3.5.4 During the Arcadis 2017, 2018 and 2020 emergence and re-entry surveys and backtracking surveys, although observing the behaviour of bats and their usage of the site was not the primary purpose of the surveys, the following observations were made:

- The assemblage of bats observed during the surveys was as obtained during the transect and static surveys, with the vast majority of passes and activity recorded being common and soprano pipistrelle bats. Lower numbers of bats of other species were observed; these were a small proportion of the calls and were limited to brown long-eared bats, noctule, serotine and Myotis species bats. No additional species were recorded during the emergence / re-entry surveys that were not recorded during the transect and static surveys.
- Within cluster 1A, there was extensive foraging and commuting of pipistrelle bats, but no key commuting routes or foraging areas were observed (foraging was widespread across the survey area).
- Within cluster 1B, key foraging areas for pipistrelle bats (common and soprano) were observed around the trees to the north of building 1h. This was mirrored in the static detector surveys where a high level of common pipistrelle foraging was recorded around this position. Noctule were heard within this area however no commuting routes were identified.
- Within cluster 1C, there was foraging and commuting of pipistrelle bats, but no key commuting routes or foraging areas were observed (foraging was widespread across the survey area). Noctules were observed commuting south at dusk and north at dawn, suggesting roosts of this species to the north (this was also observed at cluster 2A and 2B).
- At cluster 2A, extensive foraging of common and soprano pipistrelle bats was observed, especially to the north and south of building 2h. Noctules were observed foraging over the meadow to the north of this cluster and commuting south at dusk and north at dawn suggesting a roost to the north.
- Within cluster 2B, there was foraging and commuting of pipistrelle bats, but no key commuting routes or foraging areas were observed (foraging was widespread across the survey area). Noctules were observed commuting south at dusk and north at dawn, suggesting roosts of this species to the north.
- At cluster 3A, common pipistrelle bats were observed commuting to and from the pond to the west from the woodland to the east. A key foraging area was observed around the pond and some foraging was observed of pipistrelle species within the courtyard of the buildings.
- At cluster 3B pipistrelle bat foraging was observed to the east and south of the building, predominantly associated with trees.
- At cluster 5A, building 5a, no key foraging or commuting routes were observed.
- At cluster 7A, noctules were observed foraging high over the area. Common and soprano pipistrelle bats foraging and commuting was observed around 7o, 7e(b), 7e(d), 7e(g), the north of buildings 7c(b) and 7c(c).
- At cluster 7B, around building 7k, foraging of common pipistrelle bats was observed, particularly to the west of the building. One commuting pass of brown long-eared bats was observed.
- At cluster 7C, building 7j, no key foraging or commuting areas were observed. Bats returning to roost did circle extensively around the structure prior to roosting.

- At cluster 7D, building 7n, key foraging areas of common and soprano pipistrelle bats were observed around the buildings, particularly around lights at the front of the structure and around the abandoned swimming pool at the rear of the structure. Pipistrelle bats appeared to be commuting from the north west along / across the A20 road, and noctules were observed commuting from the north at dusk.
- At cluster 8A, foraging areas for pipistrelle bats were observed to the north of the building around the trees and scrub.
- At cluster 12, there was extensive foraging of pipistrelle bats around the gardens of this structure.

3.5.5 Full results from the surveys are presented in Figure 4 and Appendix B.

3.6 Westenhanger Castle External and Internal Building Assessment

3.6.1 External and internal inspections were undertaken on five buildings. The detailed results are described in Appendix G, Table 17 and summarised below:

- Buildings 2a, 2f and 2h were confirmed to support bat roosts as bat droppings and potential feeding remains were recorded within these buildings. The results of DNA analysis confirmed that building 2f supports a brown long-eared roost and Building 2h supports a common pipistrelle, brown long-eared and Natterer's bat roost.
- Building 2g was assessed as having Low potential to support roosting bats.
- Building 2j was assessed as having negligible potential to support roosting bats.

4 Discussion

4.1 Introduction

4.1.1 This section of the report assesses the findings of the surveys. This assessment should be read alongside the assessment of the results of the transect surveys and the automated (static) detector surveys in the associated reports (ES Appendices 7.12, 7.14). All of these results are compiled and assessed in combination in the EIA, bat summary and impact assessment (ES Appendix 7.11) and the bat mitigation strategy (ES Appendix 7.18).

4.2 Description of Roosts

4.2.1 During the emergence and re-entry and backtracking surveys in 2017, 2018 and 2020, a total of eight clusters and seven individual buildings were surveyed, covering a total of 43 structures. During the surveys, 13 confirmed / probable roosts and three possible roosts were identified. All but one of these roosts was a small roost of common or soprano pipistrelle bats, with one roost being a likely maternity roost of brown long-eared bats (within building 7j).

4.2.2 The desk study identified roosts around the site (but outside of the application site boundary). These ranged from small pipistrelle bat roosts (largely within residential houses) to large maternity roosts (including a roost of up to 114 pipistrelle bats within Lympne village). The presence of these roosts will need to be accounted for in mitigation within the site and to ensure that connectivity for these bats within and across the site and foraging availability is not compromised.

4.2.3 The building assessment surveys in 2020 and 2021 identified three further confirmed roost sites within buildings 2a, 2h and 2f. The roost site in 2a was confirmed (by DNA analysis of found droppings) to have been used by at least three species of bat: common pipistrelle, brown long-eared and serotine. The roost in 2h is a common pipistrelle, brown long-eared and Natterer's bat roost and the roost in 2f is a common pipistrelle roost.

4.2.4 A valuation of the roosts is presented in ES Appendix 7.11.

4.3 Bat assemblage, Foraging and Commuting Activity

4.3.1 Within the emergence and re-entry surveys, the assemblage of bats recorded was comparable to that recorded within the other bat surveys within the site. In addition, very few key commuting and foraging areas which were not identified within the transect and static surveys were identified. Therefore, this aspect of the bat surveys will not be discussed in this report but discussed in combination with the results of the other surveys in the Bat results summary and impact assessment (ES Appendix 7.11).

5 Mitigation Recommendations and Further Work

5.1 Introduction

5.1.1 This section of the report broadly outlines the mitigation approaches which may be employed to address the potential impacts to bats, particularly the bat roosts identified in this report. Further details are presented within the Bat Mitigation Strategy (ES Appendix 7.18) document and within the ES (ES Chapter 7). Overall, impacts to bats within the site are largely addressed through avoidance within the design of the project.

5.2 Design Mitigation

Roosting bats

5.2.1 This information will allow the impact to bats resulting from the proposed Development being minimised at the masterplanning stage. The approach will include:

- Retention of roosts where possible. This includes retention of the following known roosts / roosting areas:
- Maternity roosts within Lympne Village;
- Roosts within Westenhanger Castle;
- Roosts at upper Otterpool and Otterpool Manor;
- Design to retain trees within the development;
- All woodlands within the site (which are likely to contain roosts) are to be retained and buffered.
- Minimisation of impacts to off-site roosts, through pollution, light spill, recreational impacts etc. Maintenance of connectivity to off-site roosts and retention and enhancement of connectivity between known / likely roosting sites and foraging habitats, including:
- Retention of Upper Otterpool and Otterpool Manor within high Quality Green Infrastructure (GI), buffered to reduce light spill;
- Retention of a wide buffer area between Lympne Village and the Otterpool development to ensure retained connectivity to foraging areas for the maternity roost within Lympne village.
- Retention of a large area of GI around Westenhanger Castle;
- Creation of an extensive green grid, including dark corridors.

5.2.2 This is an overview of the mitigation to be applied. Full details are provided within the mitigation strategy.

Foraging bats

5.2.3 Within the masterplan, the following measures are being employed to safeguard foraging bats within the development.

- Retention and buffering of important foraging areas;
- Maintenance of known and likely commuting routes between foraging and roosting areas across the site;
- Creation of new habitats likely to be of high value for foraging bats.
- Creation of new valuable habitats such as ponds and Sustainable Drainage Systems (SuDs);

- Enhancement of existing habitats, such as creating heterogeneity in the East Stour River Corridor.

5.2.4 This is an overview of the mitigation to be applied. Full details are provided within the mitigation strategy.

Commuting bats

5.2.5 This information will allow the impact to bats resulting from the proposed Development being minimised at the masterplanning stage. The approach to this is likely to include:

- Maintenance of known and likely commuting routes between foraging and roosting areas across the site, and ensuring connectivity to off-site roosts identified by the surveys and within the desk study;
- Identification of commuting routes and enhancement of these corridors, including landscaping and maintenance of low light levels; and
- Creation of new commuting routes between areas known to be of value for bats.

5.3 Additional Mitigation

5.3.1 During the buildout of the development, the following will be required to ensure that impacts to bats are adequately mitigated. These actions will need to be informed by further surveys, conducted throughout the detailed design and construction process, as outlined in section 5.4.

Construction mitigation

General

5.3.2 During the construction phase of the development, a range of measures will need to be implemented to ensure that impacts to bats are minimised. These measures are specified within a CoCP (Code of Construction Practice) and would include (but not be limited to)

- Prescriptions for the provision of tool box talks for on-site contractors and staff, informing them of the legal protection afforded to bats;
- Prescriptions for site lighting to minimise the impacts and disturbance to bats (duration of works and construction lighting specifications);
- Buffers and offsets from sensitive areas for bats, to be fenced and protected appropriately.
- Appropriate measures are put in place to control dust and other emissions that could affect air quality.
- Site compounds, storage facilities and staff facilities are suitably bunded and located in places that would not have an adverse effect on the environment; in particular, the CoCP would ensure that retained trees are protected.
- In advance of site clearance, protective fencing is installed to protect retained and/or ecologically sensitive habitats (woodlands, mature trees and hedgerows) and their associated buffer zones to ensure that they are not subject to accidental damage (to be determined on a phase by phase basis).
- Haul routes, storage compounds and staff facilities would be located away from retained habitats to minimise disturbance to the species they support.
- An Ecological Clerk of Works is in place to oversee site clearance, in particular any works that have the potential to disturb notable receptors. They would also ensure that the mitigation measures proposed adhere to best practice guidelines and take account of any changes in legislation that may have occurred.

- The ecological clerk of works would ensure that hedgerow translocation is undertaken in accordance with an agreed method statement. They would also ensure that the retained and translocated hedgerows are monitored to ensure that they are managed appropriately.

5.3.3 An Ecological Clerk of Works would be employed to ensure that the ecological protection measures outlined in the CoCP are adhered to. They would also undertake regular monitoring to ensure that the protection measures remain in place for the time that they are required.

5.3.4 The Ecological Clerk of Works would report to the site Manager and/or Environmental Clerk of Works to ensure that remedial actions are undertaken in a timely manner.

Roost mitigation and licensing

5.3.5 During demolition and tree removal on the site, there will be a need to safeguard roosting bats within structures and trees to be removed. This will need to be informed by up-to-date roost surveys, as outlined in section 5.4. Disturbance or removal of any roosts is likely to require a licence form the statutory Authority (Natural England) and may specify:

- Dedicated mitigation;
- Specific timings for works;
- Displacement and exclusion of bats from structures;
- Supervision by a licensed ecologist of demolition works.
- Suitable alternative roosting provision will also be likely to be required, which may include bat barns and houses and / or bat boxes.

5.3.6 Details of derogation licences that may be required are specified within Chapter 7 of the ES.

Operational Mitigation

Safeguarding habitats

5.3.7 In order to minimise the potential for operational impacts to the bat populations within the site, measures will be implemented to minimise these impacts. These are likely to include:

- Installation of new roosting opportunities including bat houses/barns and tree/structure mounted boxes (both as an enhancement within the new development and as mitigation for roost loss, where appropriate) will be conducted. This is outlined within the Bat Mitigation Strategy (ES Appendix 7.18) but will be specified in detail within the detailed planning for each zone / phase of the development.
- Implementation of a suitable lighting strategy, ensuring that dark corridors and areas important for foraging bats are kept dark; and
- Features being installed to limit access by humans in areas where disturbance may adversely impact bats. This could include fences or carefully deployed SuDS features.

Maintenance and monitoring

5.3.8 Maintenance and monitoring will be required of any retained or created habitats. An outline of the desired outcomes for the monitoring and maintenance is provided within a site Biodiversity Action Plan (BAP) - ES Appendix 7.20). As each phase parcel is brought forward for development, detailed strategies will be required for creation, management and maintenance of the habitats created will be required (this is beyond the remit of this document).

5.3.9 A broad outline of the locations of proposed habitat creation is provided within the mitigation strategies (ES Appendix 7.18).

Design parameters for built parcels

5.3.10 The value of the built parcels to bats will be maximised.

5.3.11 Native planting, including scrub and trees, will provide habitats and food sources for foraging and commuting bats. In addition, bat boxes may be strategically placed to target specific species, and a minimum number of bat boxes per a certain number of built structures and trees should be installed, to be determined separately.

5.3.12 Within the built parcels, parameters will be set (dependent upon the proposed density of the parcel's buildings) for the GI which will be of value for bats. This will include:

- Parameters for amounts of green roofs within built parcels;
- Parameters for the number of trees and street trees within built parcels;
- A dedicated lighting strategy will be required to minimise light spill; and
- Parameters for the number of additional bat roosts.

5.4 Further survey work

5.4.1 This survey, when combined with the other bat surveys referred to within this document, are considered sufficient to inform the EIA, allow for masterplan design (at planning Tier 1) and to inform outline planning. However, due to the details of the proposed Development and the requirement for an extended build out, subsequent surveys are likely to be required to inform each phase of the development (at Tiers 2 and 3). These surveys will inform detailed planning and construction mitigation and avoidance. This section of the report outlines the survey work likely to be required as the development progresses. The following surveys are likely to be required during the buildout:

- As the masterplan evolves into a detailed design, additional areas may require scoping for potential impacts to bats (at Tier 2)
- Further 'Preliminary Roost Assessment' (PRA) surveys of structures, as access to previously inaccessible areas is obtained (i.e. within areas not previously accessed, buildings 6b, 6c, 6d, 7g, 7i, 7l, 7m, 7o, 8a) at Tier 2 and 3 when the masterplan for these area progresses
- Once detailed design is finalised, hibernation surveys may be required on buildings to be removed which have been identified as having hibernation potential during the building assessments (at Tier 3). The table below (Table 18) outlines the status of the buildings which may require hibernation assessments, dependent upon the details of the design.

Table 18: Status of structures within which hibernation potential was identified or an accurate determination could not be made.

Status	Buildings applicable	Count
Hibernation potential identified, but it was not practicable or proportionate to survey and / or health and safety concerns prevented internal inspections. Likely to require an internal inspection at the appropriate	1c, 3a, 3b, 3c, 3d, 3f, 5a, 5b, 7f, 7j.	10

time in the planning process, if possible.		
Some hibernation potential identified, but likelihood is identified as low. Hibernation surveys are likely to be required if structure to be removed.	1d, 1f, 7n, 8g, 10a,	5
Hibernation potential identified, but the structure is not within the OPA. Survey only to be required if structure to be removed (unlikely).	2a, 2f, 2g, 2h, 9f, 11a, 11b/c, 11e/g, 12a, 12b, 12c, 12d, 15a, 16b.	16
Hibernation potential unknown – not possible to assess structure for a detailed external inspection. May need hibernation inspection if structure to be removed.	4a, 4b, 5c, 6b, 6c, 7g, 7i, 7o, 7l, 8a,	10

- Further, and more detailed PRA and subsequent emergence / re-entry surveys will be required to identify roosts to safeguard individual roosts (in structures to be removed, once this is known) at Tier 3. These should be phased to be conducted as each phase proceeds to planning and be designed to ensure that sufficient data can be collected to allow a licence to be obtained (determined by the current best practice and licence guidelines at the time of the development). This is likely to include buildings assessed as having 'low' potential, as there is the potential for these structures to support small bat roosts, however the presence of these roosts was not considered to be a material consideration within the EIA. Update surveys are likely to be required on buildings which were previously surveyed, dependent upon the time lapsed since the surveys were conducted.
- Assessment of the roosting potential of trees, especially those identified within these surveys as likely to support bat roosts; once the details of tree impacts and removal is known. These should be phased as each parcel proceeds to planning (at Tier 3).
- The assessments above are likely to prompt the requirement for emergence / re-entry and/or climbed surveys to be completed on trees within the development area (at Tier 3).
- Throughout the development buildout and subsequent to buildout completion, monitoring of the bat usage of the site will need to be conducted, to determine any significant decline in the usage of the site by the recorded assemblage of bats.

6 Conclusions

6.1.1 Across the Otterpool Park site, in order to identify bat roosts building assessments and emergence / re-entry surveys were conducted between 2017 and 2021 by Arcadis.

6.1.2 In summary a total of 124 buildings were initially assessed, of which 32 were assessed as having negligible roosting potential, 47 were assessed as having low potential, 36 as having moderate potential and 9 as having high roost potential.

6.1.3 Of these structures assessed, a subset consisting of those structures with moderate or high roosting potential was selected for emergence and re-entry surveys and backtracking to identify any roosts present. Where individual structures were to be surveyed, a standard emergence / re-entry survey approach was undertaken, where multiple structures were to be surveyed together a backtracking approach was undertaken.

6.1.4 During these surveys a total of 13 confirmed / probable roosts and three possible roosts were identified. All but one of these roosts was a small roost of common or soprano pipistrelle bats, with one roost being a likely maternity roost of brown long-eared bats (within building 7j).

6.1.5 The small roosts of common and soprano pipistrelle bats are assessed as being of local value only. The brown-long eared maternity roost is assessed as being of county value and will need to be mitigated for accordingly.

6.1.6 In addition, the desk study revealed a number of roosts on and around the site which had been recorded previously and within surveys conducted for previous planning applications.

6.1.7 The follow-up surveys in 2020 assessed the buildings for roosting potential. One new building with low potential was noted and two buildings had their bat roost potential ungraded from negligible to low and low to moderate respectively.

6.1.8 Further follow-up building assessment surveys in 2021 upgraded one building from negligible to low and downgraded one building from moderate to low. The building assessment surveys in 2020 and 2021 identified three further confirmed roost sites within buildings 2a, 2h and 2f. The roost site in 2a was confirmed (by DNA analysis of found droppings) to have been used by at least three species of bat: common pipistrelle, brown long-eared and serotine. The roost in 2h is a common pipistrelle, brown long-eared and Natterer's bat roost and the roost in 2f is a common pipistrelle bat roost.

6.1.9 The information obtained within these surveys, when combined with the results of previous surveys will allow mitigation to ensure that impacts to bats can be mitigated. A discussion of the bat survey results combined and the mitigation proposed is presented within associated documents, namely the bat summary and impact assessment and bat mitigation strategy (ES Appendix 7.11, 7.18).

6.1.10 Further surveys are likely to be required at an appropriate stage of the planning process to ensure that all roosts are identified, and suitable additional mitigation can be implemented.

7 References

Ref	Reference Description
Ref 1	BCT (2011) Bechsteins Bat Survey, Final Report, September 2007 – September 2011, Bat conservation Trust, http://www.bats.org.uk/data/files/publications/Bechsteins_bat_survey_final_report.pdf
Ref 2	BCT (Online accessed August 2018) Bat Conservation Trust Bat hibernation survey data; Bat Conservation Trust Distribution Atlas of Bats in Britain and Ireland (1980-1999): data spreadsheet; Biological Records Centre Mammals Database; Natural England Batsites inventory for Britain; Natural England from JNCC Online (http://jncc.defra.gov.uk/publications/JNCC312/species.asp?FeatureIntCode=S1308
Ref 3	BCT (Online, accessed August 2018) Bat Conservation Trust Bat hibernation survey data; Bat Conservation Trust Distribution Atlas of Bats in Britain and Ireland (1980-1999): data spreadsheet; Biological Records Centre Mammals Database; Natural England Bat sites inventory for Britain; Natural England from JNCC Online (http://jncc.defra.gov.uk/publications/JNCC312/species.asp?FeatureIntCode=S1323
Ref 4	BCT (Online, accessed December 2018) Threats to Bats https://www.bats.org.uk/about-bats/threats-to-bats
Ref 5	BSBI, 2007. Botanical Society for the British Isles. BSBI 2007 List. Available at: http://www.bsbi.org.uk/resources.html [Accessed on 3rd February 2016].
Ref 6	BSI, 2013. Biodiversity - Code of Practice for Planning and Development BS42020:2013. BSI Standards Limited: London. CIEEM, 2016. Guidelines for Ecological Impact Assessment in the UK and Ireland.
Ref 7	Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London
Ref 8	CSa Environmental Planning (2013) Ecological Appraisal – Lympne, Former Lympne Airfield – Proposed Housing Development;
Ref 9	Ecology Solutions Ltd (2014) Ecological Assessment, Land at Sellindge., Kent.
Ref 10	Ecotricity (2012) Harringe Brooks Wind Park Environmental Statement;
Ref 11	Highways England (2016) M20 Lorry Area Stanford West Interim Environmental Assessment Report;
Ref 12	HMSO (2018) A Green Future: Our 25 Year Plan to Improve the Environment
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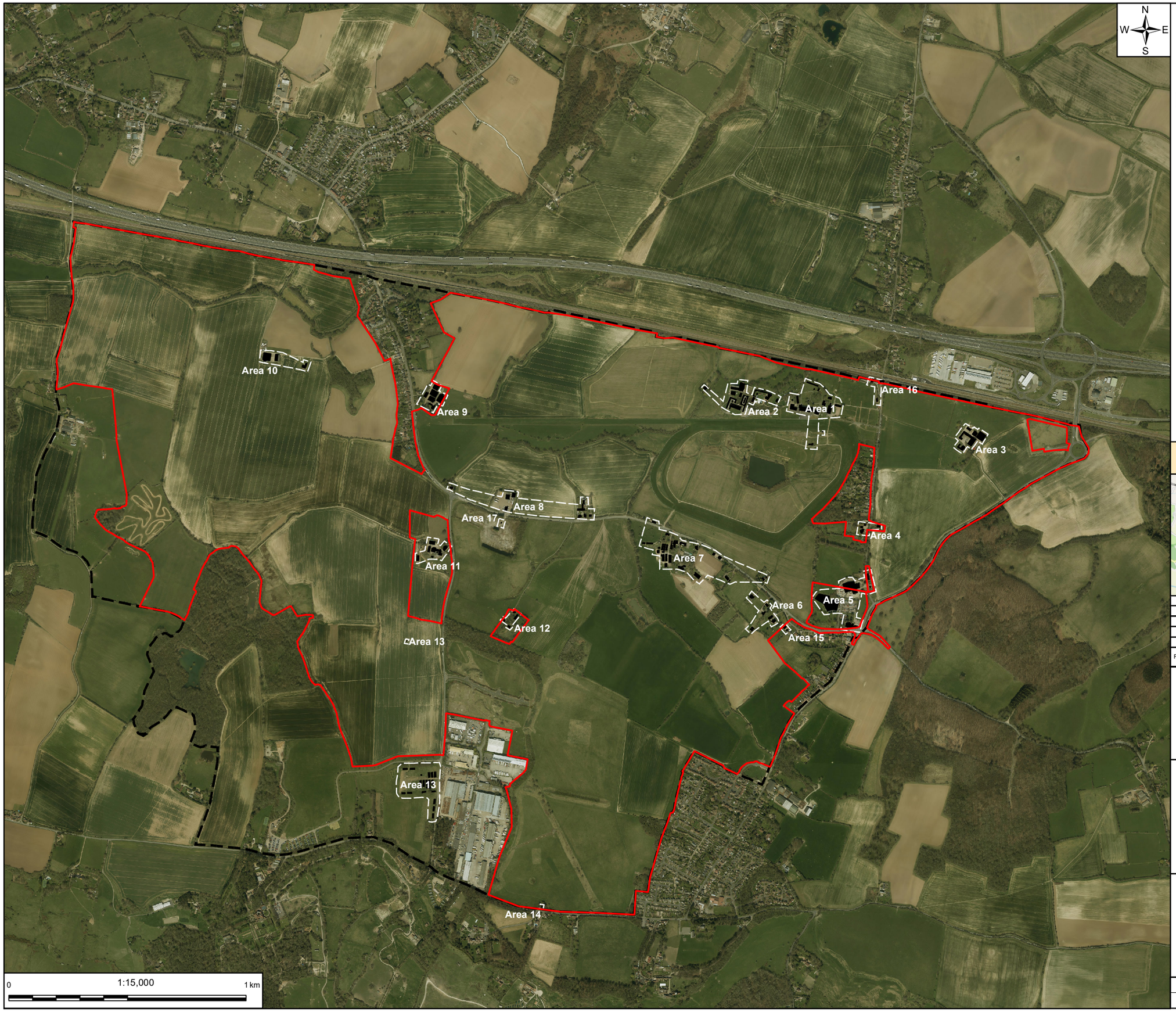
Ref 15	JNCC (2015) UK BAP Priority Species and Habitats. Available at: http://jncc.defra.gov.uk/page-5705 [Accessed on 3rd February 2016].
Ref 16	Kent Bat Group (accesses online December 2018) UK Mammals: Species Status and Population Trends http://www.kentbatgroup.org.uk/bats-in-kent/
Ref 17	Natural Environment and Rural Communities (NERC) Act 2006: Available at: http://www.legislation.gov.uk/ukpga/ [Accessed on 3rd February 2016].
Ref 18	Peter Brett Associates LLP (2015) Link Park Phase 2 Supplementary Environmental Statement Non Technical Summary;

Ref	Reference Description
Ref 20	Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester. Collins, J. (ed.), 2016.
Ref 21	The Habitats Directive Available from: htttp://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm. [Accessed February 2016]
Ref 22	Waterman Energy, Environment & Design Limited (2010) Ecological Appraisal, Folkestone Racecourse, Kent;
Ref 23	Wildlife and Countryside Act 1981 (as amended). Available at: http://www.legislation.gov.uk/ukpga/1981/69 [Accessed on 3rd February 2016].
Ref 24	Wray S, Wells D, Long E, Mitchell-Jones T, December 2010. Valuing Bats in Ecological Impact Assessment, IEEM In-Practice p 23-25
Ref 25	WYG (2016) Shepway District Council, Folkestone Kent, Extended Phase 1 Habitat Survey Ecology Report

Figure 1: Overview of building areas



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Buildings
- Area

Layer Credits: Contains aerial imagery supplied by Folkstone and Hythe Council

REV	Date	Description	Drawn	Check	Approv
02	23-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

ARCADIS
80Fen
80 Fenchurch Street
London
EC3M 4BY

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Figure 1
Bat Building Assessment
Areas Overview Map

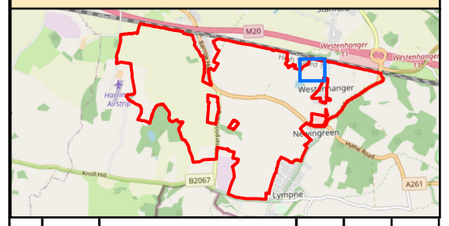
scale	original size	datum	grid
1:15,000	A3	Sx	BNG

Figure 2: Building Areas and Clusters

N
W E
S

Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
- Building with high summer roosting potential
- Building with moderate summer roosting potential
- Building with low summer roosting potential
- Building with negligible summer roosting potential
- Structure Removed



REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

ARCADIS
80Fen
80 Fenchurch Street
London
EC3M 4BY

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 01 of 18

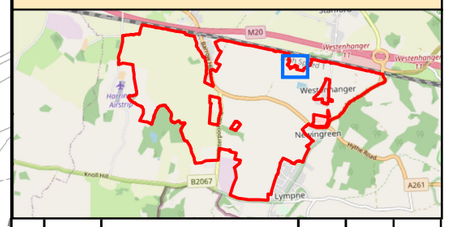
scale	original size	datum	grid
1:1,250	A3	Sx	BNG

0 1:1,250 0.06 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
- Building with high summer roosting potential
- Building with moderate summer roosting potential
- Building with low summer roosting potential
- Building with negligible summer roosting potential
- Structure Removed



REV	Date	Description	Drawn	Check	Approv
02	07-03-2022	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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80 Fenchurch Street
London
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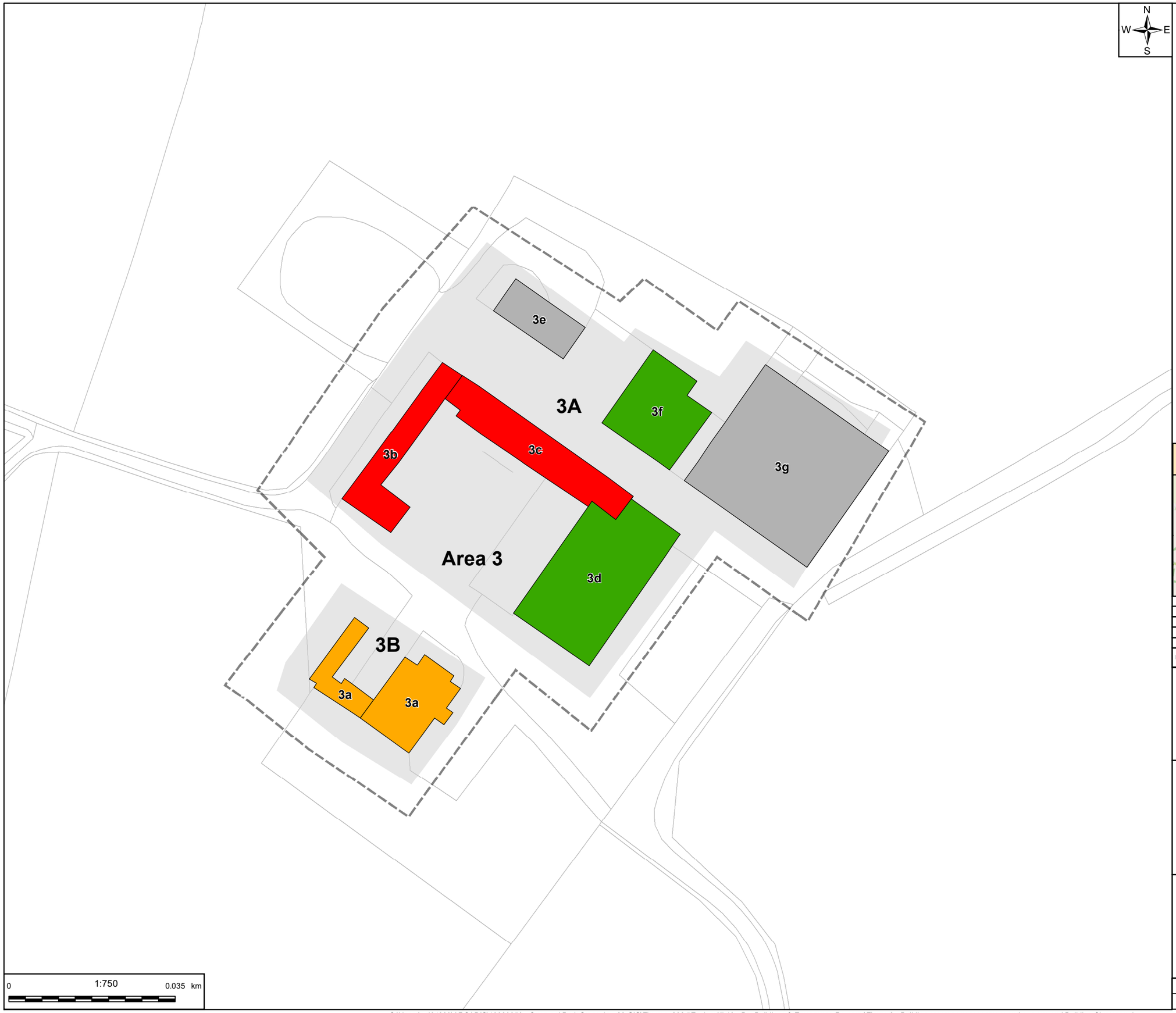
Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 02 of 18

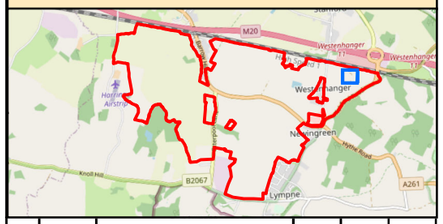
scale	original size	datum	grid
1:1,250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
- Building with high summer roosting potential
- Building with moderate summer roosting potential
- Building with low summer roosting potential
- Building with negligible summer roosting potential
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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80Fen
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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 03 of 18

scale	original size	datum	grid
1:750	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

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Legend

- Outline Planning Application Boundary
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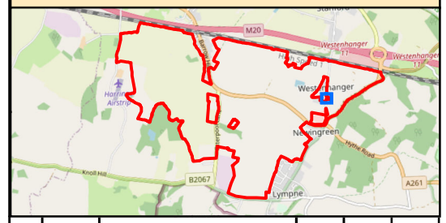
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 04 of 18

scale	original size	datum	grid
1:500	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

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Legend

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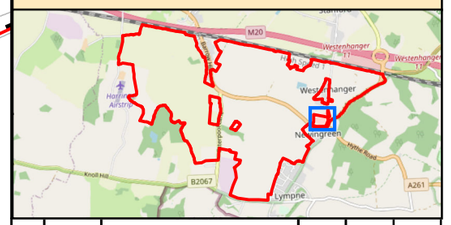
- Building with negligible summer roosting potential
- Structure Removed

5a
5b
5d
5d
5f
5e (indicative, under construction)
5e
Area 5
5A
5c

0 1:1,250 0.06 km



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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scale	original size	datum	grid
1:1,250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

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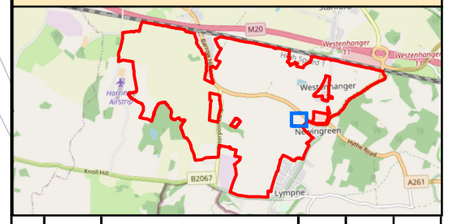

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 06 of 18

scale	original size	datum	grid
1:750	A3	Sx	BNG

0 1:750 0.035 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

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Legend

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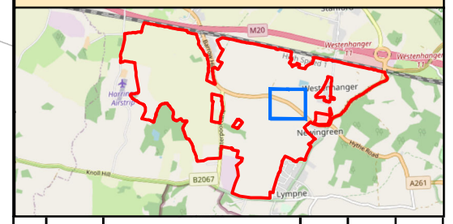

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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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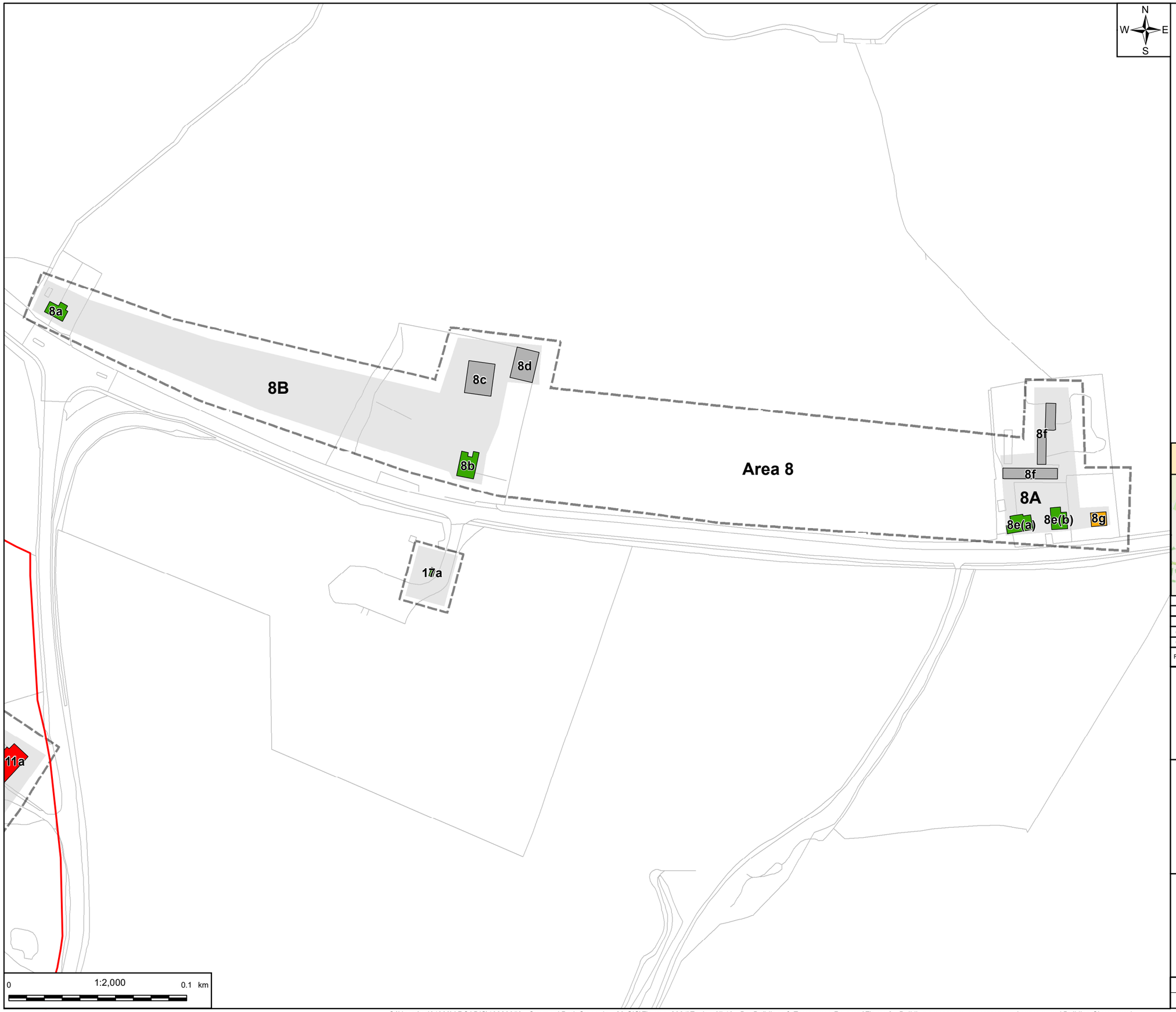
Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 07 of 18

scale	original size	datum	grid
1:1,750	A3	Sx	BNG

0 1:1,750 0.085 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



Legend

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- Framework Masterplan Boundary
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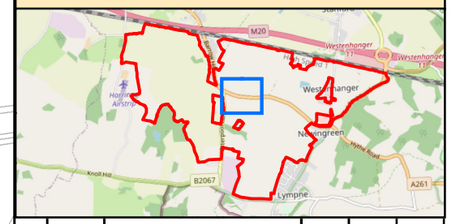

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 08 of 18

scale	original size	datum	grid
1:2,000	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

Legend

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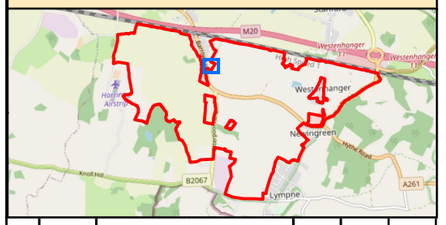

REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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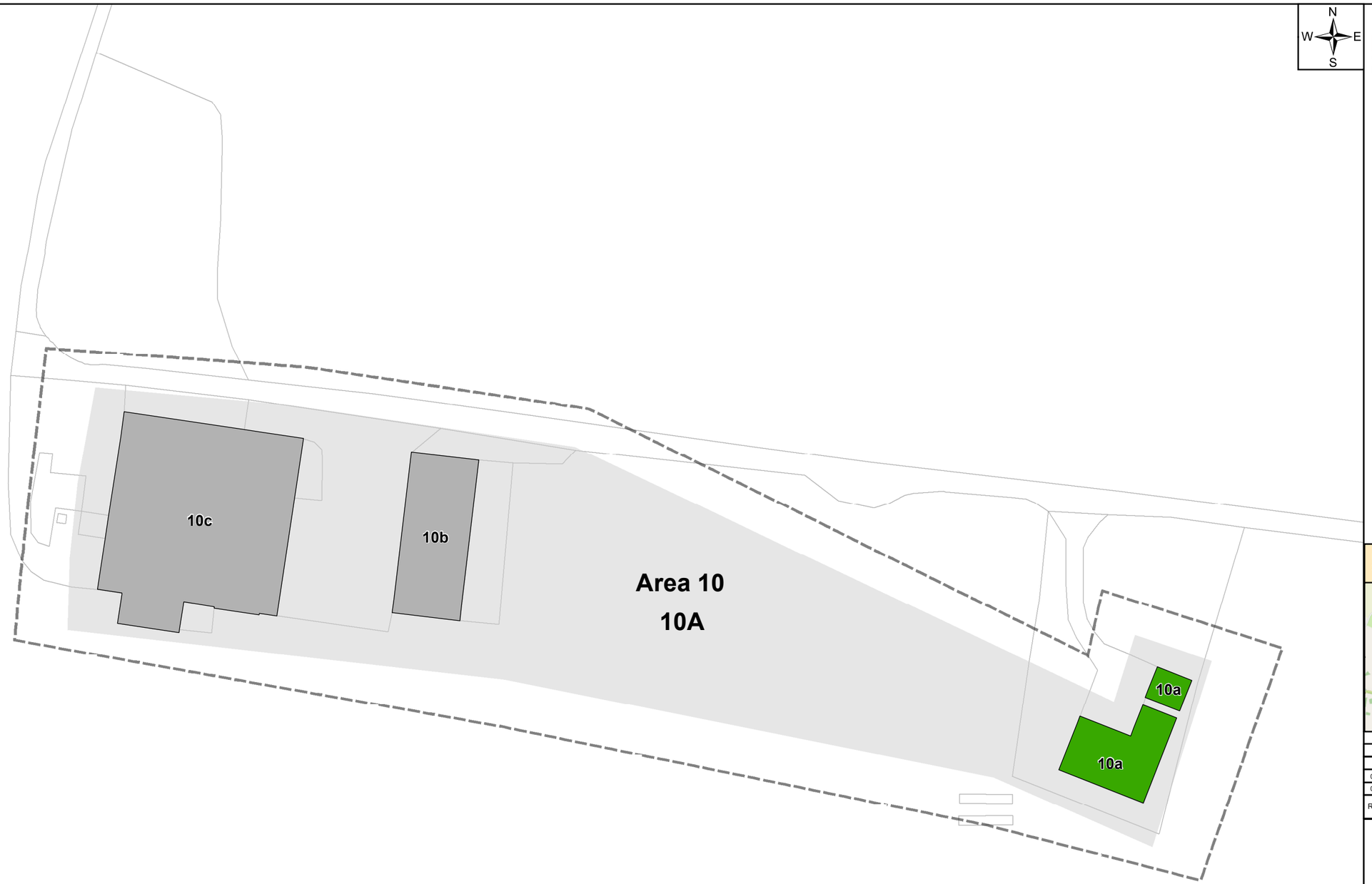
Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 09 of 18

scale	original size	datum	grid
1:750	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



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Legend

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- Framework Masterplan Boundary
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- Cluster
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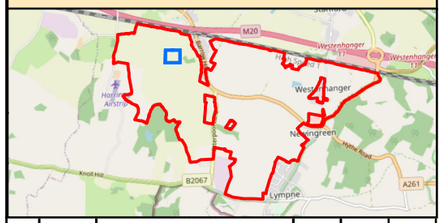

REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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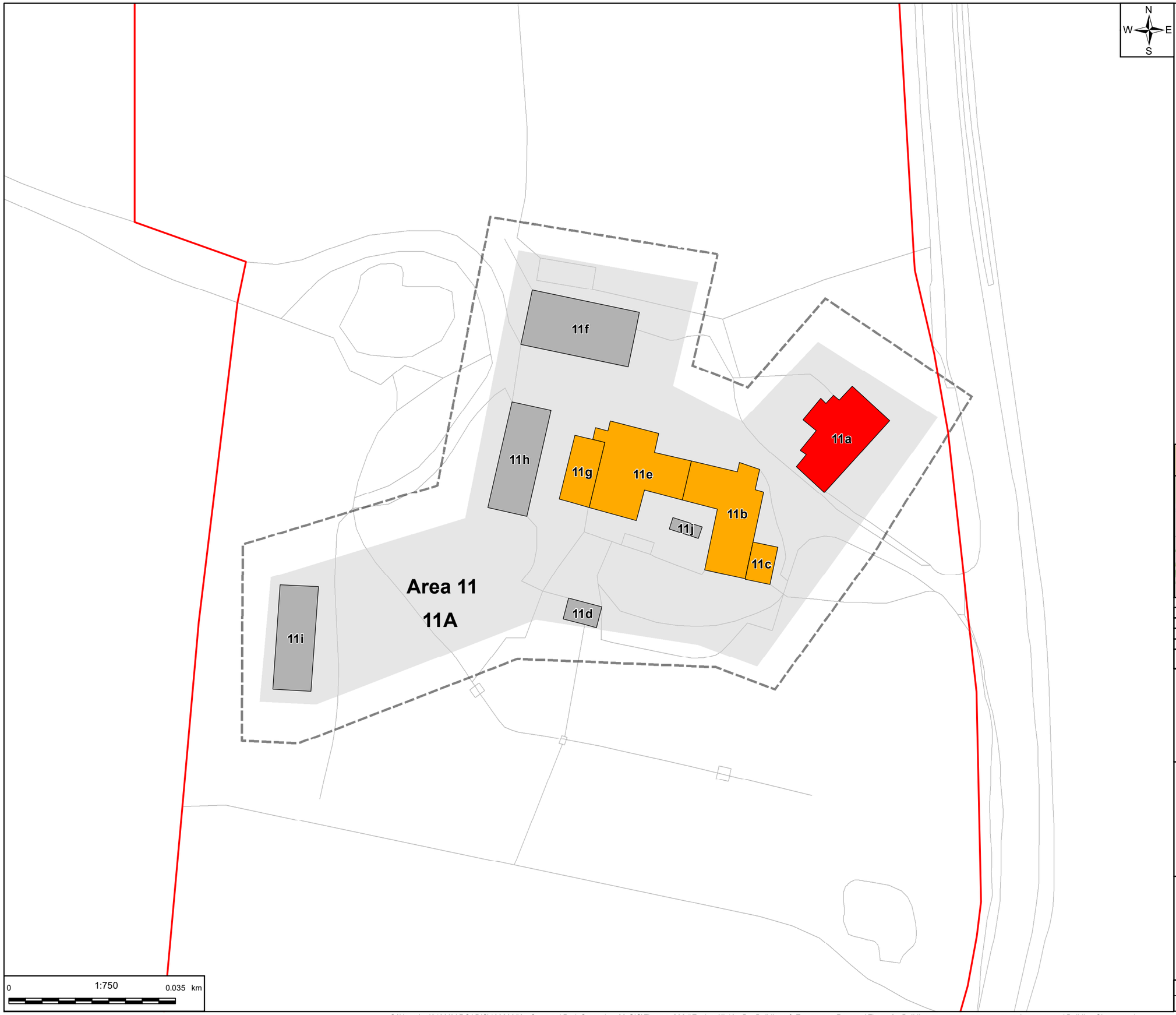
Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 10 of 18

scale	original size	datum	grid
1:750	A3	Sx	BNG

0 1:750 0.035 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
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- Building with low summer roosting potential
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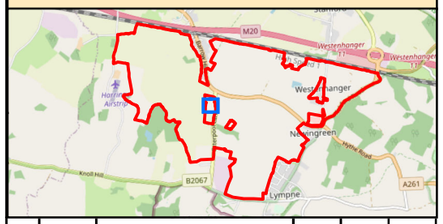

REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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scale	original size	datum	grid
1:750	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
- Building with high summer roosting potential
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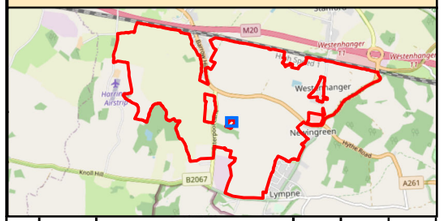
- Building with negligible summer roosting potential
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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OTTERPOOL PARK
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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 12 of 18

scale	original size	datum	grid
1:500	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

Legend

- Outline Planning Application Boundary
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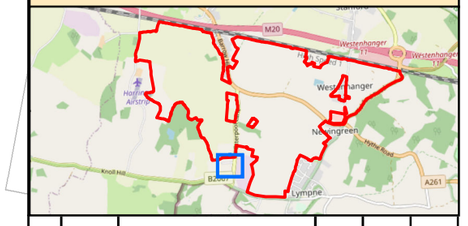
- Building with negligible summer roosting potential
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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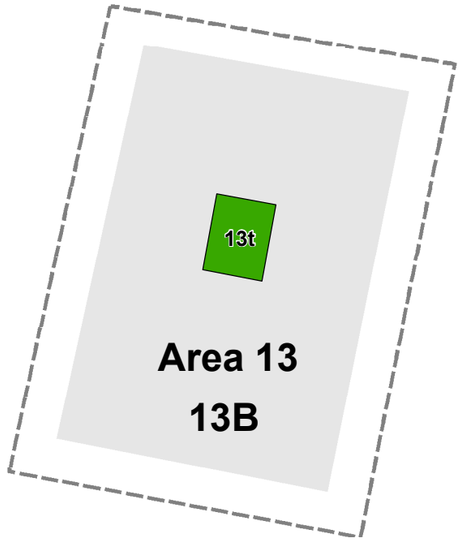
OTTERPOOL PARK
COUNTRYSIDE · CONNECTED · CREATIVE

Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 13a of 18

scale	original size	datum	grid
1:1,250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



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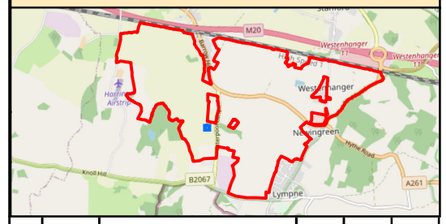
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
- Cluster
- Building with high summer roosting potential
- Building with moderate summer roosting potential
- Building with low summer roosting potential
- Building with negligible summer roosting potential
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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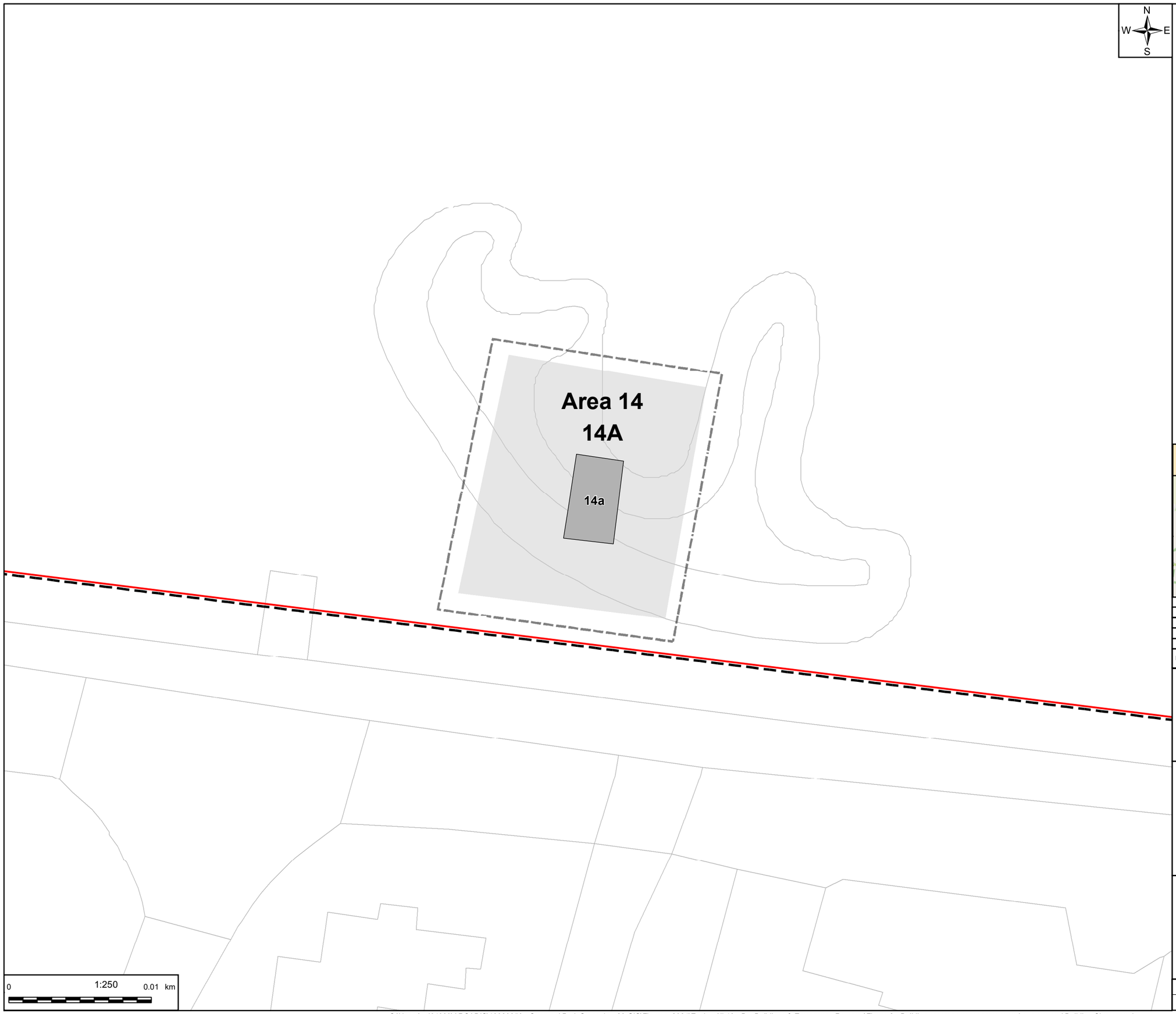
Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
Page 13b of 18

0 1:250 0.01 km

scale	original size	datum	grid
1:250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Area
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- Building with high summer roosting potential
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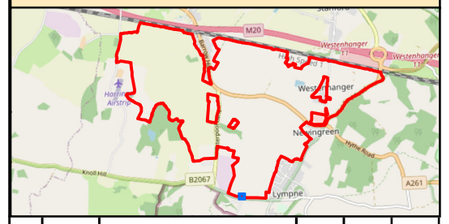
- Building with negligible summer roosting potential
- Structure Removed



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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scale	original size	datum	grid
1:250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

6c

15a

15a

Area 15
15A

15b

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Legend

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- Area
- Cluster
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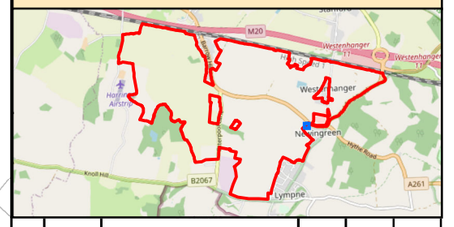

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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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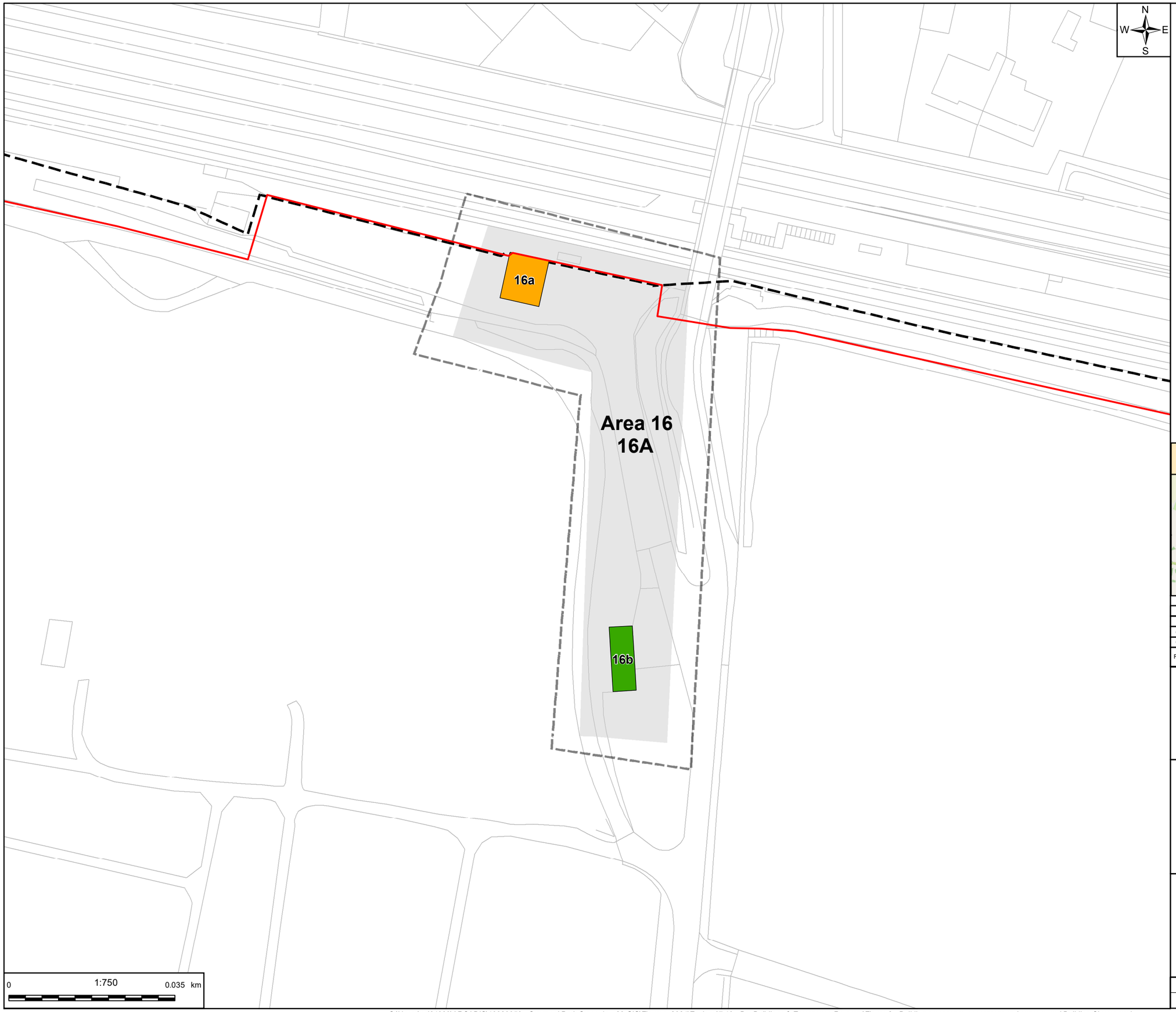
scale	original size	datum	grid
1:250	A3	Sx	BNG

0 1:250 0.01 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd



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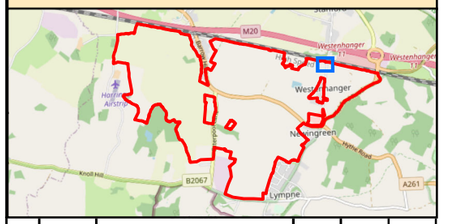

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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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scale	original size	datum	grid
1:750	A3	Sx	BNG

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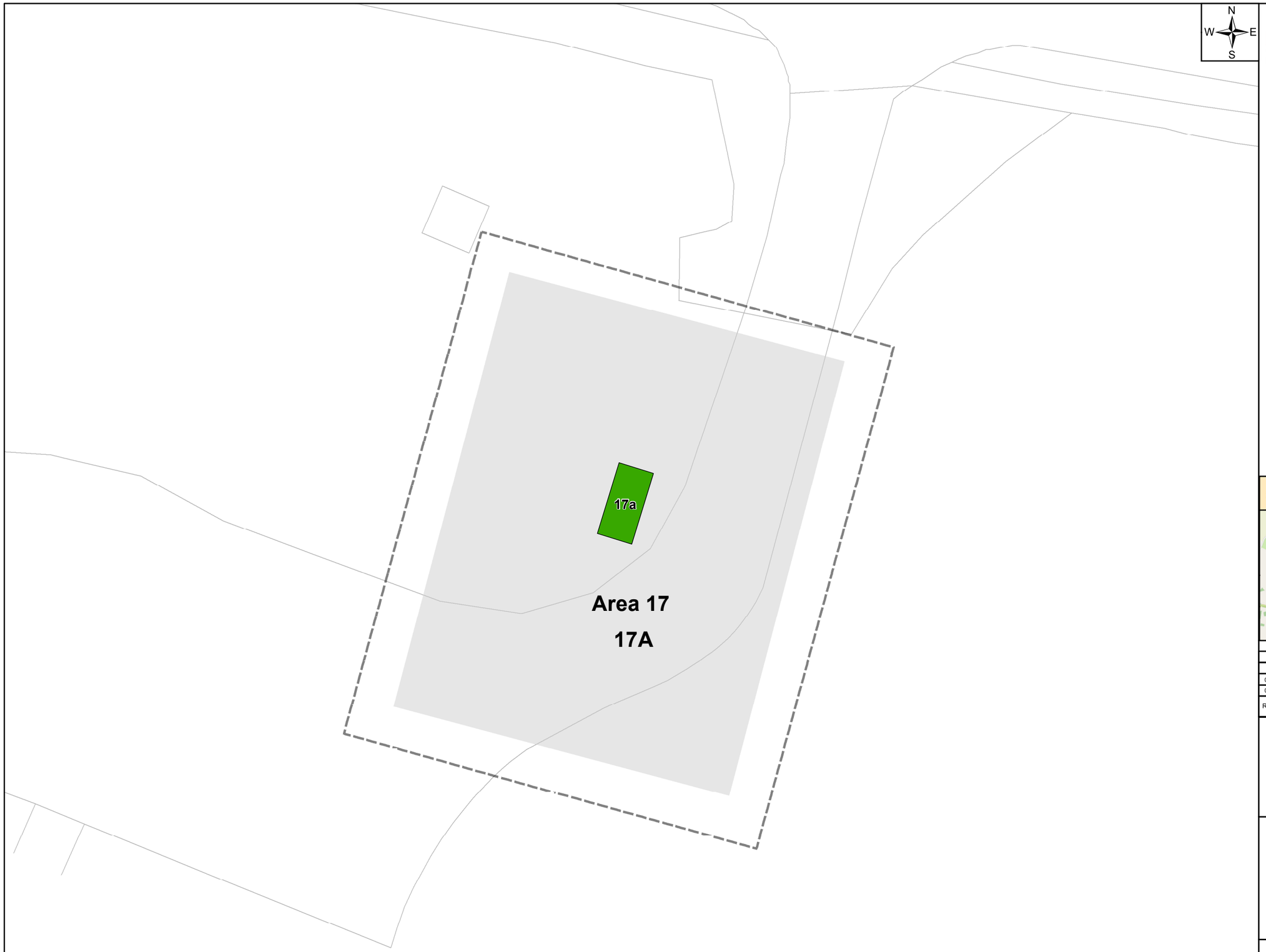

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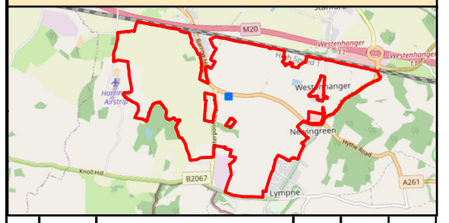

REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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COUNTRYSIDE • CONNECTED • CREATIVE

Figure 2
Bat emergence assessment and surveys - building clusters, building numbers and roost assessment results.
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scale	original size	datum	grid
1:250	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 2 - Building emergency assesment and surveys and Building Cluster.mxd

Figure 3: Bat Roost Results - Desk Study and Arcadis 2017 and 2018 Results

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Legend

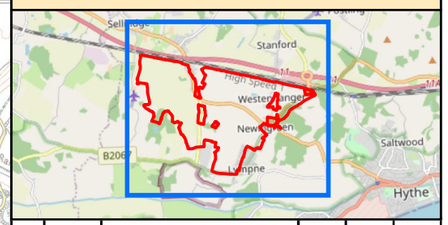
- Areas of search / study area
- Outline Planning Application Boundary
- Framework Masterplan Boundary
- 2km buffer from OPA
- Unknown species
- Brown Long-Eared Bat
- Long-Eared species
- Myotis species
- Noctule Bat
- Common Pipistrelle
- Soprano Pipistrelle
- Pipistrelle species
- Serotine Bat

Roost Results - Kent and Medway Biodiversity Record Center

- Hibernation Roost
- Maternity Roost
- Roost type not classified

Roost Results 2017, 2018 and 2020 Arcadis Surveys

- Maternity Roost
- Summer Roost



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01	31-12-2018	FOR INFORMATION	PN	BM	MG

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Figure 3
Bat Roost Records from Arcadis 2017, 2018 and 2020 Surveys and from Records Centre Data

scale	original size	datum	grid
1:27,500	A3	Sx	BNG

0 1:27,500 1.5 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 3 - Bat Roost Records from Arcadis 2017 and 2018 Survey and from Records Centre Data.mxd

Figure 4: Bat Emergence Survey Results for each Cluster / Building 2017 - 2021

2017 survey data

Cluster 1B

Cluster 1A

1i

1h

1a

1aa

1b

1c

1d

Common pipistrelle
04/07/2017

Common Pipistrelle
03/07/2017

Common Pipistrelle
03/07/17 &
Pipistrelle sp.
14/08/2017

Common Pipistrelle
14/08/2017

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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Possible
- Probable
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Common Pipistrelle, HNS, Survey 4
- Myotis sp., HNS, Survey 2
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Noctule, HNS, Survey 3
- Serotine, HNS, Survey 2
- Serotine, HNS, Survey 3
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Commuting, Survey 4
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Common Pipistrelle, Foraging, Survey 3
- Soprano Pipistrelle, Foraging, Survey 1
- Soprano Pipistrelle, Foraging, Survey 2

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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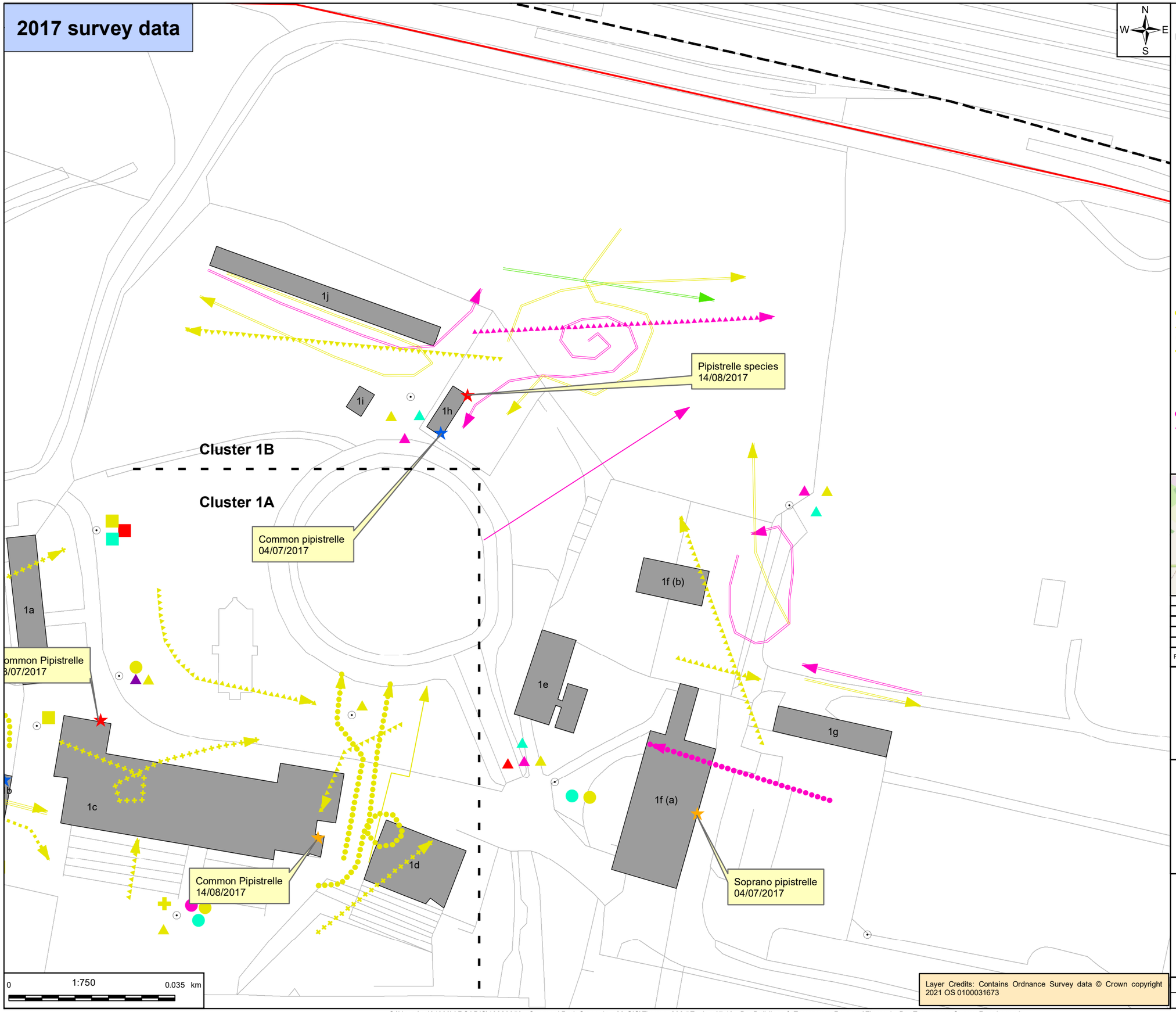
Figure 4
Bat Emerence Survey Results
Page 1 of 16

0 1:500 0.02 km

scale	original size	datum	grid
1:500	A3	Sx	BNG

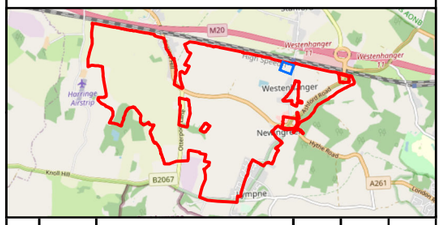
C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2017 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Possible
- Probable
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Common Pipistrelle, HNS, Survey 4
- Myotis sp., HNS, Survey 2
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Noctule, HNS, Survey 3
- Serotine, HNS, Survey 2
- Serotine, HNS, Survey 3
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Commuting, Survey 4
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Common Pipistrelle, Foraging, Survey 3
- Pipistrelle, Foraging, Survey 2
- Soprano Pipistrelle, Commuting, Survey 1
- Soprano Pipistrelle, Commuting, Survey 2
- Soprano Pipistrelle, Foraging, Survey 1
- Soprano Pipistrelle, Foraging, Survey 2



REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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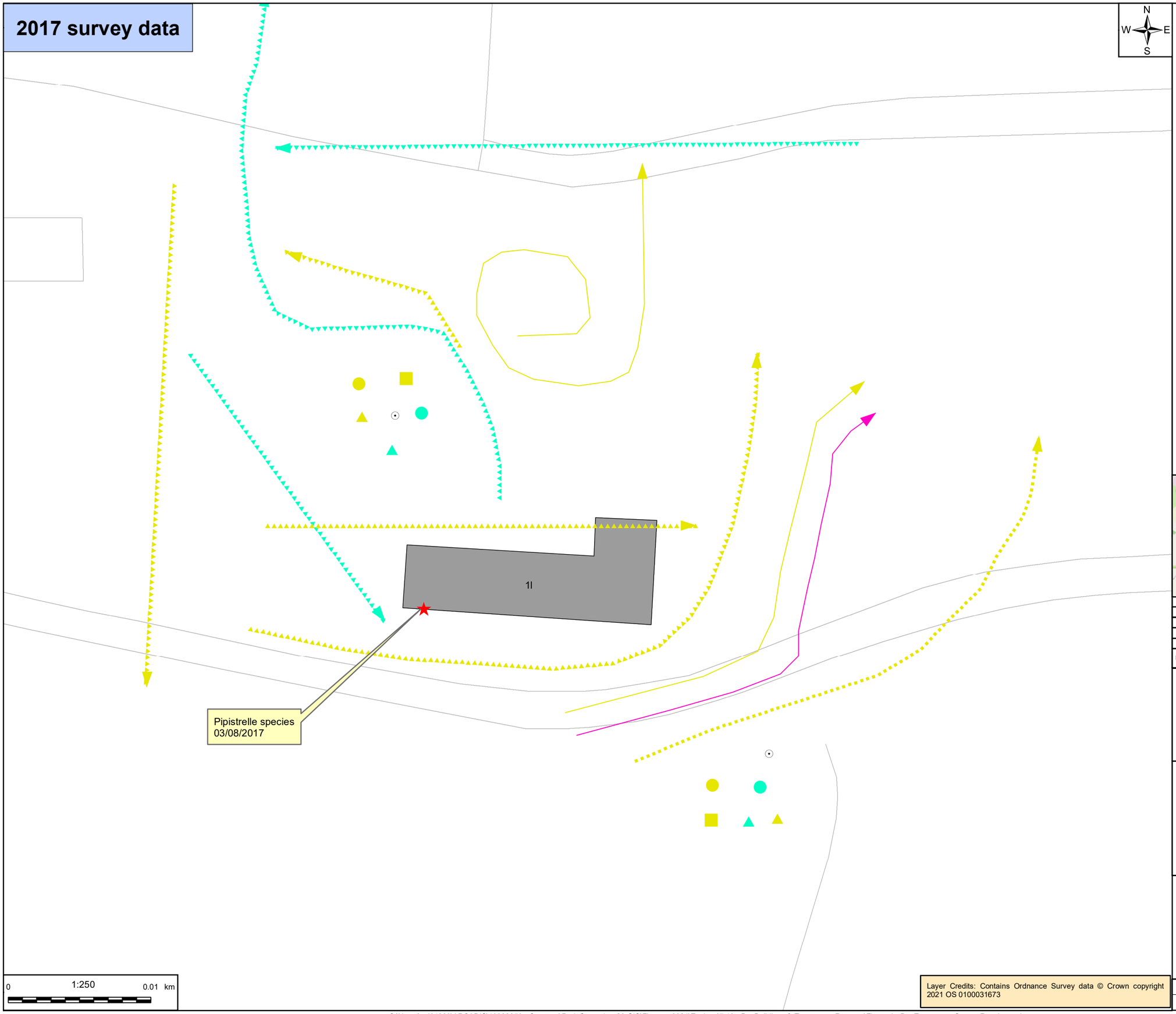
Figure 4
Bat Emerence Survey Results
Page 2 of 16

scale	original size	datum	grid
1:750	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2017 survey data



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Foraging, Survey 1
- Noctule, Commuting, Survey 2
- Soprano Pipistrelle, Foraging, Survey 1

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 4
Bat Emerence Survey Results
Page 3 of 16

0 1:250 0.01 km

scale	original size	datum	grid
1:250	A3	Sx	BNG

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2017 survey data

Cluster 2B

Cluster 2A

2g

2g

2h

2f

2c (e)

(c)

2j

Unknown bat
(likely Soprano pipistrelle)
04/07/2017

Soprano Pipstrelle
20/07/2017

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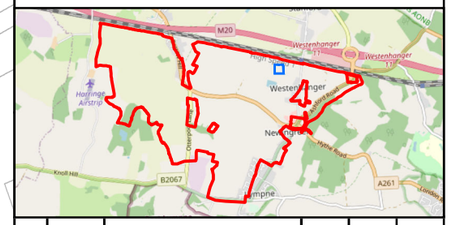
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Noctule, HNS, Survey 3
- Serotine, HNS, Survey 3
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Soprano Pipistrelle, HNS, Survey 3
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Common Pipistrelle, Foraging, Survey 3
- Noctule, Commuting, Survey 2
- Noctule, Commuting, Survey 3
- Noctule, Foraging, Survey 1
- Noctule, Foraging, Survey 2
- Noctule, Foraging, Survey 3
- Soprano Pipistrelle, Commuting, Survey 1
- Soprano Pipistrelle, Foraging, Survey 3



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 4
Bat Emerence Survey Results
Page 4 of 16

0 1:500 0.02 km

scale	original size	datum	grid
1:500	A3	Sx	BNG

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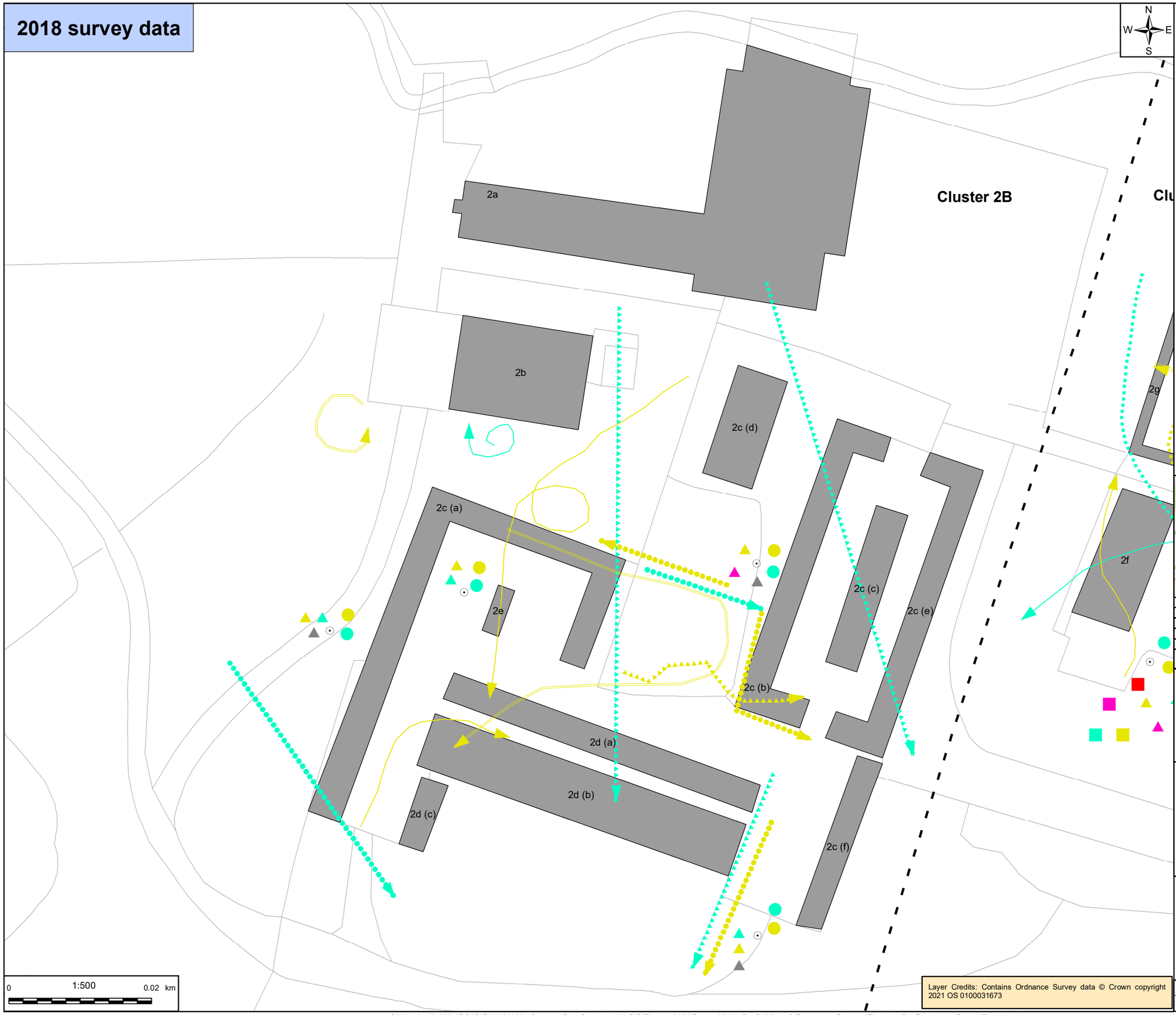
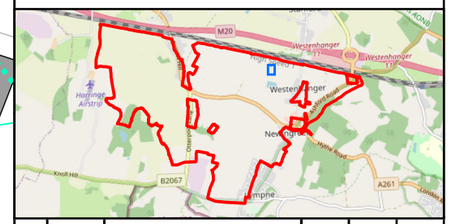
2018 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Noctule, HNS, Survey 3
- Pipistrelle sp., HNS, Survey 2
- Serotine, HNS, Survey 3
- Soprano Pipistrelle, HNS, Survey 2
- Soprano Pipistrelle, HNS, Survey 3
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Common Pipistrelle, Foraging, Survey 3
- Noctule, Commuting, Survey 1
- Noctule, Commuting, Survey 2
- Noctule, Commuting, Survey 3
- Noctule, Foraging, Survey 1



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 4
Bat Emerence Survey Results
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0 1:500 0.02 km

scale	original size	datum	grid
1:500	A3	Sx	BNG

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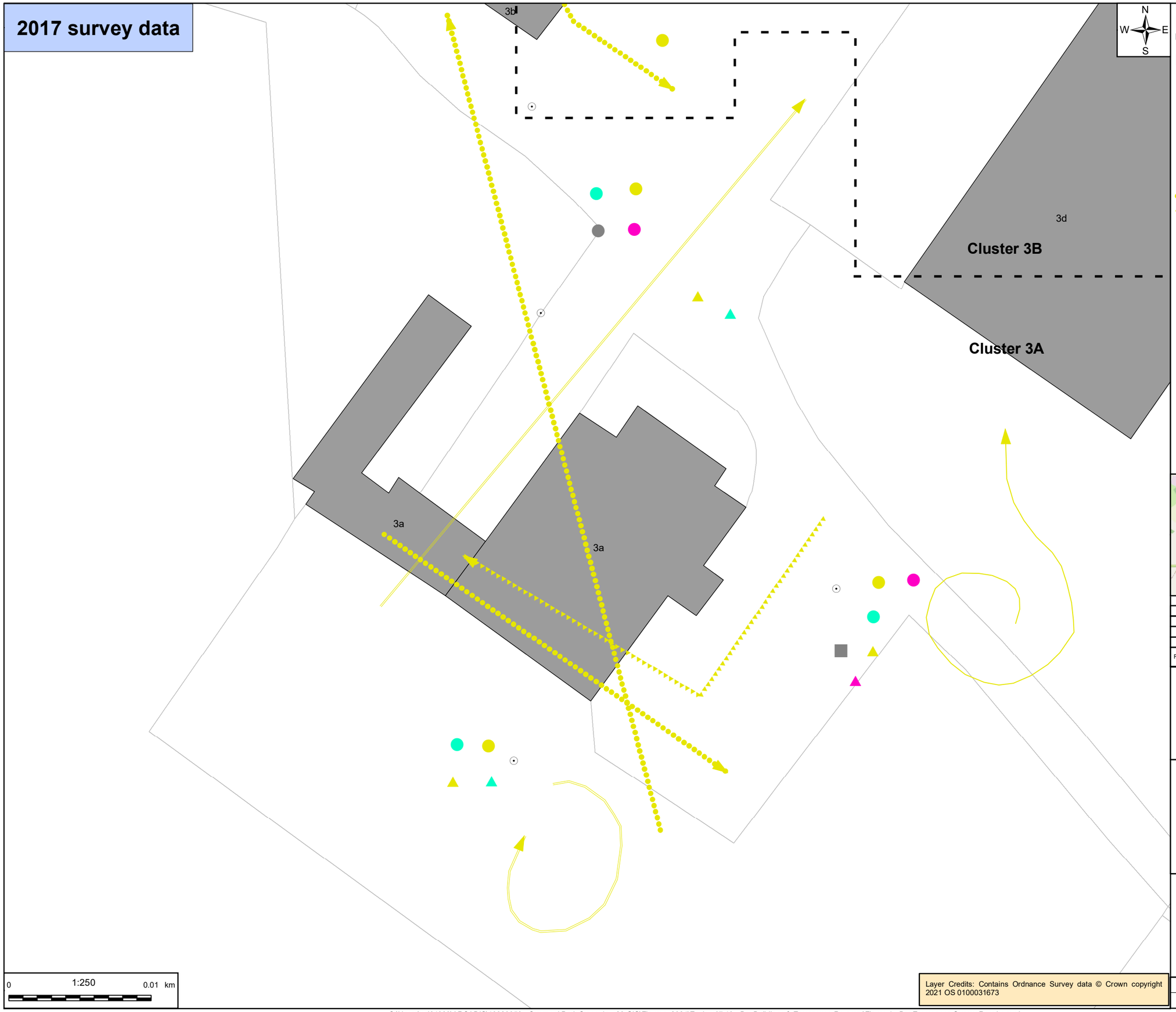
2017 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Pipistrelle sp., HNS, Survey 1
- Serotine, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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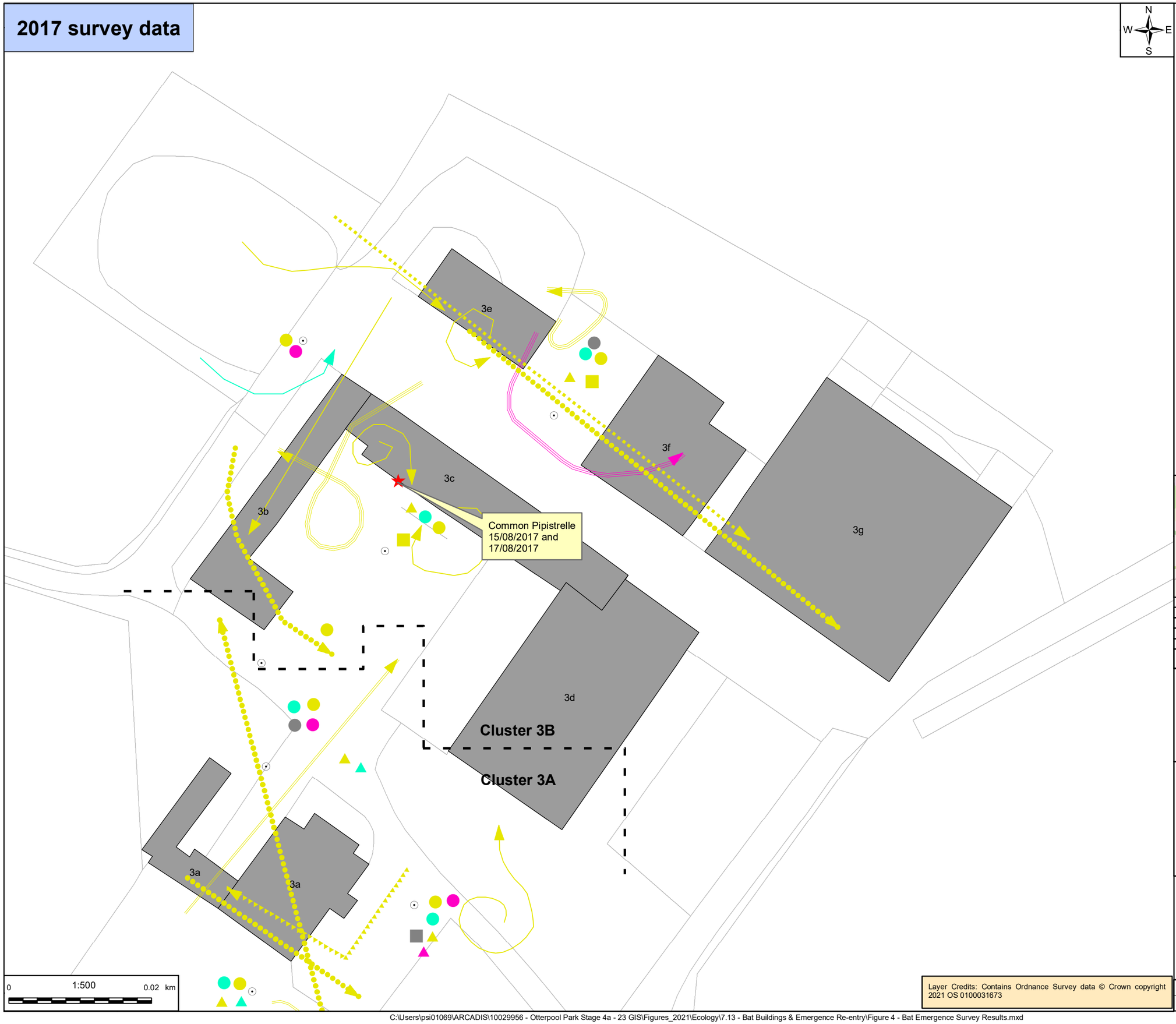
Figure 4
Bat Emerence Survey Results
Page 6 of 16

scale	original size	datum	grid
1:250	A3	Sx	BNG

0 1:250 0.01 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2017 survey data



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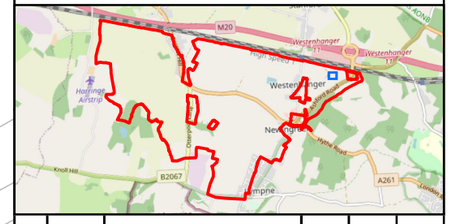
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Common Pipistrelle, HNS, Survey 3
- Noctule, HNS, Survey 1
- Noctule, HNS, Survey 2
- Pipistrelle sp., HNS, Survey 1
- Serotine, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Commuting, Survey 3
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Common Pipistrelle, Foraging, Survey 3
- Noctule, Foraging, Survey 1
- Soprano Pipistrelle, Foraging, Survey 3



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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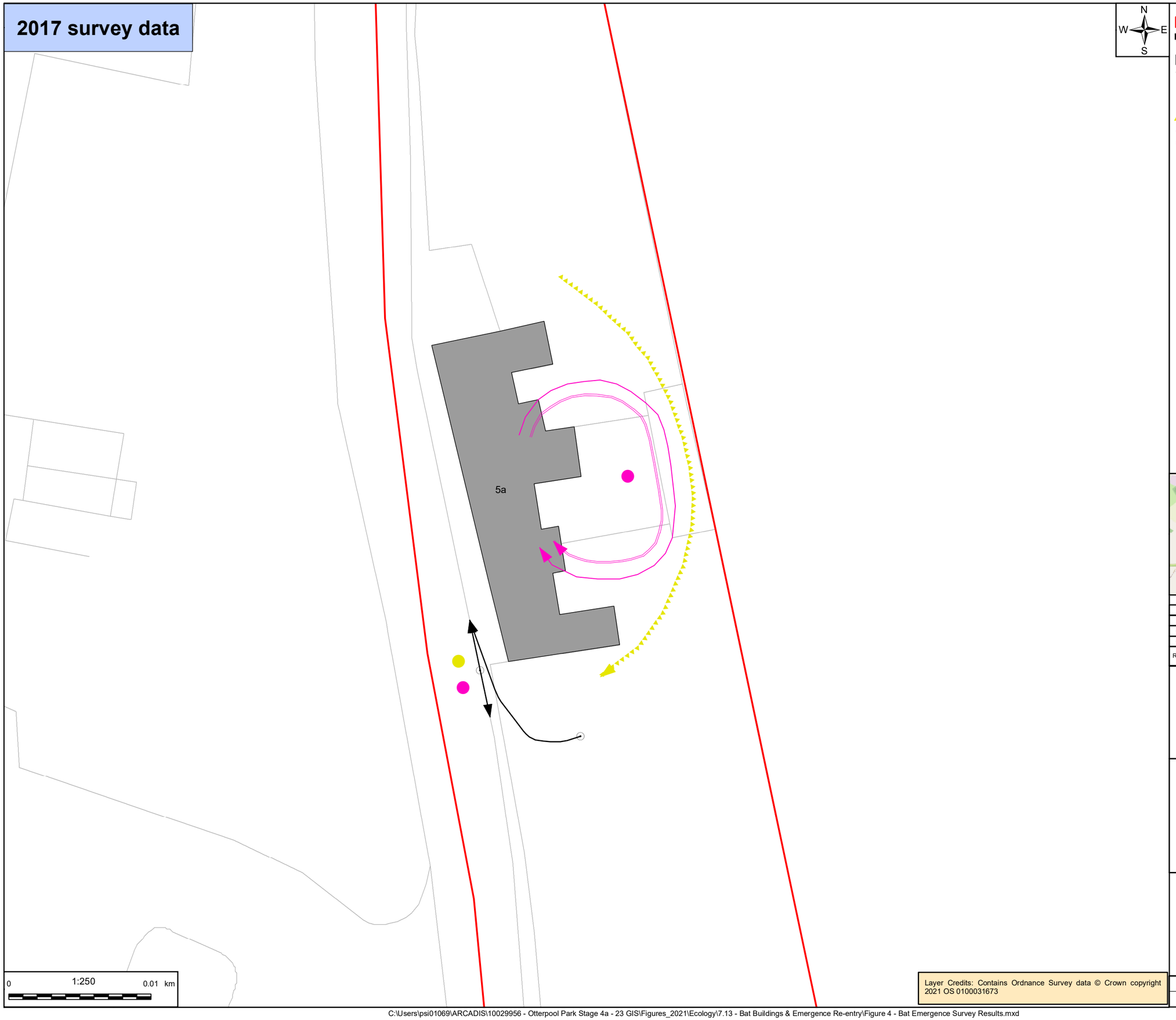
Figure 4
Bat Emerence Survey Results

scale	original size	datum	grid
1:500	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2017 survey data



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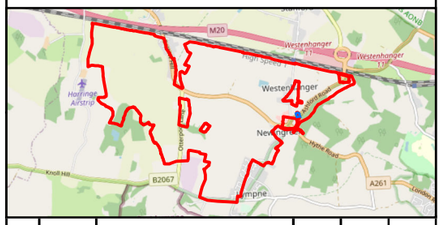
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Area covered by surveyors
- Common Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Soprano Pipistrelle, Foraging, Survey 1
- Soprano Pipistrelle, Foraging, Survey 2



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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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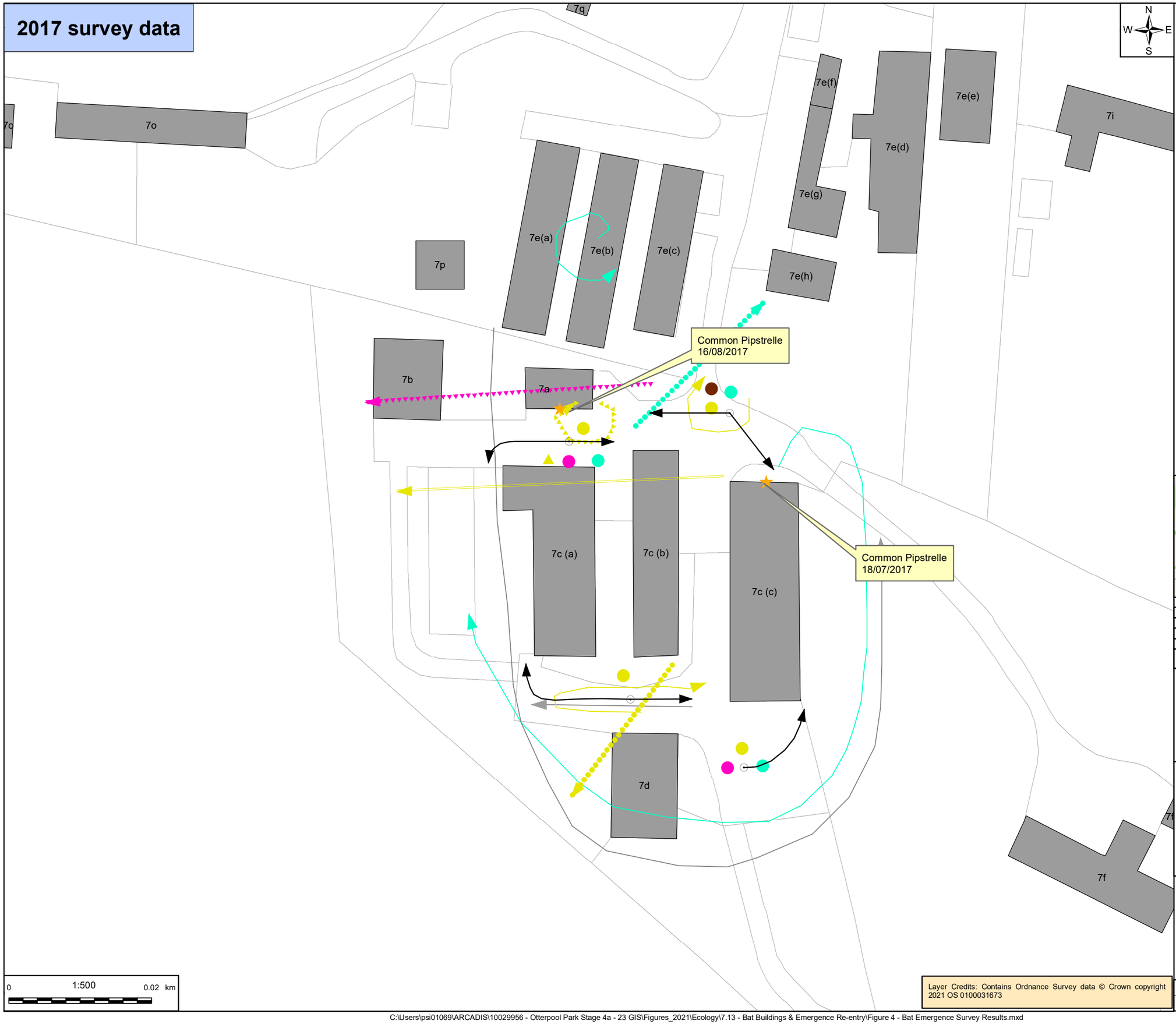
Figure 4
Bat Emerence Survey Results
Page 8 of 16

scale	original size	datum	grid
1:250	A3	Sx	BNG

0 1:250 0.01 km

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2017 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Area covered by surveyors
- Possible
- Brown Long Eared, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Noctule, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Noctule, Commuting, Survey 1
- Noctule, Foraging, Survey 1
- Soprano Pipistrelle, Commuting, Survey 2
- Unknown (Big Bat), Foraging, Survey 1

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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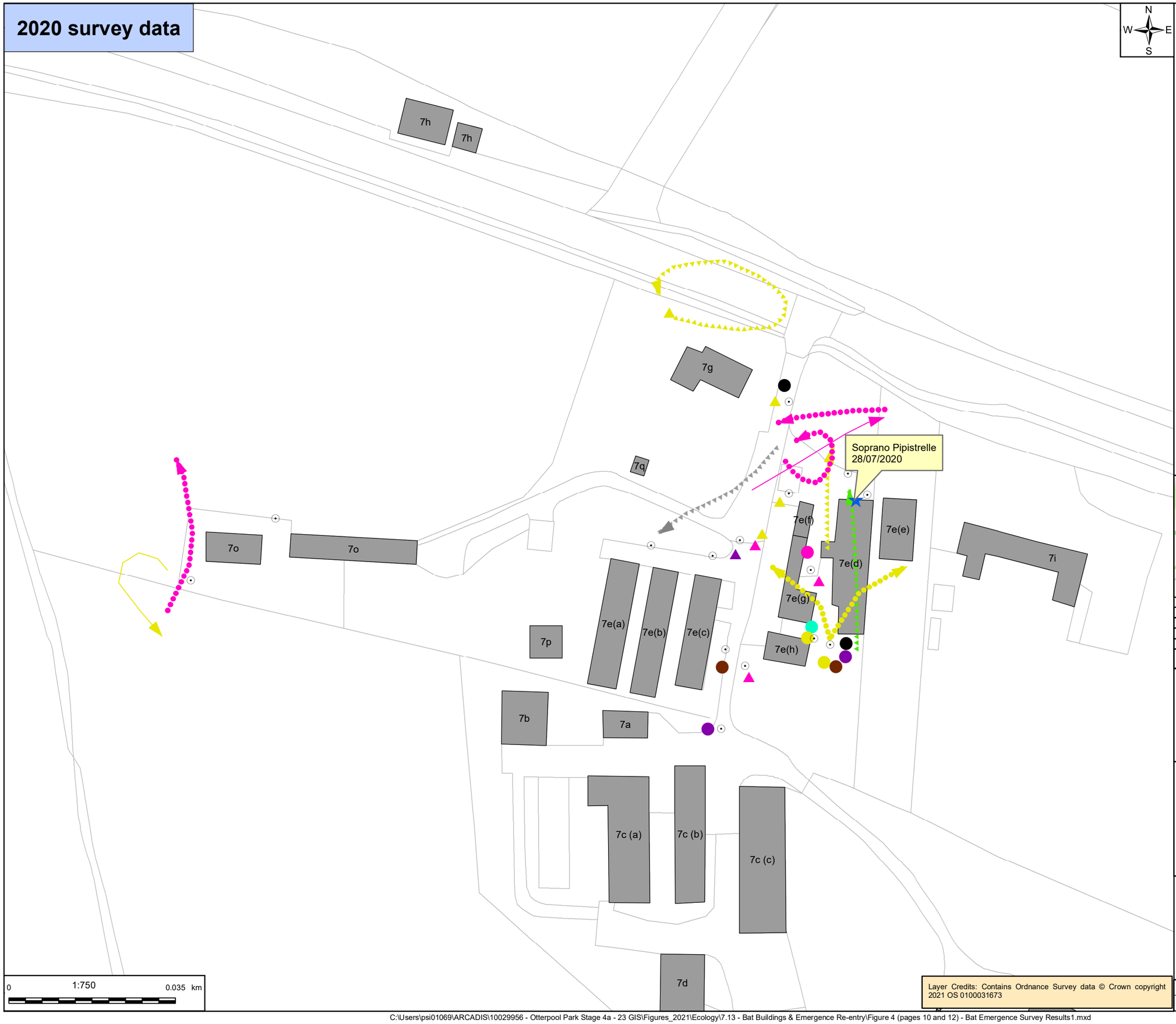
Figure 4
Bat Emerence Survey Results
Page 9 of 16

scale	original size	datum	grid
1:500	A3	Sx	BNG

0 1:500 0.02 km

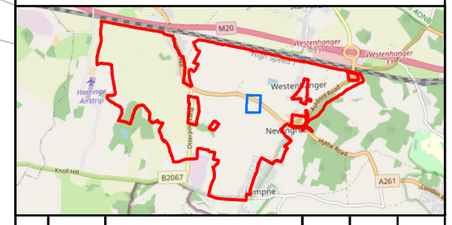
C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.13 - Bat Buildings & Emergence Re-entry\Figure 4 - Bat Emergence Survey Results.mxd

2020 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Probable
- Brown Long Eared, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Myotis sp., HNS, Survey 1
- Myotis sp., HNS, Survey 2
- Noctule, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 2
- Unknown sp., HNS, Survey 1
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Pipistrelle, Commuting, Survey 2
- Soprano Pipistrelle, Commuting, Survey 1
- Soprano Pipistrelle, Foraging, Survey 1
- Unknown, Commuting, Survey 2
- Buildings



REV	Date	Description	Drawn	Check	Approv
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01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 4
Bat Emerence Survey Results
Page 10 of 16

scale	original size	datum	grid
1:750	A3	Sx	BNG

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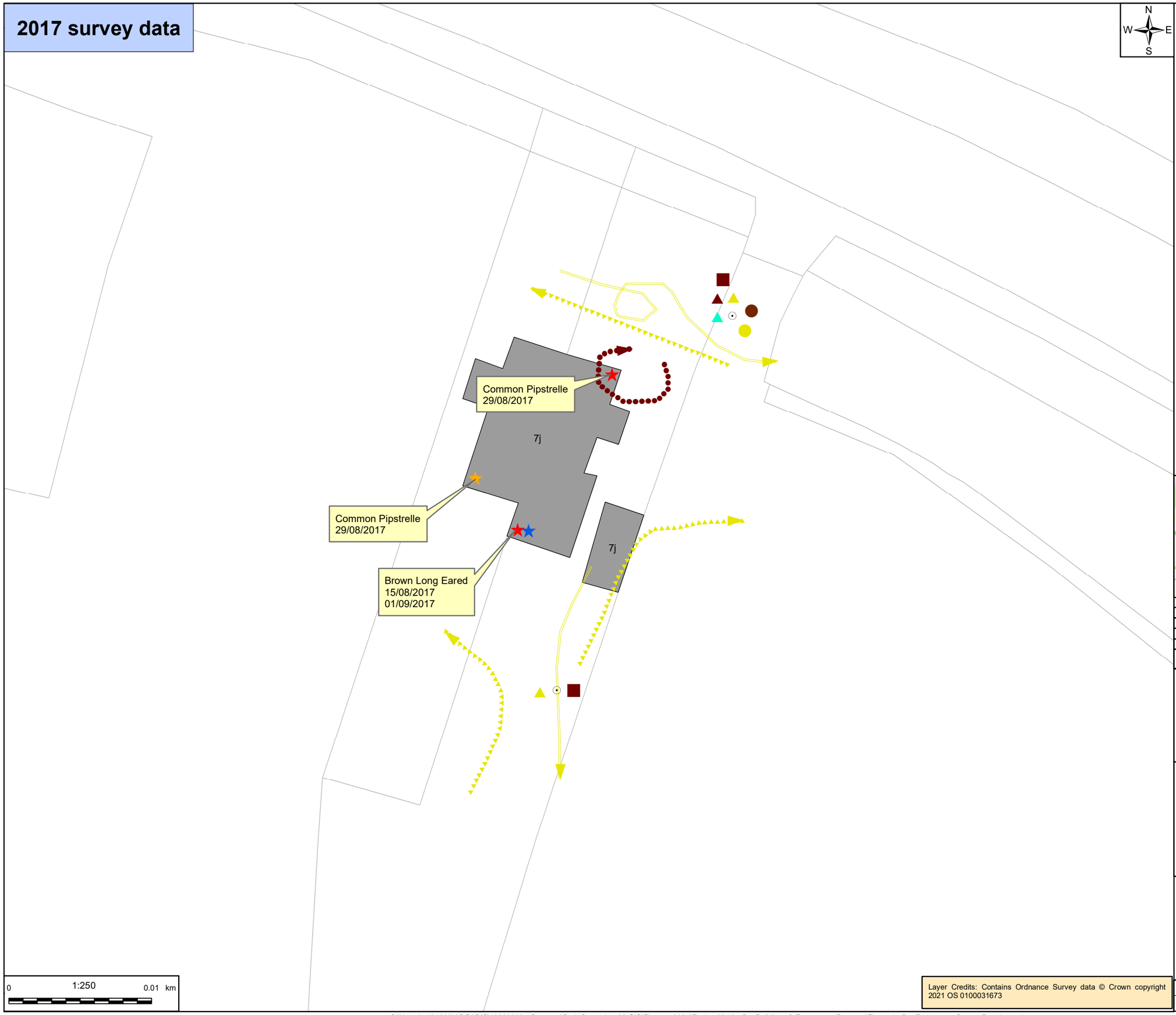
2017 survey data



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Confirmed
- Possible
- Probable
- Brown Long Eared, HNS, Survey 1
- Brown Long Eared, HNS, Survey 2
- Brown Long Eared, HNS, Survey 3
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Noctule, HNS, Survey 2
- Brown Long Eared, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 2

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
01	28-12-2018	FOR INFORMATION	EP	BM	MG

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Figure 4
Bat Emerence Survey Results
Page 11 of 16

0 1:250 0.01 km

scale	original size	datum	grid
1:250	A3	Sx	BNG

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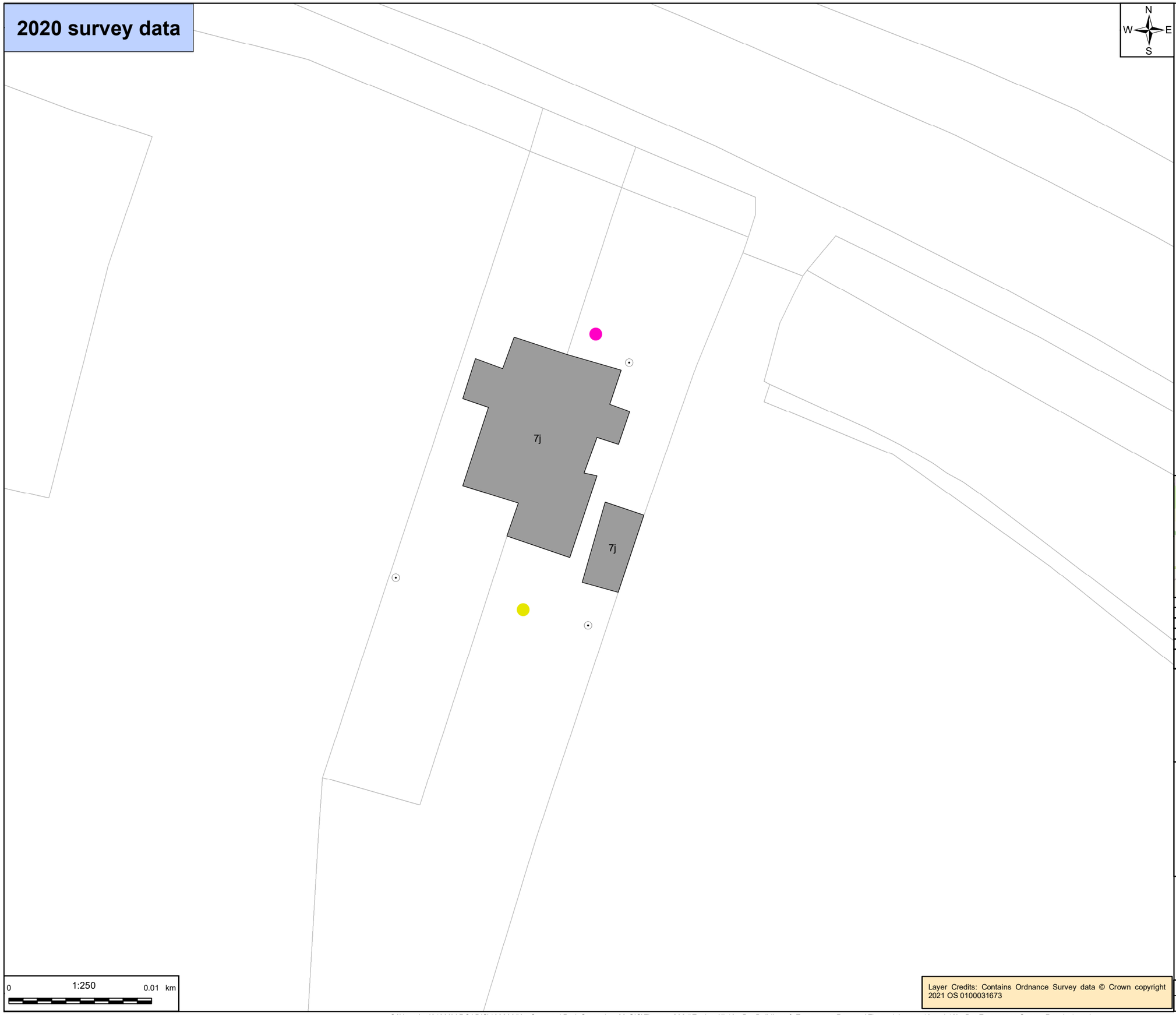
2020 survey data



N
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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Common Pipistrelle, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Buildings

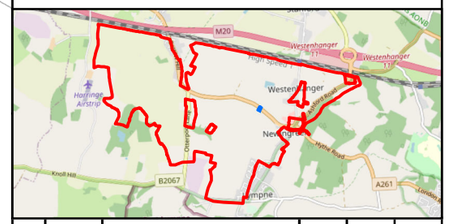

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Figure 4
Bat Emerence Survey Results
Page 12 of 16

0 1:250 0.01 km

scale	original size	datum	grid
1:250	A3	Sx	BNG

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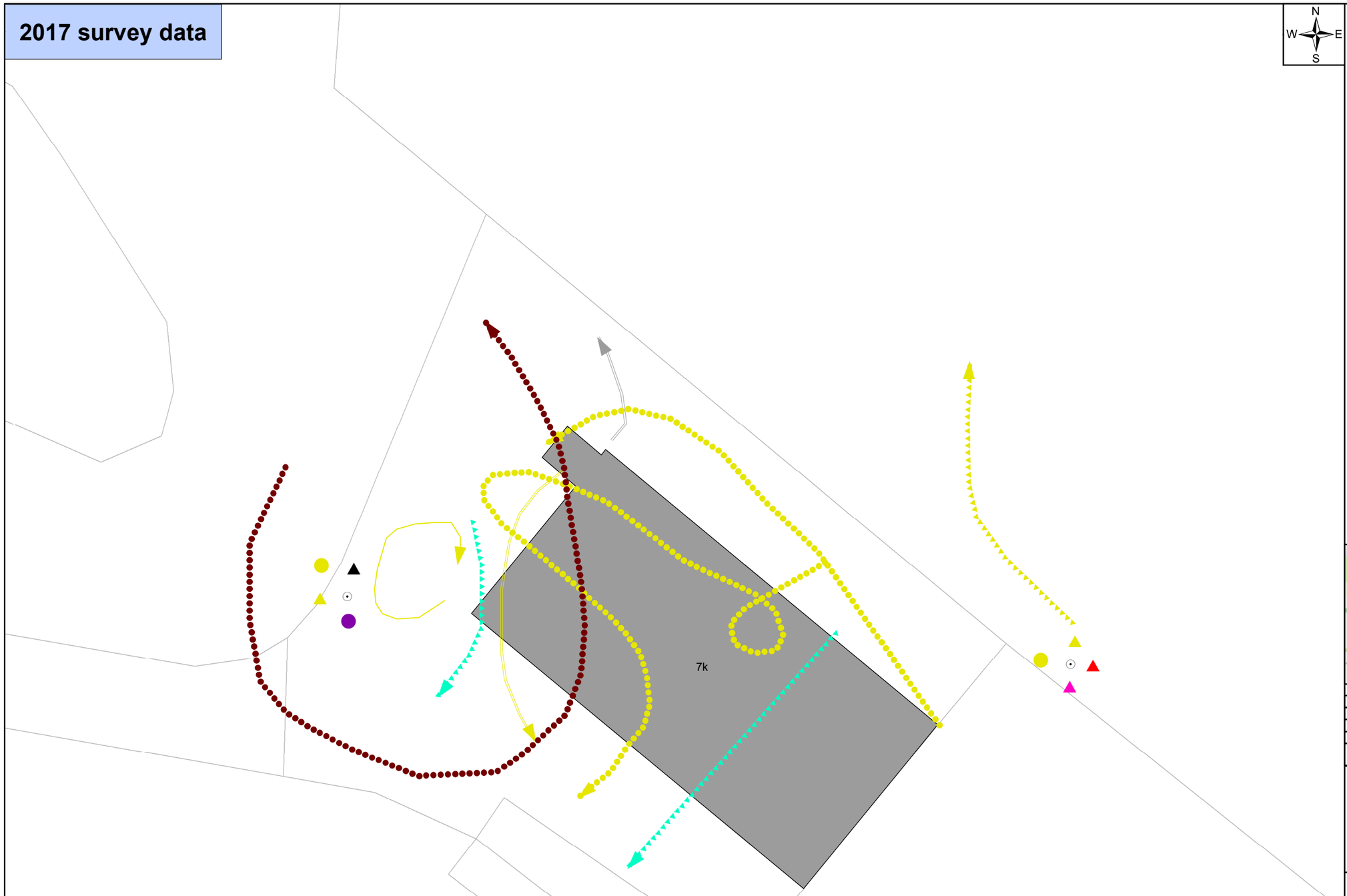
2017 survey data



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Myotis sp., HNS, Survey 1
- Serotine, HNS, Survey 2
- Soprano Pipistrelle, HNS, Survey 2
- Unknown sp., HNS, Survey 2
- Brown Long Eared, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Noctule, Commuting, Survey 2
- Unknown (Big Bat), Foraging, Survey 2

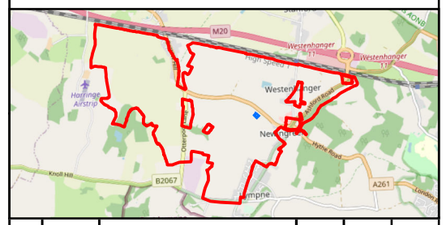

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Figure 4
Bat Emerence Survey Results

0 1:250 0.01 km

scale	original size	datum	grid
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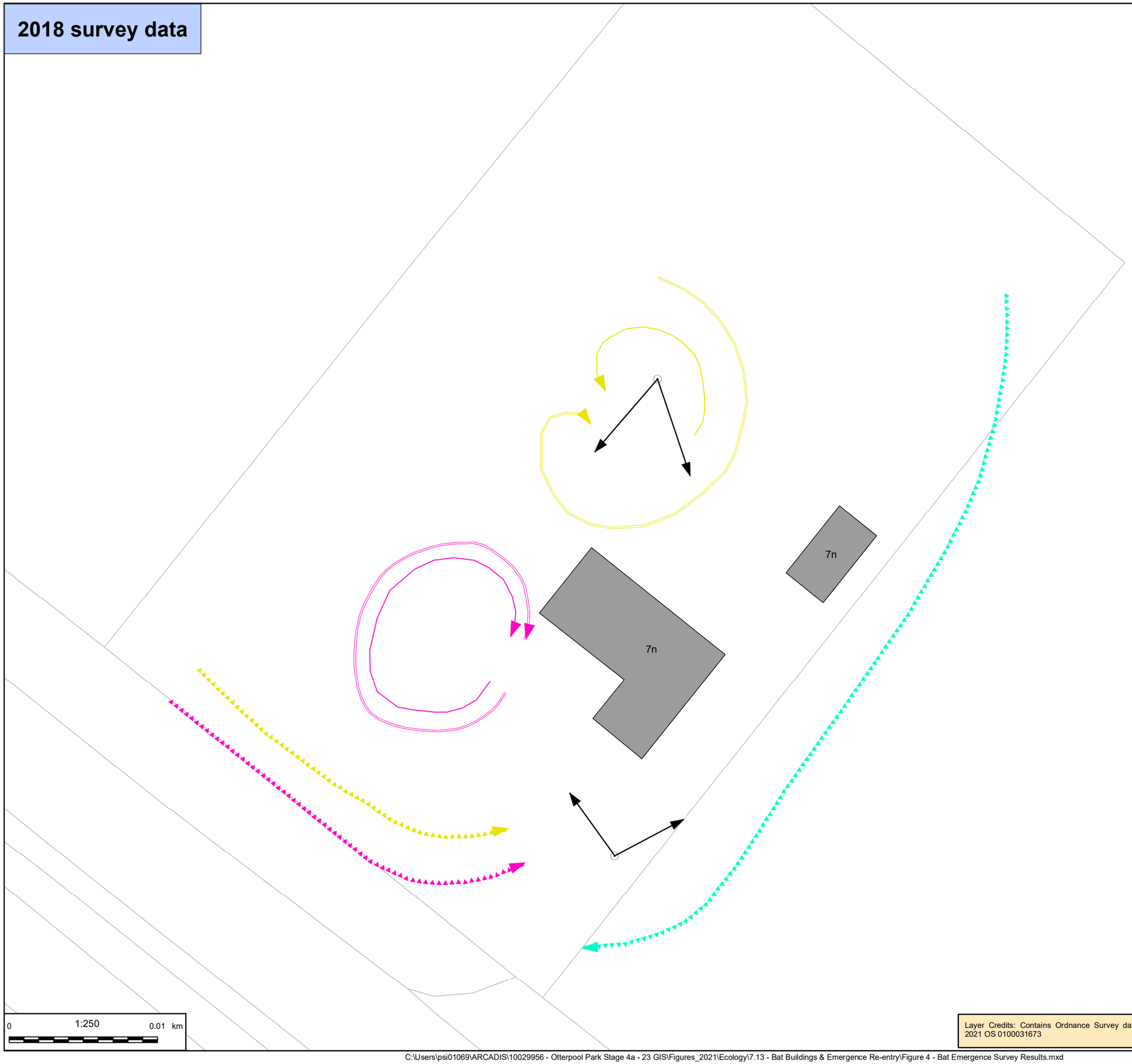
2018 survey data



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Area covered by surveyors
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2
- Noctule, Commuting, Survey 2
- Soprano Pipistrelle, Commuting, Survey 2
- Soprano Pipistrelle, Foraging, Survey 1
- Soprano Pipistrelle, Foraging, Survey 2

REV	Date	Description	Drawn	Check	Approv
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Figure 4
Bat Emerence Survey Results

scale	original size	datum	grid
1:250	A3	Sx	BNG

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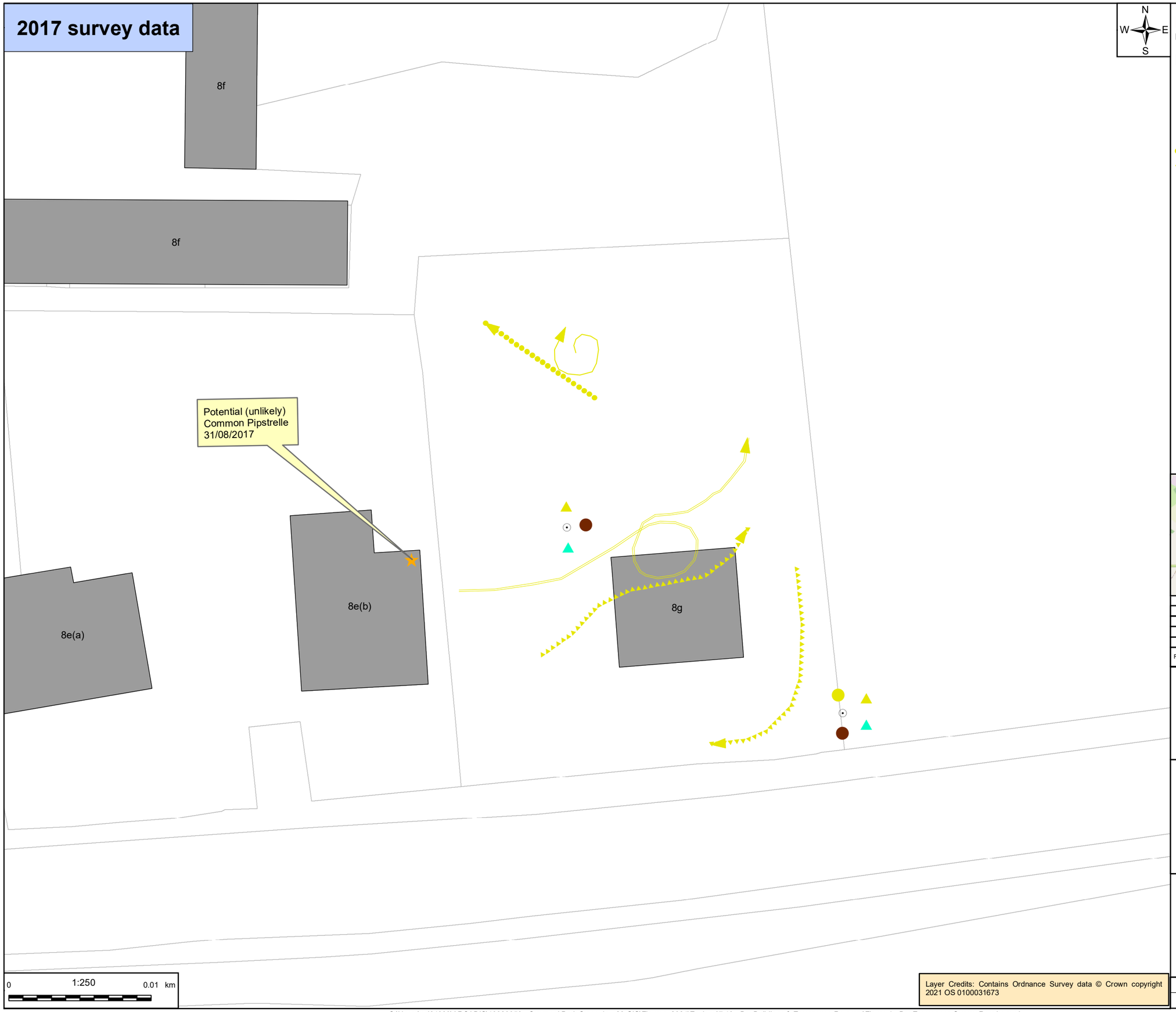
2017 survey data



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Possible
- Brown Long Eared, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Noctule, HNS, Survey 2
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 2
- Common Pipistrelle, Foraging, Survey 1
- Common Pipistrelle, Foraging, Survey 2

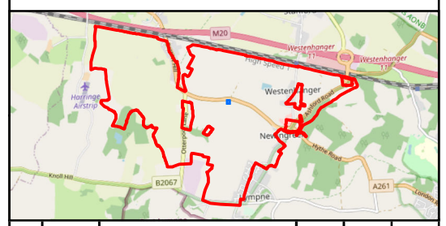


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Figure 4
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scale	original size	datum	grid
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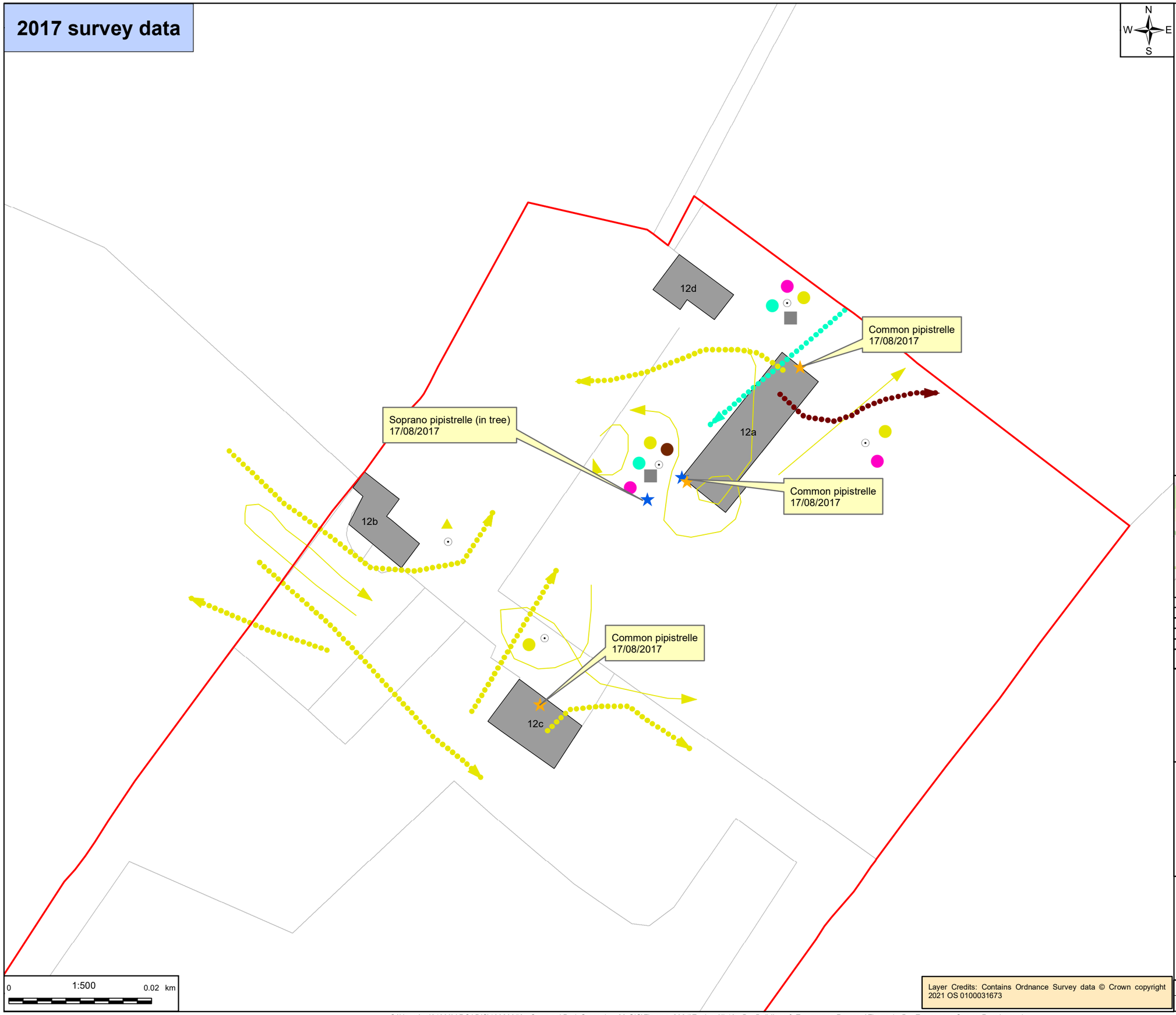
2017 survey data



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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Surveyor Start Position (indicative)
- Bat_Buildings_Emergence_Assessment_Nov21
- Possible
- Probable
- Brown Long Eared, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 1
- Common Pipistrelle, HNS, Survey 2
- Noctule, HNS, Survey 1
- Serotine, HNS, Survey 1
- Soprano Pipistrelle, HNS, Survey 1
- Brown Long Eared, Commuting, Survey 1
- Common Pipistrelle, Commuting, Survey 1
- Common Pipistrelle, Foraging, Survey 1
- Noctule, Commuting, Survey 1

REV	Date	Description	Drawn	Check	Approv
02	25-11-2021	FOR INFORMATION	KF	BM	MG
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Figure 4
Bat Emerence Survey Results

0 1:500 0.02 km

scale	original size	datum	grid
1:500	A3	Sx	BNG

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APPENDIX A: BCT (2016) – Habitat Suitability Criteria

Table 19: BCT (2016) – Habitat Suitability Criteria

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain Potential Roost Features but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree- lined watercourses and grazed parkland. site is close to and connected to known roosts.

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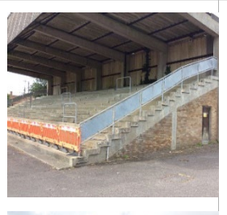
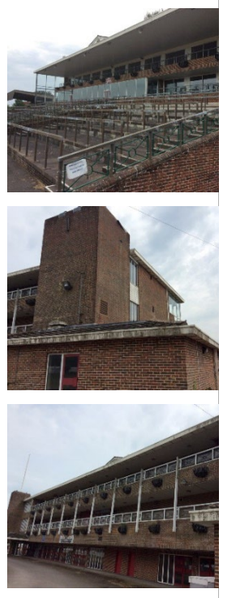
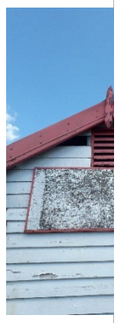
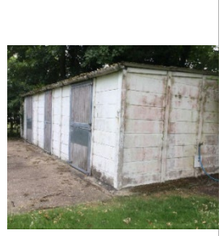
APPENDIX B: Full Building Assessment

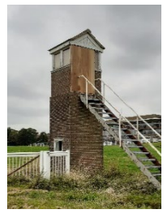
Table 20: Full building assessment results

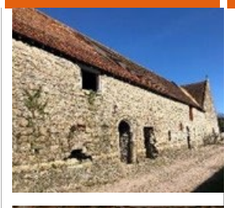
Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
1	1A	1a	Single storey utility building (currently used as boxing gym)	Wood	Wood	Cavity	Absent	Mixed (Felt and tiles)	Absent	27/06/2017	Hardstanding, arena buildings, improved grassland, adjacent to Castle & grounds with mature trees	Yes	Yes	Hollow roof line but gaps present along the insulated wooded walls of the commercial building (currently used as a boxing gym)..		Moderate (potential for crevice dwelling but no significant roost potential)	Negligible	Yes in cluster 1A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change. Some additional dilapidation.	No change
1	1A	1a(a)	Sub-station	Brick	Absent	Single skin	Absent	Flat	N/A	27/06/2017	Hardstanding, arena buildings, improved grassland, adjacent to Castle & grounds with mature trees	Yes	Yes	Small substation associated outbuilding with small gaps above the door and along the barge board were observed		Low	Negligible	Yes in cluster 1A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change
1	1A	1b	Disused single storey utility building (former racecourse spectator sitting area) with associated storage	Mixture of block and brick	Absent	Solid	Absent	Mixed (Felt and Corrugated fibreboard / metal)	Unknown	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Gaps above the doors leading inside the storage. Open vent present within the north face of the building.	 	Moderate (potential for significant voids at a stable temperature)	Negligible	Yes – in sub - cluster 1A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y – Probable emergence of common pipistrelle.	No change	No change

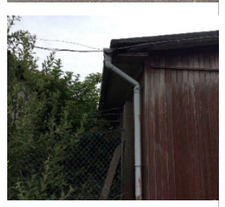
Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
1	1A	1c	Disused three storey utility building (former racecourse spectator sitting area) with associated building	Brick	Absent	Solid	Unknown	Tiles	Unknown	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Disused, largely unmaintained four storey utility building with open vents present and several other features such as missing mortar, small gaps along the soffits and barge boards. Additionally, partially open windows were observed on the 4th floor of the associated building leading to the wider building space		Moderate (potential for significant voids at a stable temperature)	Potential	Yes - in sub-cluster 1A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y two bats of unknown species emerged. Likely pipistrelle.	No Change. Gaps in tiles on roof. Still moderate summer roost potential	No change
1	1A	1d	Disused two storey utility building (former racecourse spectator sitting area) with associated building	Wood	Absent	Unknown	Unknown	Tiles	Fibre/ wood boards	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Largely unmaintained building with rotten wood fascia with several gaps leading to the wider roof space. Black birds and wood pigeons observed nesting within the roof space		High (potential for significant voids at a stable temperature)	Potential, low	Yes in cluster - 1A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change. Very dilapidated.	No change

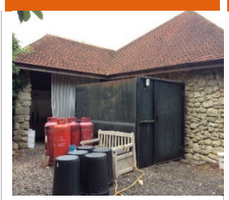
Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
1	1B	1e	Disused two single storey utility buildings (former Jazz bar and general storage)	Wood	Absent	Unknown	Absent	Mixed felt and corrugated fibreboard / metal	Fibre/ wood boards	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Gaps present within the soffit potentially leading into the roof space were present. Open vent present and partially open windows also observed	 	Low (potential for crevice dwelling but no significant roost potential)	Negligible	Yes in Cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	Upgraded to Moderate. Holes at cable end allow access. 	No change
1	1B	1f(a)	Single storey utility building (currently used as office / storage building)	Brick	Absent	Solid	Present	Tiles	Fibre/ wood board	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Some tiles slightly lifted potentially leading into the roof space. Some gaps observed within the wooden fascia boards	 	Moderate (potential for significant voids at a stable temperature)	Negligible	Yes in Cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Probable entry of soprano pipistrelle	No change	No change
1	1B	1f(b)	Two storeys residential building	Brick	Absent	Solid	Absent	Tiles	Unknown	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Well maintained large residential building with no obvious features observed but due to size and location, low potential was considered		Low (potential for crevice dwelling but no significant roost potential)	Potential, low	Yes in cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	Not access	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
1	1B	1g	Single storey utility building	Wood	Absent	Unknown	Absent	Corrugated fibreboard / metal	Fibre/ wood board	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Gaps above the door, ivy covering a proportion of the building. A single hole was observed on the west face of the building potentially leading inside 9the utility building		High (potential for suitable crevices to be present)	Negligible	Yes in cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change
1	1B	1h	Disused single storey utility building (former stables)	Block	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Disused stables with small gaps under the corrugated roof and under the fascia boards		Low (potential for crevice dwelling but no significant roost potential)	Negligible	Yes in sub-cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y – single pipistrelle emergence	No change	No change
1	1B	1i	Single storey utility building (storage shed)	Brick	Absent	Solid	Absent	Tiles	Fibre/ wood boards	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	Gaps above the door small gaps leading inside the storage building		Low (potential for crevice dwelling but no significant roost potential)	Negligible	Yes in cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	N/A	No change	No change
1	1B	1j	Single storey utility building (former stables)	Block	Absent	Solid	Absent	Tiles	Raffia Fabric	27/06/2017	Arena buildings, hedgerow, improved grassland near to Castle & grounds with	Yes	Yes	Several gaps within the raffia fabric lined roof		Low (potential for crevice dwelling but no significant roost	Negligible	Yes in cluster 1B	No – surveyed in 2017	In early phases. Surveyed as a cluster with	N/A	No change	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											mature trees					potential)				surrounding buildings			
1	1C	1k	Disused single storey utility building (former viewing tower)	Brick	Absent	Solid	Unknown	Tiles	Absent	27/06/2017	Hardstanding, arena buildings, improved grassland near to Castle & grounds with mature trees	Yes	Yes	No features observed		Negligible	Negligible	No	No	In early phases. Negligible potential for roosting bats, therefore building was not surveyed as part of the cluster	N/A	No change	Upgraded to Low potential (upper floor now boarded-up forming enclosed space with access via gap in rotted wood.
1	1C	1l	Disused single storey utility building (former changing room/toilet block)	Wood	Absent	Unknown	Absent	Tiles	Unknown	27/06/2017	Improved grassland, near to lake and surrounding scrub/ditches.	Yes	Yes	Wooden fascia board with gaps potentially leading inside building		Moderate (potential for crevice dwelling but no significant roost potential)	Negligible – unlikely to offer protection	Yes	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y	No change	No change
2	2B	2a	Single storey farm building	Stone	Absent	Solid	Present	Tiles	Absent	27/06/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Roof across the barn very exposed but possible that a small number of crevice-dwelling bats roost within the gaps between the stone wall. Bat droppings		High (potential for suitable crevices to be present)	Potential (outside of OPA boundary)	No	No	None	Yes (Feeding roost confirmed - Pipistrelle droppings)	No change. Barn being repaired. Roost confirmed again in 2020.	No change. Roost confirmed with additional species (DNA analysis of droppings) : common pipistrelle, brown

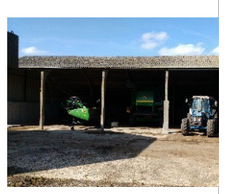
Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
														collected for analysis.	 								long-eared & serotine.
2	2B	2b	Single storey farm building	Metal skin	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	No features observed, no voids present.		Negligible	Negligible	No	No	None	No	No change	No change
2	2B	2c(a) 2c(b) 2c(c) 2c(d) 2c(e)	Disused complex of single storey utility buildings (former stables)	Block	Absent	Solid	Present	Corrugated fibreboard / metal	Absent	27/06/2017	Stables adjacent to castle grounds, paved ground, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Small gaps under the corrugated asbestos roof	 	Low (potential for crevice dwelling but no significant roost potential)	Negligible	Yes in cluster 2B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
2	2B	2d (a) 2d (b) 2d (c)	Disused single storey utility building (former office building)	Wood	Absent	Unknown	Absent	Felt	Underfelt	27/06/2017	Stables adjacent to castle grounds, paved ground, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Gaps present in several sections of the barge boards and soffits, substantial voids within building	 	Moderate (potential for suitable crevices to be present)	Negligible	Yes in cluster 2B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change. Increased dilapidation but still moderate roost potential	No change
2	2B	2e	Disused single storey utility building (former storage building)	Brick	Absent	Solid	Absent	Tiles	Fibre/ wood boards	27/06/2017	Stables adjacent to castle grounds, paved ground, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Gaps within the wooden barge board potentially leading into the roof space. Door also partially open		Moderate (potential for suitable crevices to be present)	Negligible	Yes in cluster 2B	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change
2	2A	2f	Single storey utility building (currently used for private functions)	Stone and brick	Absent	Solid	Present	Tiles	Fibre/ wood boards	27/06/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Several gaps observed within the fascia boards potentially leading into the roof space	 	Moderate (potential for suitable crevices to be present)	Potential (outside of OPA boundary)	Yes, in cluster 2A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	Upgraded to High potential with the confirmation of a roost in 2020 through DNA of droppings - common pipistrelle, brown long-eared and Natterer's bat roost.	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
																							
2	2A	2g	Castle ruins	Stone	Absent	Solid	Absent	None	Absent	27/06/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Roof absent but gaps between stone wall and section covered by ivy were observed		Moderate (potential for crevice dwelling but no significant roost potential)	Potential (outside of OPA boundary)	Yes, partially in cluster 2A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	Downgraded to Low potential	No change
2	2A	2h	Two storey residential building	Stone and brick	Absent	Unknown	Present	Tiles	Unknown	27/06/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Well maintained residential building with some lifted tiles potentially leading into the wider space of the roof	  	High (potential for suitable crevices to be present)	Potential (outside of OPA boundary)	Yes, in cluster 2A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y	No change in grade. Roost was confirmed again in 2020 – common pipistrelle	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
																							
2	2A	2j	Disused boat (decorative feature within the castle grounds)	Wood	Absent	Unknown	N/A	N/A	N/A	27/07/2017	Castle grounds, Mature trees, stream, improved and semi-improved grassland	Yes	Yes	Decorative boat with potential small opening leading inside the hull		Low	Negligible	Yes, in cluster 2A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change
2	2C	2i	Two storey residential building	Stone	Absent	Solid	Absent	Slates	Unknown	12/07/2017	Farmland, improved grassland, SI grassland	No (outside of RLB)	Accessed from accessible land	Relatively well-maintained building with small crevices within the stonework and along the roof eaves.	 	Low (potential for crevice dwelling but no significant roost potential)	Negligible.	No	No	Not within RLB surrounded by retained GI	N/A	Downgraded to Negligible potential	No change
3	3B	3a	Two storey utility building (currently used as office unit)	Brick	Absent	Unknown	Present	Slate	Unknown	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	Gaps behind the soffit and drainpipes, slipped tiles, access for swallows nesting inside.		Moderate (potential for suitable crevices to be present)	Potential	Yes	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
3	3A	3b	Single storey farm building	Brick	Absent	Solid	Absent	Tiles	Unknown	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	Gaps leading to the roof space		High (potential for suitable crevices to be present)	Potential	Yes, in cluster 3A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No change. Some new boarding up at windows. No significant changes	No change
3	3A	3c	Single storey farm building	Brick	Absent	Unknown	Absent	Tiles	Under felt	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	Multiple holes within the soffits	 	High (potential for suitable crevices to be present)	Potential	Yes, in cluster 3A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Y	No change. Some new boarding up at windows. No significant changes	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
3	3A	3d	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	No obvious features observed		Low (potential for crevice dwelling but no significant roost potential)	Potential	Yes, in cluster 3A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	N	No change	No change
3	3A	3e	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	No features observed		Negligible	Negligible	Yes, in cluster 3A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	N	No change	No change
3	3A	3f	Single storey farm building	Brick	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields surrounding.	Yes	Yes	No obvious roosting potential		Low (potential for crevice dwelling but no significant roost potential)	Potential	Yes, in cluster 3A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	N	No change	No change
3	3A	3g	Single storey farm building	Corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	12/07/2017	Active farm with mature trees, a small pond, a wet ditch, arable and grazed fields	Yes	Yes	No obvious features observed		Negligible	Negligible	No	No	In early phases	N/A	No change	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											surrounding.												
4	4A	4a*	Two storey residential building (known as twin Chimneys)	Brick	Absent	Solid	Unknown	Tiles	Unknown	12/07/2017	Arable field with the property bounded by hedgerow	Yes – letter posted.	No	Full assessment was not possible due to access		Moderate (preliminarly assessment from roadside)	Unknown	No	No	Access not permitted	N/A	No access	No access
4	4B	4b*	Residential building	Brick	N/A	N/A	N/A	N/A	N/A	No detailed assessment, roadside assessment on 14/06/2018	Large garden with trees.	Yes – letter posted.	No	N/A		Low	Unknown	No	No	No access	N/A	No access	No access
5	5A	5a	Two storey residential building Adjacent brick build shed	Brick	Absent	Solid	Absent	Tiles	Unknown	27/06/2017 Detailed assessment of number 1 and 2 Little Greys on 21/06/2018	Arable field, hedge with trees bordering road, small industrial unit, residential gardens.	Yes Road side survey, view limited to the front of the building. Rear of the building not surveyed	Access to two of the three cottages obtained	Well maintained building, occupied, some small external gaps noted		Moderate The houses and the adjancet shed.	Potential	No	Yes	Surveyed in 2018	Potential	No change	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
5	5A	5f	Garages (x2)	Brick / concrete	N/A	Single skin	No	Tiles / panels	Unknown	21/06/2018	Residential garden and farmland	Yes	Yes	Some small crevices		Low	Negligible	No	No	No survey required	N/A	No change	No access
5	5A	5b	Two storey utility building	Brick	Absent	Solid	Absent	Tiles	Unknown	31/05/2017	Hedgerows, hardstanding and grazed and arable fields.	Yes	Yes	No obvious roosting features observed		Low	Potential	No	No	Surveys not required due to low potential	N/A	No change	No access
5	5A	5c*	Two storey utility building	Brick	Present	Unknown	Absent	Tiles	Unknown	27/06/2017	Hedgerows, hardstanding and grazed and arable fields.	No (outside works area) Road side inspection	N/A	Only slightly lifted tiles observed	 	Low (preliminarly assessment)	Unknown (off-site)	No	No	Surveys not required due outside works area	N/A	No change	No access, no change visible
5	5A	5d	Single storey utility building	Mixed block and corrugated fibreboard / metal	Absent	Unknown	Absent	Corrugated fibreboard / metal	Unknown	31/05/2017	Improved grassland field, road, residential.	Yes	Yes	N/A		Negligible	Negligible	No	No	No further surveys	N/A	No change	No access, no change visible
5	5A	5e	Two storey office building, recent construction and building under	Block and wood cladding	Wood (new)	Unknown	Absent	Membrane	Unknown	31/05/2017	Improved grassland field, road, residential.	Yes	Yes	N/A		Negligible	Negligible	No	No	No further surveys outside RLB	N/A	Construction now completed. Still negligible bat roost potential.	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
			construction.																				
6	6A	6a	Single storey residential building 'The Willows'	Brick	Absent	Solid	Absent	Tiles	Unknown	28/06/2017 (roadside), detailed assessment on 4/08/2017	Arable/improved grassland to north and south with small area of dense scrub to south. Adjacent to A21 road with neighbouring houses and gardens.	Yes	Yes	No obvious features observed. One cavity in garage edge but filled with cobwebs etc.		Low (potential for crevice dwelling but no significant roost potential)	Negligible	No	No	Letter drop 2017 access obtained	N/A	No change	No access, no change visible
6	6A	6b*	Two, two storey residential buildings	Brick	Absent	Solid	Absent	Tiles	Unknown	28/06/2017 (roadside assessment)	Arable/improved grassland to north and south with small area of dense scrub to south. Adjacent to A21 road with neighbouring houses and gardens.	Yes	No	No obvious features observed.		Low (preliminarly assessment)	Unknown	No Access obtained	No	Letter drop 2017 – No access	N/A	No access	No access, no change visible
6	6A	6c*	Two storey residential building	Brick	Absent	Solid	Absent	Tiles	Unknown	28/06/2017 (roadside assessment)	Arable/improved grassland to north and south with small area of dense scrub to south. Adjacent to A21 road with neighbouring houses	Yes	No	Roadside inspection with restricted view of the building. Only front of property inspected, garage present but not visible from the roadside. No obvious		Low (preliminarly assessment)	Unknown	No Access obtained	No	Access not granted	N/A	No access, no visible change	No access, no change visible

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											and gardens.			features observed.									
6	6A	6d*	Single storey farm building	Corrugated fibreboard / metal	Absent	Unknown	Unknown	Corrugated fibreboard / metal	Unknown	04/08/2017 assessment from a distance 14/06/2018 – assessment from adjacent land.	Improved grassland fields, residential properties.	Yes	No	N/A no access viewed from a distance only.		Low (preliminary assessment from adjacent land)	Negligible	No Access obtained	No	Access not granted	N/A	No access. Not visible in 2020 but still present.	No access
7	7A	7a	Single storey farm building	Corrugated fibreboard / metal	Absent	Unknown	Absent	Corrugated fibreboard / metal	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Double corrugated sheeted wall. Gaps along skirting board leading inside the building observed		Moderate (potential for suitable crevices to be present)	Negligible	Yes, in cluster 7A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Possible	No access	No change
7	7A	7b	Single storey farm building	Mixed block and corrugated fibreboard / metal	Present	Solid	Absent	Corrugated fibreboard / metal	Absent	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream	Yes	Yes	No roosting features observed.		Negligible	Negligible	Yes, in cluster 7A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No access	Building extended and enclosed. No change to potential.

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											nearby to the west.												
7	7A	7c(a)	Single storey utility building (farm/commercial buildings)	Block	Absent	Solid	Absent	Corrugated fibreboard / metal	Fibre/ wood boards	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west. N/A	Yes	Yes	Gaps observed along the skirting board potentially leading into the roof space		Moderate potential for suitable crevices to be present)	Negligible	Yes, in cluster 7A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	Possible	No access	No change
7	7A	7c(b), 7c(c)	Complex of single storey utility buildings (farm/commercial buildings)	Block	Present	Solid	Absent	Corrugated fibreboard / metal	Fibre/ wood boards	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Gaps observed along the skirting board potentially leading into the roof space	 	Moderate (potential for suitable crevices to be present)	Negligible	Yes, in cluster 7A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding buildings	No	No access	No change
7	7A	7d	Single storey farm building	Wood	Absent	Unknown	Absent	Corrugated fibreboard / metal	Absent	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential	Yes	Yes	Several gaps observed across the wall.		Low (potential for crevice dwelling but no significant roost potential)	Negligible	Yes, in cluster 7A	No – surveyed in 2017	In early phases. Surveyed as a cluster with surrounding	No	No access	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.									buildings			
7	7A	7e*	Disused complex of single storey farm building	Wood	Present	Unknown	Absent	Corrugated fibreboard / metal	Fibre/ wood boards	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	No	Barns partially fallen-down, various features present with a potential roof space		Moderate (potential for suitable crevices to be present)	Negligible	No	No	Access not approved	N/A	No access	Most structures now removed. Remaining wooden building no change.
7	7A	7e(a)	Farm building	Wood	Present	Cavity (with insulation)	Absent	Corrugated asbestos	Wood boards	27/07/2020		Yes	Yes	Roof completely collapsed	n/a	Negligible	Negligible	No	No	Access not approved	No	Assessed as negligible	Structure now removed. No potential.
7	7A	7e(b)	Farm building	Wood	Present	Cavity (with insulation)	Absent	Corrugated asbestos	Wood boards	27/07/2020		Yes	Yes	Pitched roof, open doorway, gap between roof ridge and wall.	n/a	Low	Negligible	No	No	Access not approved	No	Assessed as low	Structure now removed. No potential.
7	7A	7e(c)	Farm building	Wood	Present	Cavity	Absent	Corrugated asbestos	Wood boards	27/07/2020		Yes	Yes	Open/missing doors, internal gaps between wooden boards leading to cavities (most with water damage)	n/a	Low	Negligible	No	No	Access not approved	No	Assessed as low	Structure now removed. No potential.

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
7	7A	7e(d)	Farm storage building	Breeze block with pebble dash render	Absent	Cavity (with insulation)	Absent	Corrugated asbestos/metal	Unknown	27/07/2020		Yes	Yes	Missing window/doors, gaps between building and roof, ivy on outside.		Low	Potential	No	No	Access not approved	No	Assessed as low	No change
7	7A	7e(e)	Residential	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	N/A		Yes	No	Unknown		Unknown	Unknown	No	No	Access not approved	N/A	No access	No access
7	7A	7e(f)	Disused storage building	Brick and wood	Present	Solid	Present	Slate	Underfelt and boards	27/07/2020		Yes	Yes	Pitched roof with missing tiles (giving internal access)		Moderate	Potential					Assessed as moderate	No change
7	7A	7e(g)	Disused storage building	Brick and wood	Present	Solid	Absent	Corrugated metal	Underfelt and boards	27/07/2020		Yes	Yes	Gaps in weatherboarding, gaps around doors.		Moderate	Potential					Assessed as moderate	No change
7	7A	7e(h)	Workshop	Asbestos	Absent	Solid	Absent	Asbestos	Remnants of insulation on roof frame	27/07/2020		Yes	Yes	Gaps around doorframe, missing windows, gaps between wall and roof.		Low	Negligible	No	No	Access not approved	No	Assessed as low	No change
7	7A	7f	Two storey residential building and associated garage	Brick	Present	Solid	Present	Tiles	Fibre/wood boards	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Large house with associated garage present with pigeon nesting holes over the garage door but with a large opening at the rear of garage. A few lifted tiles present.	 	Low (potential for crevice dwelling but no significant roost potential)	Potential	No due to low potential	No	No surveys were required	N/A	No access	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
7	7A	7g*	Disused two storey residential building	Brick	Present	Solid	Absent	Tiles	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	No	Disused large residential building with gaps present in the corner potentially leading into a larger roof space, as well as multiple missing tiles.		Moderate	Potential	No	No	No access permitted	N/A	No change, still abandoned.	No change
7	7A	7h	Single storey residential buildings	Brick	Present	Unknown	Absent	Tiles	Fibre/ wood boards	28/06/2017 initial inspection, 5/06/2018 – detailed inspection.	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Roadside survey with restricted view of the property. Small gaps observed across the building.		Low	Negligible	No	No	No further surveys required	N/A	No change	No access, no change visible
7	7A	7i*	Two single storey residential buildings	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream	Yes	No	Roadside survey with restricted view of the property. A few lifted tiles observed.		Low (preliminarly assessment)	Unknown	No	No	Letter dropped no access granted	N/A	No change. Not fully visible but no change identified.	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											nearby to the west.												
7	7C	7j	Three storey residential building	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017, initial inspection, detailed inspection 04/08/2018.	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Cobtree house resident reported a bat roost within the property. The bat roost was reportedly located at the rear of the garage and dead bats were previously found nearby. Access to loft space and into garage through gaps at the eaves and through tiles.		High (known roost)	Potential - likelihood increasing due to presence of brown long-eared bats which hibernate in residential structures.	Yes	No – surveyed in 2017	In early phases	Yes – roost confirmed	No change.	No access, no change visible
7	7B	7k	Single storey farm building	Wood	Absent	Unknown	Absent	Corrugated fibreboard / metal	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	Barn partially fallen-down, various features present with a potential roof space		Moderate	Negligible	Yes	No – surveyed in 2017	In early stages	Possible	No access. Still present but obscured from distance.	Downgraded to Low. Barn repaired, new wooden wall panels, open windows with only a few small gaps for small numbers of crevice dwellers.

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
7	7C	7l*	Two storey residential building and adjacent structure	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	No – observed from road	Roadside survey with restricted view of the property. Surrounded by arable field, missing tiles and small gaps observed		Low (precautionary assessment)	Unknown	No	No	Letter dropped no access granted	N/A	No access	No access, no change visible
7	7D	7m*	Two storey residential building	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017	Arable/improved grassland to north and south with small area of dense scrub to south. Adjacent to A21 road with neighbouring houses and gardens.	Yes	No	Roadside survey with restricted view of the property. Small gaps within the tiles present but generally well-maintained property.		Low (precautionary assessment)	Unknown	No	No	Letter dropped no access granted	N/A	No change	No access, no change visible
7	7D	7n	Two storey residential building	Brick	Absent	Solid	Present	Tiles	Unknown	27/06/2017, detailed inspection 28/06/2018	Arable/improved grassland to north and south with small area of dense scrub to south. Adjacent to A21 road with neighbouring houses	Yes	Yes	Few missing tiles creating small gaps. Gaps at eaves along guttering covered with chicken wire		Moderate	Potential, low (loft converted)	No	Yes	Likely to be removed.	No	No change	No change to category (windows now broken)

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											and gardens.												
7	7A	7o	House and shed (asbestos Nissen hut)	Brick	N/A	Unknown	No	Tiles	Unknown	28/06/2017	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	No	Gap on corner of roof, gap between soffit box and gable end, multiple lifted tiles.		Moderate (adjacent Nissen hut low)	Unknown	No	No	No access	N/A	No change to house, Nissen hut reassessed as negligible potential	No access, no change visible
7		7p	Open sided barn	Corrugated metal / open	N/A	Solid	No	Corrugated asbestos / fibreboard	Absent	27/07/2020	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to A21 road. Tree-lined stream nearby to the west.	Yes	Yes	No potential features observed		Negligible	Negligible	No	No	None	No	Not accessed	No change
7		7q	Small outhouse	Unknown	N/A	Unknown	No (most tiles not visible)	Slate tiles	Unknown	27/7/2020	On/near to small industrial estate bordered by arable/improved grassland and residential gardens. Adjacent to	Yes	Yes	Possible small gap at corner under tiles, building mostly smothered by vegetation		Negligible	Negligible	No	No	None	No	Not accessed	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											A21 road. Tree-lined stream nearby to the west.												
8	8B	8a*	Two storey residential building	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017	Adjacent to A21 road junction, surrounded by improved grassland with a hedge-lined ditch to north.	Yes	No	Roadside survey with restricted view of the property. Few missing tiles creating small gaps		Low (precautionary assessment)	Unknown	No	No	No access	N/A	No change. Not fully visible but no change identified.	No access, no change visible
8	8B	8b	Two storey utility building (currently occupied by the airport cafe)	Brick	Absent	Solid	Present	Tiles	Unknown	28/06/2017	Roadside (A21) café and associated outbuildings, arable/improved grassland to north and south. Brownfield site of demolished industrial buildings to South screened by scrub and planted conifers.	No – sufficient access obtained from pulic areas.	Yes – public car park	Currently occupied by the airport café. Hanging tiles and small gaps along the skirting boards. The building is surrounded by bright car parking lights.		Low (potential for crevice dwelling but minimal significant roost potential)	Negligible	No	No	Not required.	N/A	No change. Not fully visible but no change identified.	No access, no change visible
8	8B	8c*	Single storey utility building (currently an active workshop)	Brick	Absent	Solid	Present	Corrugated fibreboard / metal	Unknown	28/06/2017	Roadside (A21) café and associated outbuildings, arable/improved grassland to north and south. Brownfield site of	No	No - not required	Roadside survey with very restricted view of the property from a distance.		Negligible	Negligible	No	No	No further survey required	N/A	No change. Not fully visible but no change identified.	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											demolished industrial buildings to South screened by scrub and planted conifers.												
8	8B	8d*	Single storey utility building (currently an active workshop)	Corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated	Unknown	28/06/2017	Roadside (A21) café and associated outbuildings, arable/improved grassland to north and south. Brownfield site of demolished industrial buildings to South screened by scrub and planted conifers.	No	No	Roadside survey with restricted view of the property from a distance. Metal shed of a type with negligible potential for bat roosting observed.	No photograph – active workshop	Negligible	Negligible	No	No	No further survey required	N/A	No change. Not fully visible but no change identified.	No access, no change visible
8	8A	8e(a)	Two-storeys residential building	Brick	Absent	Solid	Absent	Tiles	Unknown	28/06/2017 (roadside assessment) and 14/06/2018 (detailed assessment)	Adjacent to A21 road, arable/improved grassland to north and south with a hedge-lined ditch and dense scrub to the north.	Yes	Yes	Large residential building with pitched tiled roof		Low (potential for crevice dwelling but no significant roost potential) Eaves relatively new and roof in good state of repair.	Negligible	No	No	Low potential	N/A	No change	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
8	8A	8e(b)	Two-storeys residential building	Brick	Absent	Solid	Absent	Tiles	Unknown	28/06/2017 (roadside assessment) and 14/06/2018 (detailed assessment)	Adjacent to A21 road, arable/improved grassland to north and south with a hedge-lined ditch and dense scrub to the north.	Yes	Yes	Full external survey revealed minimal access, well maintained structure. May be some access below raised tiles.		Low, no obvious accesses.	Negligible	No	No	Low potential	Potential roost recorded during survey of building 8g. Single common pipistrelle.	No change	No access, no change visible
8	8A	8f	Disused complex of single storey farm building	Asbestos / fibreboard / wood	Absent	Unknown	Unknown	Corrugated fibreboard / metal	Unknown	28/06/2017, 04/08/2017 (internal inspection) and 14/06/2018 (repeat inspection)	Adjacent to A21 road, arable/improved grassland to north and south with a hedge-lined ditch and dense scrub to the north.	Yes	Yes	Several unmaintained farm buildings. No obvious features observed	 	Negligible	Negligible	No	No	None	N/A	Not accessed	No access
8	8A	8g	Two storey residential building	Wood	Absent	Hollow	Present (hanging wood)	Tiles	Unknown	28/06/2017 (roadside) 04/08/2017 (detailed external inspection)	Adjacent to A21 road, arable/improved grassland to north and south with a hedge-lined ditch and dense scrub to the north.	Yes	Yes	Roadside survey with very restricted view of the property from a distance. House occupied but no well-maintained. Gaps observed across the property.		Moderate	Potential - low.	Yes	No survey ed in 2017	Surveyed in 2017 No further survey required	No	Now abandoned but no change to bat potential.	No access, no change visible

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
9	9A	9a	Single storey farm building	Mixed brick and Wood	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	Fully open with no roosting opportunity observed.		Negligible	Negligible	No	No	None	N/A	Upgraded to low potential. Gaps under asbestos cladding 	No change
9	9A	9b	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	No roosting features observed		Negligible	Negligible	No	No	None	N/A	No change. Not fully visible but no change identified.	No change
9	9A	9c	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	No roosting features observed		Negligible	Negligible	No	No	None	N/A	No change. Not fully visible but no change identified.	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
9	9A	9d	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Absent	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	No roosting features observed		Negligible	Negligible	No	No	None	N/A	No change. Not fully visible but no change identified.	No change
9	9A	9e	Single storey farm building	Block	Absent	Solid	Absent	Corrugated Asbestos	Absent	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	No roosting features observed		Negligible	Negligible	No	No	None	N/A	No change. Not fully visible but no change identified.	No change
9	9A	9f	Two storey residential building	Brick / render	Absent	Solid	Absent	Slate	Unknown	27/06/2017	Active farm with mature trees, arable and grazed fields surrounding. A21 road to the west lined with residential properties and gardens.	Yes	Yes	Small gaps observed within wood fascia board. Associated small round outhouse. Poor state of repair		Moderate (potential for suitable crevices to be present, may be access to roof space.	Potential off-site (not within OPA)	No	No	No further surveys required outside RLB surrounded by retainbed GI	Unknown	Northwestern part of the structure has moderate potential. The main house is in good conditon and has low potential.	No change

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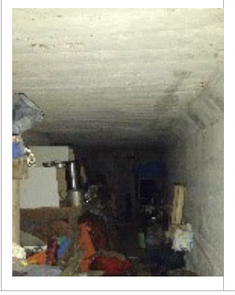
10	10A	10a	Three storey residential building	Brick	Absent	Solid	Present	Tiles	Unknown	27/06/2017	Residential garden surrounded by arable fields with broadleaved woodland to the east. Active commercial/farm buildings to west.	Yes	Yes	Small gaps observed on the roof		Low (potential for crevice dwelling but no significant roost potential)	Potential (likely low)	No	No	None	N	No change	No access, no change visible
10	10A	10b/c (two adjacent structures)	Single storey farm building	Corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated Asbestos / fibreboard	Absent	27/06/2017	Active commercial farm buildings surrounded by arable fields with broadleaved woodland to the far east.	Yes	Yes	Corrugated iron barn with no obvious roosting features observed		Negligible	Negligible	No	No	None	N	No change	No change
11	11A	11a	Two storey residential building	Brick	Absent	Unknown	Absent	Clay tiles	Unknown	20/02/2018 Full external assessment	Arable fields, farm buildings and yards.	Yes	Yes	Gaps in brickwork, under tiles etc.		High (known pipistrelle roost from desk study)	Potential (outside of OPA)	No	No	Not within RLB, within retained GI	N	No Access	No access

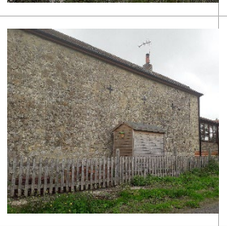
Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
11	11A	11b/c (two adjacent structures)	Two storey utility building (currently a farm building and commercial unit)	Brick	Absent	Unknown	Absent	Clay tiles	Unknown	20/02/2018 – full external assessment	Arable fields, farm buildings and yards.	Yes	Yes	Gaps under clay tiles, in brickwork and at eaves.	 	Moderate (potential for suitable crevices to be present)	Potential (outside of OPA)	No	No	Not within RLB, within retained GI	N	No Access	No access
11	11A	11d	Wooden Shed	Wood	Absent	Solid	Absent	Fibreboard	Absent	20/02/2018 – full external assessment	Arable fields, farm buildings and yards.	Yes	Yes	N/A	No photograph – As of 22/02/2018 removed from site.	Negligible	Negligible	No	No	Not within RLB within retained GI	N	No Access	No access
11	11A	11e/g	Single storey farm building	Stone / brick	Absent	Solid	Absent	Clay tiles	Unknown	20/02/2018 – full external assessment	Arable fields	Yes	Yes	Gaps under tiles, in stonework		Moderate (potential for suitable crevices to be present)	Potential (outside of OPA)	No	No	Not within RLB within retained GI	N/A	No Access	No access
11	11A	11f	Single storey farm building	Corrugated fibreboard / metal	Absent	Solid	Absent	Corrugated fibreboard / metal	Unknown	20/02/2018 – full external assessment	Arable fields, farm buildings, riding area.	Yes	Yes	No potential features observed		Negligible	Negligible	No	No	Not within RLB within retained GI	N/A	No Access	No access
11	11A	11h	Single storey farm building	Corrugated fibreboard / metal	N/A	N/A	Absent	Fibreboard / metal	Absent	20/02/2018 – full external assessment	Arable fields	Yes	Yes	No potential features observed		Negligible	Negligible	No	No	Not within RLB within retained GI	N/A	No Access	No access

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
																							
11	11A	11i	Single storey farm building	Mixed block and corrugated fibreboard / metal	Absent	Unknown	Absent	Corrugated fibreboard / metal	Absent	20/02/2018 – full external assessment	Arable fields, farm buildings, riding area.	Yes	Yes	No potential features observed		Negligible	Negligible	No	No	Not within RLB within retained GI	N/A	No Access	No access
11	11A	11j	Single storey portable building	Portable building	Absent	N/A	Absent	Flat roof	N/A	20/02/2018 – full external assessment	Arable fields, farm buildings, riding area. As of 22/02/2018 removed from site.	Yes	Yes	No potential features observed		Negligible	Negligible	No	No	Not within RLB within retained GI	N/A	No Access	No access
12	12A	12a	Two storey residential building	Stone	Absent	Unknown	Absent	Tiles	Unknown	04/08/2017 – full external assessment	Arable fields, pasture woodland plantation.	Yes	Yes	Known roost – pers. comm. 04/08/2018 with owner		High	Potential – off-site (outside of OPA) (outside of OPA)	Yes	No, surveyed in 2017, nut outside of RLB, see flow chart in Appendix E.	No further surveys required Not within RLB	Y	Not accessed but no changes visible from distance	No access, no visible change
12	12A	12b	Single storey farm building	Brick	Absent	Unknown	Absent	Clay tiles	Absent	04/08/2017 – full external assessment	Arable fields, pasture woodland plantation.	N/A	Yes	Crevices under tiles, gaps in brick work.		Moderate	Potential – off-site (likely low) (outside of OPA)	Yes	No, surveyed in 2017, nut outside of RLB, see flow	No further surveys require Not within RLB	None confirmed	Not accessed but no changes visible from distance	No access, no visible change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
																			chart in Appendix E.				
12	12A	12c	Single storey farm building	Wood	Absent	Unknown	Absent	Clay tiles	Absent	04/08/2017 – full external assessment	Arable fields, pasture woodland plantation.	Yes	Yes	Droppings and feeding remains present, likely brown long-eared bat roost.		High	Potential – off-site (likely low) (outside of OPA)	Yes	No, surveyed in 2017, nut outside of RLB, see low chart in Appendix E.	No further surveys require Not within RLB	Yes	Not accessed but no changes visible from distance	No access, no visible change
12	12A	12d	Single storey utility building (currently used as a garage)	Brick	Absent	Unknown	Absent	Clay tiles	Unknow	04/08/2017 – full external assessment	Arable fields and pasture	Yes	Yes	Gaps in tiles and soffits.		Moderate	Potential – off-site (likely low) (outside of OPA)	Yes	No, surveyed in 2017, nut outside of RLB, see low chart in Appendix E.	No further surveys require Not within RLB	None confirmed	Not accessed but no changes visible from distance	No access, no visible change
13	13A	13a, 13b, 13c, 13d, 13e, 13f, 13g, 13h, 13s	Bunkers	Concrete pour	N/A	Solid	Absent	Earth	Absent	12/07/2017	Rough grassland immediately surrounding. Improved grassland to west, recent broadleaved plantation to south.	Yes	Yes	Abandoned bunkers with no obvious roosting features	Internal 	Low (potential for crevice dwelling but no significant roost potential)	Negligible	No	No	None	N/A	No access	No access

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											Industrial estate to east.				External 								
13	13A	13i	Barracks	Brick	Absent	Solid	Absent	Corrugated	Absent	12/07/2017	Rough grassland immediately surrounding. Improved grassland to west, recent broadleaved plantation to south. Industrial estate to east.	Yes	Yes	Former barracks with roof partially collapsed. No obvious roosting features		Negligible	Negligible	No	No	None	N/A	No access	No access
13	13A	13j, 13k, 13l, 13m, 13n, 13o, 13p, 13q	Disused complex of single storey military buildings (former barracks)	Brick	Absent	Solid	Absent	Corrugated	Absent	12/07/2017	Rough grassland immediately surrounding. Improved grassland to west, recent broadleaved plantation to south. Industrial estate to east.	Yes	Yes	Ex barracks with roof partially collapsed. Only 13m and 13p still have roofs. No obvious roosting features		Negligible	Negligible	No	No	None	N/A	No access	No access
13	13A	13r	Military building (Pill box)	Concrete pour	Absent	Solid	Absent	Concrete	Absent	12/07/2017	Rough grassland immediately surrounding. Improved grassland	Yes	Yes	Old military pill box,	No photograph	Negligible	Negligible	No	No	No potential	N/A	No access	No access

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
											to west, recent broadleaved plantation to south. Industrial estate to east.												
13	13B	13t	Military building (Pill box)	Concrete pour	Absent	Solid	Absent	Concrete	Absent	12/07/2017	Rough grassland immediately surrounding. Improved grassland to west, recent broadleaved plantation to south. Industrial estate to east.	Yes	Yes	Old military pill box, small and low. No roosting features observed		Low (potential for crevice dwelling but no significant roost potential)	Negligible	No	No	None	N/A	No change	No change
14	14A	14a	Military Bunker	Brick (buried)	Absent	Solid	Absent	Soil	Concrete	20/02/2018	Grassland, residential areas.	Yes	Yes	Military bunker. Solid walls internally, no cracks and crevices present.	 	Negligible	Negligible	No	No	None	N/A	No change	No change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
15	15A	15a	Residential House, adjacent shed/outbuilding	Brick	No – upper walls are rendered	Cavity - insulated	No	Concrete tiles	Felt	09/08/2018	Residential gardens	Yes	Yes	Some potential oil staining around eaves where access between felt and concrete tiles was possible.	 	Moderate	Potential – off-site (outside of OPA)	No	No	Outside of redline and within retained GI	N/A	No change	No access, no visible change
15	15A	15b	Garage	Brick	Absent	No	No	Concrete tiles	Unknown	09/08/2018	Residential gardens	Yes	Yes	No notable access points recorded.		Low	Negligible	No	No	Outside of redline and within retained GI	N/A	No change	No access, no visible change
16	16A	16a	Station building	Stone	Absent	Unknown	No	Slate	Unknown	06/10/2016	Railway Carpark	No (to be retained)	N/A	Some small areas of crevice		Moderate	Potential – to be retained	No	No	To be retained	Y – roost recorded within desk study.	No change	No access, no visible change
16	16A	16b	Residential property	Stone	Absent	Unknown	No	Tiles	Unknown	06/10/2016	Racecourse, amenity grassland, farmland.	No	Viewable from on site.	Appears to be recently renovated with roof dwelling spaces.		Low	Potential – off-site (outside of OPA)	No	No	Low risk and to be retained.	N/A	No change	No access, no visible change
16	16A	16c	Shed on residential property	Brick	Wood (at top)	Unknown	unknown	Tiles	Wood	15.05.2020	Racecourse, amenity grassland, farmland.	No	Viewable from road	No visible access points		Low	Low	No	No	Low risk and to be	N/A	New in 2020	No access, no visible change

Area Number	Cluster	Building Identification	Building type*	Wall material	Cladding	Wall construction	Hanging tiles	Roof material	Roof lining	Date of assessment	Surrounding habitat	Access for external survey requested	External access permitted	Features and signs	Photograph	Summer roost Potential	Hibernation potential assessment	Surveyed in 2017?	Surveyed in 2018?	Rationale (2018)	Roost(Y/N/P)	2020	2021
																				retained			
17	17A	17a	Outbuilding	Block / wood	No	No cavity	No	Corrugated fibreboard (asbestos)	Wood	14/08/2017	Hardstanding / bare ground beyond which is trees and grassland.	Yes	Yes	Small crevices for bats present but offers limited shelter.		Low	Negligible	No	No	Low risk of bat roosting.	N/A	No access	No access

APPENDIX C: Bat Survey Results

Table 21: Results of backtracking and emergence / re-entry surveys conducted by Arcadis in 2017 and 2018

N.B. Potential roosting activity highlighted in RED

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
2017 Surveys											
CLUSTER 1											
03/07/17	Dusk	1	1A (backtracking)	1a, 1a(a), 1b, 1c, 1d	Unknown species	Confirmed Re-entry (Building 1c)	21:30	28 minutes after sunset (21:12)	Aline Brodzinski	Two bats, not echolocating, seen entering building 1c (north face) at 21:30. Emergence of a common pipistrelle from building 1b, the vent on the north face at 21:32. Trees north of building 1j (stables) are being used by commuting bats.	Common pipistrelle roost confirmed in 1c recorded from additional surveys Common pipistrelle roost confirmed from Building 1b
					Common Pipistrelle	Confirmed Emergence (Building 1b)	21:32	20 minutes after sunset (21:12)			
					Soprano Pipistrelle	Heard Not Seen Commuting	22:33	1 hours & 21 minutes after sunset (21:12)			
					Noctule	Heard Not Seen Commuting	21:33	21 minutes after sunset (21:12)			
					Big Bat*	Heard Not Seen Foraging	22:04	52 minutes after sunset (21:12)			
					Myotis Species**	Heard Not Seen Commuting	21:54	42 minutes after sunset (21:12)			
05/07/17	Dawn	1	1A (backtracking)	1a, 1a(a), 1b, 1c, 1d	Unknown species	Heard Not Seen. Possible social call.	04:06	42 minutes before sunrise (04:48)	Aline Brodzinski	No roosting activity recorded. Relatively low levels of commuting and foraging activity recorded.	No
					Big Bat*	Heard Not Seen – Commuting / Foraging	03:39	1 hour and 9 minutes before sunrise (04:48)			
					Big Bat* / Long-eared Bat Species	Heard Not Seen Foraging	03:18	1 hour and 30 minutes before sunrise (04:48)			
					Myotis species**	Heard Not Seen Commuting / Foraging	02:57	51 minutes before sunrise (04:48)			
					Common Pipistrelle	Commuting	04:12	36 minutes before sunrise (04:48)			
					Noctule	Heard Not Seen Foraging	03:18	1 hour and 30 minutes before sunrise (04:48)			
					Big Bat (Nyctalus Species)*	Commuting	03:53	55 minutes before sunrise (04:48)			
15/08/17	Dawn	1	1A (backtracking)	1a, 1a(a), 1b, 1c, 1d	Common Pipistrelle	Heard Not Seen Commuting / Foraging	05:21	21 minutes before sunrise (05:42)	Aline Brodzinski	No roosting activity recorded.	No

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
					Noctule	Commuting	03:53	21 minutes before sunrise (05:42)		Common pipistrelle and noctule foraging and commuting activity recorded.	
					Serotine	Commuting	04:20	1 hour and 2 minutes before sunrise (05:42)			
04/07/17	Dawn	1	1B (backtracking)	1d, 1e, 1f(a), 1f(b), 1g, 1h	Common Pipistrelle	Probable Emergence (Building 1h)	04:15	32 minutes before sunrise (04:47)	Aline Brodzinski	Probable Common pipistrelle emergence from the south east face of Building 1h at 04:15. Possible Soprano pipistrelle re-entry into the east face of Building 1f(a) at 04:05. Bat flew directly towards the fascia board, just above the security lights of the building, but no obvious roosting features observed within that area. Tree cover round building 1f, c, h provides good for foraging. Foraging and commuting bats observed.	Yes within building 1h, confirmed within subsequent surveys. Roost not likely from subsequent surveys on Building 1f(a)
					Soprano Pipistrelle	Possible Re-entry (Building 1f(a)), subsequent surveys suggest that this was an erroneous result.	04:05	42 minutes before sunrise (04:47)			
					Noctule	Commuting	04:40	7 minutes before sunrise (04:47)			
14/08/17	Dusk	1	1A, 1B (backtracking)	1a, 1b, 1c, 1d, 1f(a), 1f(b), 1g, 1h, 1i, 1j	Common Pipistrelle	Possible Re-entry (Building 1c)	21:09	51 minutes after sunset (20:18)	Aline Brodzinski	Probable Common pipistrelle re-entry into the first level balcony of building 1c at 21:09 Possible emergences of common pipistrelle species at 20:40 and 20:48 from building 1b. Two bats likely to have emerged from the vent. Emergence of Pipistrelle species from north corner of building 1h at 20:41	Common pipistrelle roost confirmed in 1c from additional surveys Common pipistrelle confirmed from additional surveys Building 1b Unknown pipistrelle species confirmed roost in 1h (previously recorded as soprano pipistrelle).
					Soprano Pipistrelle	Foraging	20:48	30 minutes after sunset (20:18)			
					Pipistrelle Species***	Probable Emergence (Building 1b)	20:40	22 minutes after sunset (20:18)			
					Pipistrelle Species***	Confirmed Emergence (Building 1h)	20:41	51 minutes after sunset (20:18)			
					Pipistrelle Species***	Possible Emergence (Building 1b)	20:48	23 minutes after sunset (20:18)			
					Noctule	Heard Not Seen Commuting	20:50	32 minutes after sunset (20:18)			
18/08/2018	Dawn	1	1A, 1B (backtracking, focussed from previous results)	1c, 1d, 1f(a), 1f(b), 1g, 1e, 1h, 1i, 1j	Common pipistrelle	Constant foraging behind surveyor north of building 1h and around building 1i and 1f(b) Commuting observed from south to north	Constant foraging between 03:41 and 05:30	Last pipistrelle call 05:30 (17 minutes before sunrise)	Hannah Tracey / Ellen Poppleton	Lots of common pipistrelle passes recorded. One probable roost observed within the south west face of building 1c	Yes, one probable common pipistrelle summer roost observed within building 1c (one bat observed)
					Common pipistrelle	Probable roost observed within structure 1c	05:17	40 minutes before sunrise			
					Myotis species **	Commuting	04:50	57 minutes before sunrise			
19/07/17	Dawn	1	1C	1l	Common Pipistrelle	Foraging	04:09	54 minutes before sunrise (05:03)	Ellen Poppleton	No roosting activity recorded. Relatively low levels of activity recorded.	No
					Soprano Pipistrelle	Foraging	04:14	49 minutes before sunrise (05:03)			
					Unknown species	Heard Not Seen Foraging	04:07	56 minutes before sunrise (05:03)			

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
03/08/17	Dusk	1	1C	1l	Common Pipistrelle	Commuting	21:35	57 minutes after sunset (20:38)	Brandon Murray	Possible pipistrelle bat (from GISS) not echolocating) emerged at 21:22 from the south facing edge of building 1l. Noctule and common pipistrelles commuting passes recorded.	Yes
					Pipistrelle Species***	Confirmed Emergence (Building 1l)	21:22	44 minutes after sunset (20:38)			
					Noctule	Commuting	20:56	18 minutes after sunset (20:38)			
30/08/17	Dawn	1	1C	1l	Common Pipistrelle	Commuting	05:22	44 minutes before sunrise (06:06)	Liat Wicks	No roosting activity recorded. Only common pipistrelles recorded, majority heard not seen / commuting.	No
CLUSTER 2											
04/07/17	Dusk	2	2A	2f, 2g, 2h	Unknown species	Possible Emergence (Building 2h)	21.26	14 minutes after sunset (21:12)	Aline Brodzinski	Probable emergence of Unknown species, likely soprano pipistrelle (not echolocating, but soprano pipistrelle roost observed on subsequent surveys) at 21:26. Bat flew from area of south west face of the building out of the top floor window of building 2h. Key foraging features observed adjacent to the north of building 2h.	Yes – probable soprano pipistrelle roost on the south of building 2h
					Common Pipistrelle	Foraging	21:29	17 minutes after sunset (21:12)			
					Soprano Pipistrelle	Foraging Commuting	21:41	29 minutes after sunset (21:12)			
					Noctule	Foraging Commuting	21:30	18 minutes after sunset (21:12)			
20/07/17	Dawn	2	2A	2f, 2g, 2h	Common Pipistrelle	Commuting	04:41	23 minutes before sunrise (05:04)	Brandon Murray	Soprano pipistrelle re-entered building 2h at 04:45. Noctule, common and soprano pipistrelle foraging activity recorded.	Yes – confirmed soprano pipistrelle roost on the south of building 2h
					Soprano Pipistrelle	Confirmed Re-entry (Building 2h)	04:45	19 minutes before sunrise (05:04)			
					Pipistrelle Species	Foraging	03:47	19 minutes before sunrise (05:04)			
					Noctule	Commuting and Foraging	04:42	1 hour and 17 minutes before sunrise (05:04)			
16/08/17	Dusk	2	2A	2f, 2g, 2h	Common Pipistrelle	Foraging	20:18	2 minutes after sunset (20:16)	Aline Brodzinski	No roosting activity recorded. Continuous foraging and commuting recorded.	No
					Soprano Pipistrelle	Commuting	20:27	11 minutes after sunset (20:16)			
					Noctule	Commuting	20:23	7 minutes after sunset (20:16)			
					Serotine	Foraging	21:55	1 hour and 39 minutes after sunset (20:16)			
					Possible *Myotis* species**	Foraging	20:49	33 minutes after sunset (20:16)			
					Potential *Myotis* Species** / Long-eared Bat Species	Commuting	22:00	1 hour and 44 minutes after sunset (20:16)			
05/07/17	Dusk	2	2B	2c(a), 2c(b), 2c(c), 2c(e)	Common Pipistrelle	Commuting	21:44	33 minutes after sunset (21:12)	Aline Brodzinski	No roosting activity recorded.	No

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
				2c(d) 2d(a), 2d(b), 2d(c), 2e	Noctule	Commuting	21:31	19 minutes after sunset (21:12)		Low levels of commuting and foraging activity recorded.	
					Big Bat*	Heard Not Seen Commuting / Foraging	20:59	13 minutes before sunset			
					Myotis species**	Heard Not Seen Commuting / Foraging	22.34	1 hour & 22 minutes after sunset (21:12)			
19/07/17	Dusk	2	2B	2c(a), 2c(b), 2c(c), 2c(d) 2d, 2e	Common Pipistrelle	Commuting	21:32	33 minutes after sunset (20:59)	Brandon Murray	No roosting activity recorded. No bats were observed within the vicinity of the building. Low levels of commuting and foraging activity recorded.	No
					Soprano Pipistrelle	Foraging	21:48	49 minutes after sunset (20:59)			
					Pipistrelle Species***	Commuting	21:34	35 minutes after sunset (20:59)			
					Noctule	Commuting	21:06	7 minutes after sunset (20:59)			
					Possible Natterer's Bat / *Myotis* Species**	Foraging	22:10	1 hour and 11 minutes after sunset (20:59)			
CLUSTER 3											
17/07/17	Dusk	3	3A	3b, 3c	Common Pipistrelle	Heard Not Seen Commuting / Foraging	21:34	32 minutes after sunset (21:02)	Brandon Murray	No roosting activity recorded. Low levels of commuting and foraging activity recorded.	No
					Soprano Pipistrelle	Foraging	21:39	37 minutes after sunset (21:02)			
					Pipistrelle Species	Foraging	22:13	1 hour and 11 minutes after sunset (21:02)			
					Noctule	Commuting	22:20	1 hour and 18 minutes after sunset (21:02)			
04/08/17	Dawn	3	3A	3b, 3c	Common Pipistrelle	Commuting / Foraging	04:42	22 minutes before sunrise (05:04)	Brandon Murray	No roosting activity recorded. Low levels of common pipistrelles recorded only.	No
17/08/17	Dawn	3	3A and 3B	3a, 3b, 3c	Common Pipistrelle	Confirmed Re-entry (Building 3c)	05:24	18 minutes before sunrise (05:42)	Ellen Poppleton	Common pipistrelle re-entered the south west face of building 3c at 05:24. The bat circled courtyard then flew against brickwork multiple times before entering a small gap within the brickwork. Foraging and commuting recorded.	Yes, single common pipistrelle roost within building 3c
					Soprano Pipistrelle	Foraging	04:44	58 minutes before sunrise (05:42)			
					Pipistrelle Species***	Commuting / Foraging	05:12	30 minutes before sunrise (05:42)			
					Noctule	Commuting	05:20	22 minutes before sunrise (05:42)			
					Serotine	Foraging	04:20	1 hour and 22 minutes before sunrise (05:42)			
18/07/17	Dawn	3	**3B**	3a	Common Pipistrelle	Commuting	04:20	42 minutes before sunrise (05:02)	Brandon Murray	No roosting activity recorded.	No

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
					Soprano Pipistrelle	Commuting	04:10	52 minutes before sunrise (05:02)		Survey predominantly recorded Common pipistrelle passes with one noctule bat pass. Possible *Myotis* species recorded.	
					Noctule	Heard Not Seen Commuting	04:38	24 minutes before sunrise (05:02)			
					Unknown species	Commuting	04:10	52 minutes before sunrise (05:02)			
					Possible *Myotis* Species**	Heard Not Seen Foraging	03:31	1 hour and 31 minutes before sunrise (05:02)			
15/08/17	Dusk	3	3A	3b, 3c	Common Pipistrelle	Confirmed Emergence (Building 3c)	20:58	40 minutes after sunset (20:18)	Aline Brodzinski	Common pipistrelle emerged from the south west face of building 3c at 20:58. Noctule, common and soprano pipistrelle and possible *Myotis* species foraging and commuting activity recorded.	Yes common pipistrelle roost recorded within building 3c
					Soprano Pipistrelle	Foraging	20:55	37 minutes after sunset (20:18)			
					Pipistrelle Species***	Foraging	21:11	53 minutes after sunset (20:18)			
					Noctule	Commuting	20:35	17 minutes after sunset (20:18)			
					Possible *Myotis* Species**	Commuting	21:32	40 minutes after sunset (20:18)			
CLUSTER 7											
18/07/17	Dusk	7	7A	7a, 7b, 7c(a), 7c(b), 7c(c), 7d	Unknown species	Foraging	21:21	20 minutes after sunset (21:01)	Brandon Murray	Possible emergence of a Common pipistrelle at 21:30 from north face of building 7c(c). Not confirmed on subsequent surveys, considered unlikely once building inspected. Foraging and commuting activity recorded.	No confirmed roost but the structure will be treated as a roost in the EIA.
					Common Pipistrelle	Possible Emergence (Building 7c(c))	21:30	29 minutes after sunset (21:01)			
					Soprano Pipistrelle	Heard Not Seen – Activity Unknown	21:43	42 minutes after sunset (21:01)			
					Noctule	Commuting Foraging	21:19	18 minutes after sunset (21:01)			
					Big Bat (Likely Nyctalus Species)*	Heard Not Seen Commuting / Foraging	21:29	28 minutes after sunset (21:01)			
					Big Bat*	Foraging	21:39	38 minutes after sunset (21:01)			
16/08/17	Dawn	7	7A	7a, 7b, 7c(a), 7c(b), 7c(c), 7d	Common Pipistrelle	Possible roost: Roosting Behaviour Observed but no entry observed (Building 7a)	05:35	7 minutes before sunrise (05:42)	Aline Brodzinski	Possible roost: Common pipistrelle displayed roosting behaviour around the south face of building 7a at 05:35. Although no re-entry was recorded, the bat flew very close to the building for several minutes and briefly perched on the south side of building before flying to the south east. Overall very low level of bat activity recorded.	No confirmed roost (possible common pipistrelle roost) but the structure will be treated as a roost in the EIA.
					Soprano Pipistrelle	Commuting	05:07	35 minutes before sunrise (05:42)			
19/07/17	Dawn	7	7B	7k	Common Pipistrelle	Commuting	04:28	35 minutes before sunrise (05:03)	Brandon Murray	No roosting activity recorded. Foraging and commuting activity recorded. Relatively low levels of activity recorded.	No
					Myotis Species**	Heard Not Seen Foraging	03:33	1 hour and 30 minutes before sunrise (05:03)			

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
					Long-eared Bat Species	Foraging	03:53	1 hour and 10 minutes before sunrise (05:03)			
					Unknown species	Commuting Close to Building	04:05	58 minutes before sunrise (05:03)			
15/08/17	Dusk	7	7B	7k	Soprano Pipistrelle	Heard Not Seen Commuting / Foraging	21:08	52 minutes after sunset (20:21)	Ellen Poppleton	Fairly constant common pipistrelle foraging throughout survey. Noctules seen passing early in the night north to south.	No
					Noctule	Commuting	20:50	34 minutes after sunset (20:21)			
					Serotine	Heard Not Seen Commuting / Foraging	21:07	9 minutes after sunset (20:21)			
15/08/17	Dawn	7	7C	7j	Common Pipistrelle	Commuting	04:03	1 hour and 39 minutes before sunrise (05:42)	Ellen Poppleton	Probable Long-eared bats species re-entry. Two bats were observed circling over the Building at 04:31. The survey was terminated at 05:05, due to heavy rain.	Yes, brown long eared bats recorded.
					Long-eared Bat Species	Probable Re-entry (Building 7j)	04:31	1 hour and 2 minutes before sunrise (05:42)			
29/08/17	Dusk	7	7C	7j	Common Pipistrelle	Confirmed Emergence (Building 7j)	19:56	6 minutes after sunset (19:50)	Liat Wicks	Confirmed Common pipistrelle emergence from building 7j at 19:56. The bat emerged from ridge between building and roofing. Possible emergence of Common pipistrelle from building 7j at 20:05. The bat potentially emerged from the upper tier of roofing on the west side of the building 7j.	Yes 2 common pipistrelle bats recorded
					Common Pipistrelle	Possible Emergence (Building 7j)	20:05	15 minutes after sunset (19:50)			
					Noctule	Heard Not Seen Commuting	20:11	21 minutes after sunset (19:50)			
					Long-eared Bat Species	Heard Not Seen Commuting	21:03	1 hour and 13 minutes after sunset (19:50)			
01/09/17	Dawn	7	7C	7j	Long-eared Bat Species	Confirmed Re-entry (Building 7e)	05:11 05:32	58 and 37 minutes before sunrise (06:09)	Liat Wicks	Confirmed Long-eared bats species recorded re-entering Building 7j. Constant Long-eared bat activity recorded. 5 to 10 Long-eared bats recorded circling for 20 minutes from before entering at the south facing rear of building.	Yes, large brown long-eared bat roost recorded, will be treated as a maternity roost in the EIA.
CLUSTER 8											
16/08/17	Dawn	8	8A	8g	Common Pipistrelle	Commuting	05:22	20 minutes before sunrise (05:42)	Ellen Poppleton	No roosting activity recorded. Very low level of bat activity recorded.	No
31/08/17	Dusk	8	8A	8g	Common Pipistrelle	Possible (unlikely) Emergence (Building 8e(b))	20:07	22 minutes after sunset (19:45)	Liat Wicks	Possible Common pipistrelle emergence from the north east face of Building 8e(b) at 19:45. Bat seen passing from this direction but no likely roost points observed. Commuting activity recorded.	Not within 8g but potential within 8e(b). Building inspection revealed minimal potential roost areas. This is considered unlikely to be a roost.
					Noctule	Heard Not Seen Commuting	20:17	32 minutes after sunset (19:45)			
					Long-eared Bat Species	Heard Not Seen Commuting	21:08	1 hour and 23 minutes after sunset (19:45)			
CLUSTER 12											

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
17/08/17	Dusk	12	12A	12a, 12b, 12c, 12d	Common Pipistrelle	Probable and possible Emergences (Buildings 12a and 12c)	20:23 20:29 20:31 20:32	11, 17 and 20 minutes after sunset (20:12)	Aline Brodzinski	Possible Common pipistrelle emergences at 20:23 and 20:32 from over the roof of Building 12c and at 20:29 and 20:31 from Building 12a. Probable Pipistrelle species emergence at 20:31 from Building 12a Probable soprano pipistrelle emergence from a tree located to the south west corner of Building 12a at 20:50 High level of foraging and commuting recorded.	Yes, common and soprano pipistrelle emergences observed. Previously confirmed as a roost (pers. comm with building owners)
					Soprano Pipistrelle	Probable Tree Emergence	20:50	38 minutes after sunset (20:12)			
					Noctule	Commuting	21:00	48 minutes after sunset (20:12)			
					Serotine	Heard Not Seen Commuting / Foraging	21:11	59 minutes after sunset (20:12)			
					Long-eared Bat Species	Commuting	20:50	38 minutes after sunset (20:12)			
					Possible *Myotis* Species**	Heard Not Seen Commuting	21:23	1 hour and 11 minutes after sunset (20:12)			
2018 Surveys											
CLUSTER 7 Killymoon											
02/07/2018	**Dusk**	**7**	**7D**	7n	Common pipistrelle	Foraging	22:14, 22:30	61, 77 minutes after sunset	Ewan Gibson	Only pipistrelle passes recorded. One common pipistrelle foraging in south-west corner of the garden. Some soprano pipistrelle foraging recorded.	No
					Soprano pipistrelle	Foraging	22:37	84 minutes after sunset			
23/08/2018	**Dawn**	**7**	**7D**	7n	Common pipistrelle	Foraging. Came from south west corner of garden. Foraging to the north of the building and above the pool. Lots of common pipistrelle foraging in the south west corner of the building.	20:21, 20:31 (until 20:54) 20:40 20:55, 21:03, 21:07.	First recording 18 minutes after sunset. Likely to be roosts nearby.	Brandon Murray	No emergences. Lots of foraging of pipistrelle species especially for the first hour. No roosts observed during the survey, likely to be roosts nearby in the south west. High commuting passes over the survey area of big bats. Unlikely to be roosting nearby.	No
					Soprano pipistrelle	Foraging at south east corner of the garden and	20:21, 20:29, 20:55	First recording 18 minutes after sunset. Likely to be roosts nearby.			
					Noctule	High passes from north to south across the site.	20:23, 21:05	20 minutes after sunset. High flying from north.			
					Serotine	Single pass, commuting	21:34	Over an hour after sunset. HNS.			
CLUSTER 5 Little Greys											
03/07/2018	**Dusk**	**5**	**5A**	**(5a)**	Pipistrelle species	Pass	21:48	35 minutes after sunset	Ewan Gibson	Very few passes all pipistrelle species. No confirmed emergences.	No Transect surveys recorded a potential roost in this structure but may be in the house within Little Greys which could not be surveyed.
					Soprano pipistrelle	Foraging	22:10, 22:38	57, 85 minutes after sunset			
					Common pipistrelle	Foraging	22:17	64 minutes after sunset			

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
22/08/2018	**Dawn**	**5**	**5A**	**(5a)**	Common pipistrelle	Commuting	05:13, 05:25, 05:47	Last pass 7 minutes before sunrise	Brandon Murray	No confirmed roosts. Passes close to sunrise suggest that a roost is nearby. Only common pipistrelles were recorded in this survey.	No Transect surveys recorded a potential roost in this structure but may be in the house within Little Greys which could not be surveyed.
					Common pipistrelle	Foraging in rear gardens.	05:28	26 minutes before sunrise.			
2020 Surveys											
CLUSTER 7											
27/07/2020	Dusk	7	7A	7g	Unknown species****	Heard Not Seen / Brief Pass	21:22	33 minutes after dusk	Marielle James	No roosting activity recorded. Low levels of activity by unknown species recorded.	No
28/07/2020	Dusk	7	7A	7e(d)	Unknown species****	Heard Not Seen / Brief Pass	21:04	17 minutes after dusk	Marielle James	Probable roost: Soprano pipistrelle appeared to emerge from gable end of the building at 21:27. Fairly constant common and soprano pipistrelle foraging and commuting throughout survey. Possible brief passes by long-eared bat species and *Myotis* species.	Probable soprano pipistrelle roost.
					Common Pipistrelle	Heard Not Seen Commuting / Foraging	21:20	33 minutes after dusk			
					Long-eared*	Heard Not Seen / Brief Pass	21:20	33 minutes after dusk			
					Soprano pipistrelle	Probable emergence	21:27	40 minutes after dusk			
					Myotis species**	Heard Not Seen / Brief Pass	21:33	46 minutes after dusk			
28/07/2020	Dawn	7	7A	7e(f), 7e(g)	Soprano pipistrelle	Heard Not Seen / Brief Pass	03:26	109 minutes before sunrise	Marielle James	No roosting activity recorded. Low levels of activity by soprano and common pipistrelle recorded.	No
					Common pipistrelle	Heard Not Seen / Brief Pass	04:28	47 minutes before sunrise			
29/07/2020	Dawn	7	7A	7e(c)	Long-eared*	Heard Not Seen / Foraging	04:13	66 minutes before sunrise	Marielle James	No roosting activity recorded. Occasional foraging activity by long-eared bat species.	No
29/07/2020	Dusk	7	7A	7o	Common pipistrelle	Commuting / Foraging	21:19	33 minutes after dusk	Aline Gomes	No roosting activity recorded. Constant foraging activity recorded.	No
					Soprano pipistrelle	Commuting	21:29	43 minutes after dusk			
30/07/2020	Dawn	7	7A	7e(b)	*Myotis* species**	Commuting	03:45	93 minutes before sunrise	Aline Gomes	No roosting activity recorded. Low levels of activity by *Myotis* species and common pipistrelle recorded.	No
					Common pipistrelle****	Commuting	04:12	66 minutes before sunrise			
18/08/2020	Dawn	7	7A	7e(d)	Pipistrelle species	Pass	05:02	45 minutes before sunrise	Aline Brodzinski	No roosting activity recorded.	No

Date	Dusk / Dawn	Area	Cluster	Building(s)	Species observed / heard	Activity	Contact time closest to sunset / sunrise	Proximity to sunset or sunrise (minutes)	Survey Leader	Survey Summary	Roost Confirmed (Y / N) and description, if appropriate
					Soprano pipistrelle	Heard not seen	04:56	51 minutes before sunrise		Very low activity levels.	
18/08/2020	Dusk	7	7A	7e(g)	Unknown species****	Heard not seen	21:19	69 minutes after sunset	Aline Brodzinski	No roosting activity recorded. Commuting and foraging by at least three species of bat.	No
					Unknown species****	Foraging	20:48	38 minutes after sunset			
					Common pipistrelle	Heard not seen, commuting.	20:42	32 minutes after sunset			
					Soprano pipistrelle	Heard not seen, foraging.	21:11	61 minutes after sunset			
					Myotis species	Heard not seen	21:19	69 minutes after sunset			
19/08/2020	Dawn	7	7A	7g	Common pipistrelle	Heard not seen, commuting and foraging	05:18	31 minutes before sunrise	Aline Brodzinski	No roosting activity recorded. Low level of foraging and commuting activity by common pipistrelles.	No
19/08/2020	Dusk	7	7A	7e(h)	Common pipistrelle	Heard not seen, commuting.	20:51	43 minutes after dusk	Aline Brodzinski	No roosting activity recorded. Survey start delayed slightly by rain. Low level of activity by 3 species of bat.	No
					Soprano pipistrelle	Heard not seen, commuting.	20:53	45 minutes after dusk			
					Noctule	Heard not seen	20:36	28 minutes after dusk			
20/08/2020	Dawn	7	7A	7j	Soprano pipistrelle	Heard not seen	04:34	76 minutes before dawn	Aline Brodzinski	No roosting activity recorded. Low level of foraging activity by common and soprano pipistrelles. No emergence/entry recorded.	No
					Common pipistrelle	Heard not seen, foraging.	05:00	50 minutes before dawn			

* Big bats were only identified to group where the species was not easy to determine. No ‘big bat’ roosts were identified, therefore no further analysis was deemed necessary.

** Myotis were only identified to species group. No myotis roosts were identified, therefore no further analysis was deemed necessary.

*** In some instances it was not possible to determine if a call was common or soprano pipistrelle (these species have overlapping call parameters). Where a roost was identified, this was analysed in detail, however if it was not possible to definitively identify the species these were identified as ‘pipistrelle species’.

**** In some instances in the 2020 surveys it was not possible to determine the species of bat recorded; however, since none of these records relate to potential or confirmed roosting activity, no further analysis was deemed necessary

APPENDIX D: Emergence / re-entry survey meta data

Table 22: Survey meta data and weather data

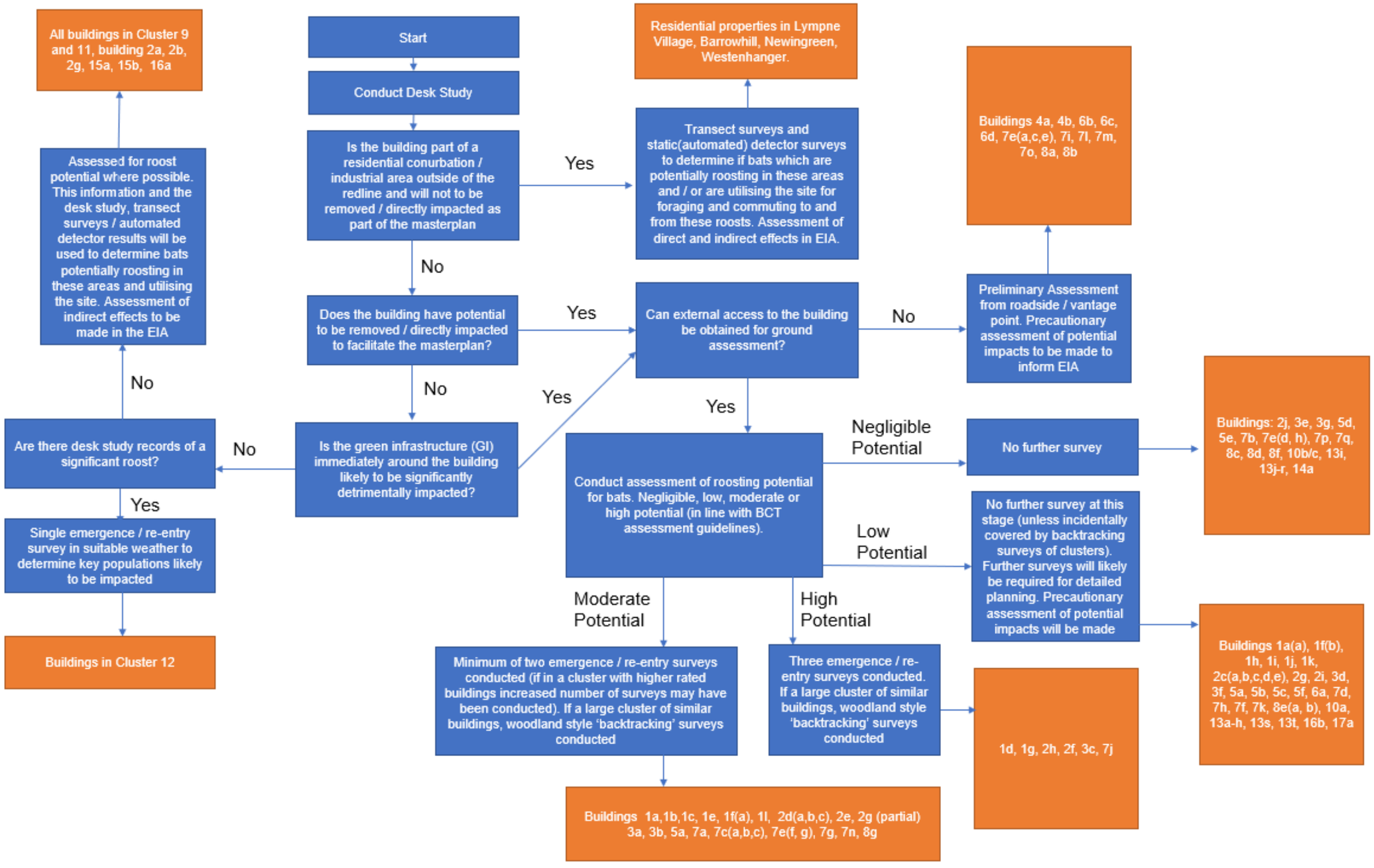
Date	Area Number	Cluster	Survey Leader	Surveyors*	Sunset/Sunrise	Temperature at start (°C)	Wind (Beaufort)	Cloud (Okta)	Conditions
03/07/2017	Area 1	1A	Aline Brodzinski	AB, EG, EP, GP	21:13	17 -15	1	3/8	Dry, fresh and clear
04/07/2017	Area 1	1B	Aline Brodzinski	AB, EG, EP, GP	04:48	16	1	7/8	Foggy
04/07/2017	Area 2	2A	Aline Brodzinski	AB, EG, EP, GP	21:12	18	1	2/8	Clear and dry
05/07/2017	Area 1	1A	Aline Brodzinski	AB, EG, EP, GP	04:49	13	0	3/8	Clear and dry
05/07/2017	Area 2	2B	Aline Brodzinski	AB, EG, EP, GP	21:11	21 - 19	1	4/8	Dry, clean and fresh
17/07/2017	Area 3	3A	Brandon Murray	BM, EG, EP, GP	21:02	22	1	2/8	Sunny, warm with a light breeze
18/07/2017	Area 7	7A	Brandon Murray	BM, EG, EP, GP	21:01	23	1-2	7/8	Warm and sunny
18/07/2017	Area 3	3B	Brandon Murray	BM, EG, EP, GP	05:00	18	1	6/8	Cloudy and warm
19/07/2017	Area 7	7B	Brandon Murray	BM, GP	05:01	22	1-2	7/8	Overcast
19/07/2017	Area 1	1C	Ewan Gibson	EG, EP	05:01	22	1-2	7/8	Overcast
19/07/2017	Area 2	2B	Brandon Murray	BM, EG, EP, GP	21:00	20	1	6/8	Overcast
20/07/2017	Area 2	7A	Brandon Murray	BM, EG, EP, GP	05:02	20	0	7/8	Still warm with rain overnight
03/08/2017	Area 1	1C	Brandon Murray	BM, AW	20:38	17	3	5/8	No rain
04/08/2017	Area 3	3A	Brandon Murray	BM, AW	05:25	17	2 -3	7/8	No rain
14/08/2017	Area 1	1A and 1B	Aline Brodzinski	AB, AW, JC, HT, EP	20:18	18	0	5/8	Dry and warm
15/08/2017	Area 1	1A	Aline Brodzinski	AB, AW, HT	05:41	20	0	7/8	Rainy and overcast with heavy rain at 04:42, survey terminated at 05:25.
15/08/2017	Area 7e (Cob tree cottage)	7C	Ellen Poppleton	EP, JC	05:41	20	0	7/8	Thunder and light rain at start, then stormy, survey terminated at 05.05
15/08/2017	Area 3b	3B	Aline Brodzinski	AB, AW, HT	20:16	20	0	2/8	Dry, bright and fresh

Date	Area Number	Cluster	Survey Leader	Surveyors*	Sunset/Sunrise	Temperature at start (°C)	Wind (Beaufort)	Cloud (Okta)	Conditions
15/08/2017	Area 7	7B	Ellen Poppleton	EP, JC	20:16	20	0	2/8	Clear
16/08/2017	Area 7	7A	Aline Brodzinski	AB, AW, HT	05:45	17	0	1/8	Clean, dry and fresh
16/08/2017	Area 8 (White House)	8A	Ellen Poppleton	EP, JC	05:45	17	0	1/8	Clear and dry
16/08/2017	Area 2	2A	Aline Brodzinski	AB, AW, JC, HT	08:14	18	0	6/8	Dry, overcast and fresh
17/08/2017	Area 3	3A and 3B	Ellen Poppleton	AB, EP, AW, JC	05:46	17	0	3/8	Light rain, some clouds
17/08/2017	Area 12	12A	Aline Brodzinski	AB, EP, AW, JC, HT	08:12	21	3	3/8	Dry warm and windy
18/08/2017	Area 1 (1 on 1a and 3 on 1b)	1A and 1B	Ellen Poppleton	EP, AW, JC, HT	05:48	17	2	8/8	Dry
29/08/2017	Area 7	7C	Liat Wicks	LW, AW	19:48	17	1	4/8	No rain
30/08/2017	Area 1	1C	Liat Wicks	LW, AW	06:06	17	3	3/8	Clear and dry
31/08/2017	Area 8 (White House)	8A	Liat Wicks	LW, AW	19:43	11.8	1	5/8	Dry
01/09/2017	Area 7	7C	Liat Wicks	LW, AW	06:09	8	0	0/8	Clear skies
02/07/2018	Building 7n Klllymoon	7D	Ewan Gibson	EG, KS	21:13	19	1	1/8	Warm and dry
03/07/2018	Building 5a Little Greys	5A	Ewan Gibson	EG, KS	21:13	20	2	1/8	Warm and dry
22/08/2018	Building 5a Little Greys	5A	Brandon Murray	BM, KS	05:54	16	1	8/8	Overcast
23/08/2018	Building 7n Killymoon	7D	Brandon Murray	BM, KS	20:05	19	0 - 1	7/8	Still and overcast
27/07/2020	Area 7 (Building 7g)	7A	Marielle James	MJ, RR	20:49	19	3-4	7/8	Dry, windy, noise from traffic on A20
28/07/2020	Area 7 (Building 7e(d))	7A	Marielle James	MJ, RR	20:47	19	1	0/8	Dry
28/07/2020	Area 7 (Buildings 7e(f) and 7e(g))	7A	Marielle James	MJ, RR	05:15	16	1-3	6/8	Dry

Date	Area Number	Cluster	Survey Leader	Surveyors*	Sunset/Sunrise	Temperature at start (°C)	Wind (Beaufort)	Cloud (Okta)	Conditions
29/07/2020	Area 7 (Building 7e(c))	7A	Marielle James	MJ, RR	05:17	14	0	1/8	Dry and calm
29/07/2020	Area 7 (Building 7o)	7A	Aline Gomes	AG, RR	20:46	18	1	2	Dry
30/07/2020	Area 7 (Building 7e(b))	7A	Aline Gomes	AG, RR	05:18	15	1	0	Dry
18/08/2020	Area 7 (Building 7e(d))	7A	Aline Gomes	AG, RR	05:47	16	2	1	Dry
18/08/2020	Area 7 (Building 7eg)	7A	Aline Gomes	AG, RR, PH	20:10	24	2	1	Dry
19/08/2020	Area 7 (Building 7g)	7A	Aline Gomes	AG, RR, PH	05:49	23	1	4	Dry
19/08/2020	Area 7 (Building 7e(h))	7A	Aline Gomes	AG, RR	20:08	22	3	8	Rain at start, then dry
20/08/2020	Area 7 (Building 7j)	7A	Aline Gomes	AG, RR	05:50	23	3	100	Dry

* Surveyor initials shown in Pen Portraits in Appendix E.

APPENDIX E: Survey decision tree



APPENDIX F: Surveyor Pen Portraits

Surveyor	Initials	Pen Portrait
Brandon Murray MCIEEM (Principal Ecological Consultant) BSc(hons)	BM	Brandon has been a professional ecologist for eleven years. Brandon has been planning, leading and completing bat surveys for over six years, including bat transects, static detector surveys, bat emergence and re-entry surveys and aerial tree inspections. Brandon is a Class II bat licence holder (Licence Number 2016-19420-CLS-CLS). Brandon has assessed the potential impacts to bats from multiple development projects and written bat survey and impact assessment reports for multiple sites. Brandon has been named on two bat development licences.
Dr Liat Wicks (Director – Sonar Ecology) CEcol MCIEEM PhD MSc BSc (Hons)	LW	Dr Wicks is a consultant and Chartered Ecologist with over 15 years' professional experience specialising in bat survey design, mitigation and sound analysis across the UK. She holds 3 Natural England class licences for protected species, and is a class 2 licenced bat surveyor (Registration no. 2015-10211-CLS-CLS). She has produced numerous EPS applications, EIA chapters and authored Bat Masterplans for major infrastructure projects. She is often consulted on her expertise in sound analysis and survey design, and is a Level 1 Thermographer, utilising this skill in ecology survey work. Between 2012 and 2013 Dr Wicks was Head of Biodiversity at the Bat Conservation Trust.
Aline Gomes (Brodzinski) (Senior Ecologist) MCIEEM BSc (hons) MSc	AG / AB	Aline Gomes has been a professional ecologist for 10 years, and has been leading bat surveys for seven years. Aline is proficient in surveying for a rage of protected species including great crested newts, badgers, reptiles, water voles and otters.
Ellen Poppleton BSc (hons) Grad CIEEM (in application)	EP	Ellen Poppleton had been an ecologist for over two years. She had experience surveying for reptiles, bats, badgers, amphibians and water voles. Ellen had received internal and on the job training to ensure that she can confidently conduct a range of protected species surveys.
Alex Ward (Graduate Consultant) BSc (Hons) Affiliate IEMA	AW	Alex was a graduate environmental consultant who was predominately involved as the environment lead on a coastal defence construction scheme for the Environment Agency. This led him to be experienced in the delivery of environmental mitigation, ecological surveying and national and international permitting requirements. Alex received in-house training in regard to the identification of both reptiles and bats during his time at Arcadis, including the usage of survey equipment.
Ewan Gibson BSc (hons) Grad CIEEM	EG	Ewan Gibson is an ecologist with a broad range of ecological experience. Ewan has been a professional ecologist for 6 years and has conducted surveys for a range of species, including bats, badger, dormouse, amphibians and reptiles, as well as being licensed to survey for barn owl. Ewan strives to collect and collate data with accuracy and precision. He has received in-house 'on the job' training in order to understand the requirements of these surveys, including the usage of survey equipment and identification of field signs.

Surveyor	Initials	Pen Portrait
Rebecca Beale BSc MSc MCIEEM	RB	Rebecca Beale had been and ecologist for over 10 years. Rebecca was an ecologist with experience of a diverse variety of ecological survey and mitigation techniques. Rebecca acquired sound experience of: undertaking protected species surveys; designing and implementing protected species mitigation; undertaking client liaison; contacting third parties for information; overseeing contactors (e.g. ecological supervision of site works); coordinating environmental desk studies and survey effort among a team of colleagues; and contributing to development licences for protected species and various types of ecological reports.
Hannah Tracey, Grad CIEEM BSc(hons) MSc (hons)	HT	Hannah worked as a professional Ecologist with Arcadis for over seven years. During this time, she developed a wide range of experience in both the field and office-based environment. Hannah regularly undertook targeted surveys for a range of protected species including great crested newt, dormouse, reptile, badger and bat activity and emergence/re-entry surveys. She had experience of undertaking site supervision activities and ecological clerk of works.
Kathryn Smart BSc (hons) MSc	KS	Kathryn Smart was an assistant ecologist. She received a range of on the job training to allow her to assist with surveys.
Jon Carter (Assistant Ecologist) GradCIEEM BSc	JC	Jon Carter was an assistant ecologist with a broad range of ecological experience. Jon had been a professional ecologist for three years, during which he conducted surveys for a range of species, particularly focussed on birds, reptiles and GCN, but also bats, dormice, badger, water vole and otter. Jon had carried out a number of bat emergence/re-entry and activity transect surveys and had undertaken in-house 'on the job' training on conducting bat surveys, which covered identification of bat calls in the field and the use of specific survey equipment to do so.
Marielle James	MJ	Marielle had been a professional ecologist for seven years. Marielle had experience in a range of protected species surveys and had led and undertaken bat surveys for four years, including bat transects, static detector surveys and bat emergence and re-entry surveys. Marielle was a Class II bat licence holder (Licence number 2019-39454-CLS-CLS).
Rory Roche	RR	Rory had been a professional ecologist for over three years and had experience of a diverse range of ecological surveys including extended phase 1 habitat surveys, ecological clerk of works and targeted protected species surveys for badgers, bats, dormouse, great crested newt, reptiles, otter and water vole.
Liam Price	LP	Liam is an ecologist with a range of ecological experience. Liam has been a professional ecologist for over three years, during which he had in-house 'on the job' training and has conducted surveys for a range of species, particularly focussed on reptiles and GCN, but also bats, dormice, badger, water vole and otter. Liam is also a keen botanist who delivers plant identification workshops regularly. Liam has carried out several biodiversity net gain assessments on small to large schemes.

Surveyor	Initials	Pen Portrait
Gregor Pecnik	GP	Gregor was an environmental economist with a range of environmental expertise. Gregor received a suite of training in house, qualifying him to assist with professional bat surveys.
Paul Holden	PH	Paul Holden was a senior technical director with a broad experience in environment, health and safety, and across a range of industries including manufacturing and food production. Paul received a suite of training in house, qualifying him to assist with professional bat surveys.

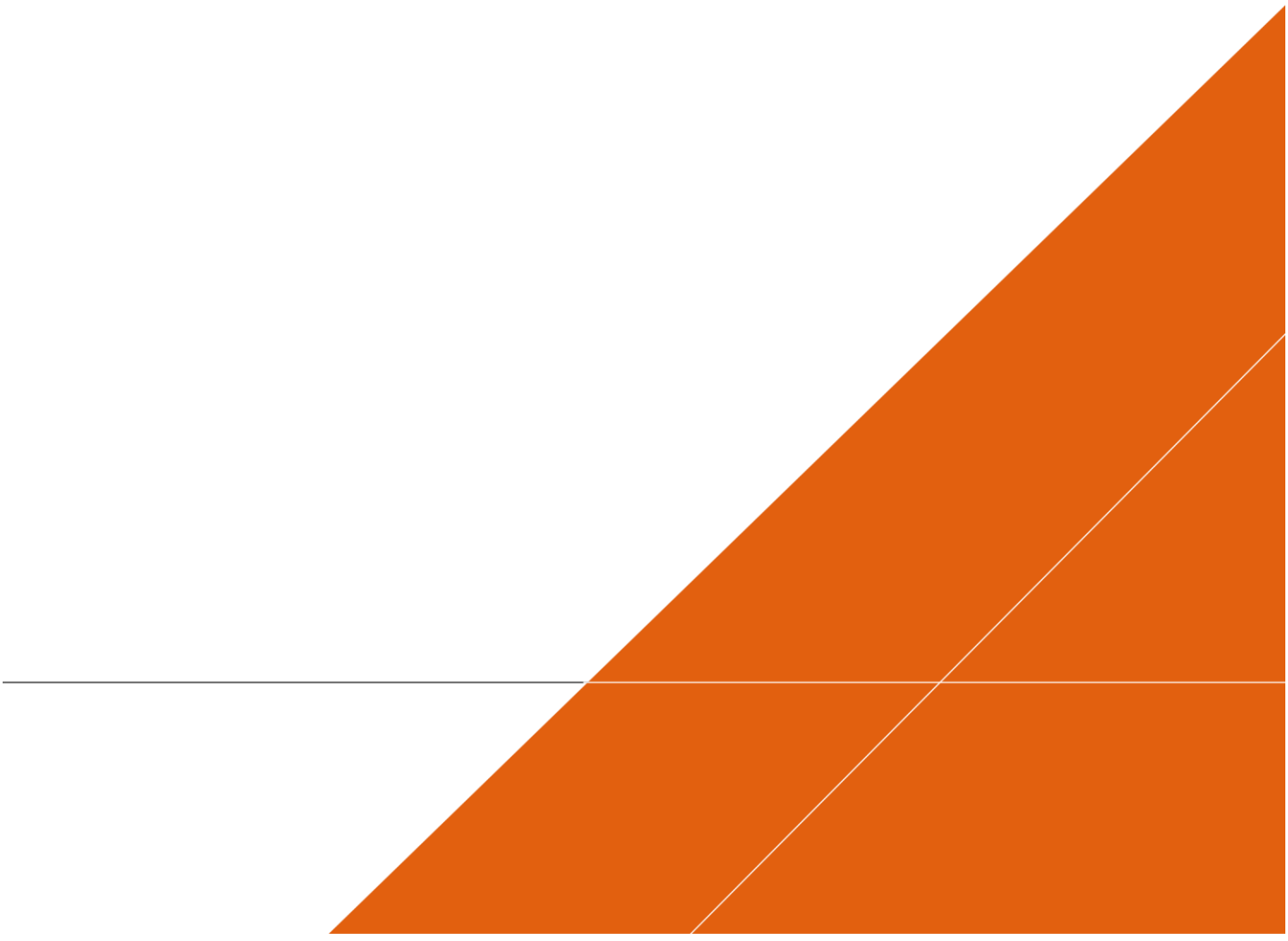
APPENDIX G: Castle Inspection Report (including DNA Results)

ARCADIS Design & Consultancy for natural and built assets

WESTENHANGER CASTLE – OTTERPOOL

Extended Phase 1 Habitat Survey

JUNE 2020



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VERSION CONTROL

Version	Date	Author	Checker	Approver	Changes
1	June 2020	Marielle James	Brandon Murray	Samantha Walters	First Issue

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TABLES

APPENDICES

Executive summary

Arcadis Consulting (UK) Limited was commissioned by Folkestone and Hythe District Council (hereafter known as “the Client”) to provide input into an outline planning application referred to as Otterpool Park. A detailed suite of habitat and protected species surveys were undertaken as part of this outline planning application, these surveys were undertaken between 2016 and 2018. The outline planning application was submitted in 2019. Since the submission of the planning application, the Client has incorporated Westenhanger Castle into the design. A suite of maintenance and improvement works, vegetation clearance and archaeological investigations are proposed at the castle and surrounding area. It is proposed to conduct these works, prior to and concurrent with the development works on the wider Otterpool Park development site. This report is in relation to the proposed works in the castle and surrounding area (hereafter known as “the site”). Where applicable, survey data compiled for the wider Otterpool Park project was reviewed, and where features on the site were assigned identification numbers or names as part of the Otterpool Park project, these are utilised within this report.

Arcadis were commissioned to undertake an extended Phase 1 habitat survey to identify the ecological constraints In addition, Habitat Suitability Index (HSI) assessments for great crested newts (GCN), environmental DNA (eDNA) surveys for GCN, detailed bat building and ground-based tree assessment surveys were also undertaken as part of this assessment. The proposed improvement works are likely to take place in two phases; the first during Autumn 2020 and the second at a subsequent date, yet to be determined. Within the Autumn phase of the works, the key activities proposed are to remove trees from the moat to the south of the castle and to clear ivy and other vegetation from a curtailment wall to the south of the castle. The tree removal is to allow archaeological investigation and to improve views of the castle. The subsequent phase of the works will constitute a suite of changes to the setting of the castle and renovation of areas of the castle, and may include: replacement of wooden beams and roof sections within the castle (as part of ongoing maintenance and to prepare the structure for potential use as a hotel or wedding facility). Further tree removal, excavation of areas of the dry moat for investigation, repairs to the castle structure and walls and re-flooding the moat are also proposed, as part of a plan to change the aesthetic setting of the castle and return the setting to a more historical nature. This report presents the findings of the Phase 1 habitat survey conducted to inform potential constraints to these works.

It is understood that the works that are proposed do not require planning permission. As such, this report is compiled to ensure that the proposed actions do not contravene any wildlife legislation. These works will also need to be informed by arboricultural surveys and assessments, it is understood that the Client is providing input in relation to arboriculture through their in-house team.

In summary, the following recommendations to ensure compliance with wildlife legislation have been made in relation to the two phases of the works:

Autumn 2020 proposed works

- Great crested newt (GCN) presence was confirmed in two ponds, with breeding in one, on site. One further pond outside of the castle area was confirmed to also support GCN. Habitats on site have potential to support great crested newt (GCN) and reptiles. Actions to prevent impacts to these species will be required. Dependent upon the details of the works and the proposed vegetation removal methodology, it may be necessary to obtain a protected species licence in relation to the potential presence of GCN in the works area. However, there is potential that the works can be conducted and managed in such a way that this can be avoided (an approach referred to as reasonable avoidance measures). This is likely to include recommendations on the timing of works, habitat manipulation (removal of habitat ahead of the works to discourage the presence of species) and that any vegetation clearance is to be conducted under a precautionary method statement and under the supervision of a suitably qualified ecologist. This approach would also be suitable to prevent any impacts to reptiles.
- As there is vegetation to support nesting birds in the works area, any vegetation clearance required to facilitate the works should be undertaken outside of the breeding bird season (the bird breeding season is generally considered to be March – August inclusive). Where this is not possible, the clearance must be undertaken under the supervision of a suitability qualified ecologist and a pre works nesting bird check undertaken 24-48 hours prior to clearance works commencing.

- Several trees located within the castle grounds have the potential to support roosting bats, ranging from low to moderate potential. Should trees assessed as having moderate potential to support roosting bats require removal; up to two aerial inspections are recommended to determine the presence/ likely absence of bats. Dependent upon the findings of these surveys, further emergence / re-entry surveys may be required to ensure legal compliance and to inform an application for a protected species licence application, if this is required. For trees with low potential for roosting bats, it is recommended that potential roosting features (PRFs) present within trees are soft felled under the supervision of a bat licenced ecologist.

Subsequent proposed works

- Great crested newt (GCN) presence was confirmed in two ponds, with breeding in one, on site. One further pond outside of the castle area was confirmed to also support GCN. Habitats on site have potential to support great crested newt (GCN) and reptiles. Actions to prevent impacts to these species will be required. Dependent upon the details of the works and the proposed vegetation removal methodology, it may be necessary to obtain a protected species licence in relation to the potential presence of GCN in the works area. However, there is potential that the works can be conducted and managed in such a way that this can be avoided (an approach referred to as reasonable avoidance measures). This is likely to include recommendations on the timing of works, habitat manipulation (removal of habitat ahead of the works to discourage the presence of species) and that any vegetation clearance is to be conducted under a precautionary method statement and under the supervision of a suitably qualified ecologist. This approach would also be suitable to prevent any impacts to reptiles.
- Evidence of barn owl was recorded, including pellets and faeces, within Building 2a. It is recommended that when the scope and extent of the proposed works are finalised, an ecologist should be consulted to determine whether the works have the potential to impact barn owls roosting within the building. Should this be the case, an appropriate licence may be required.
- Buildings 2a, 2f and 2h were confirmed as bat roosts due to the presence of bat droppings. Fresh bat droppings were collected from each building and sent for DNA analysis. Building 2a was confirmed as a common pipistrelle roost, building 2f was confirmed as a brown long-eared roost, and Building 2h was confirmed as a common pipistrelle, brown long-eared and Natterer's bat roost. Recommendations for further surveys on each building include three separate dusk emergence and/or dawn re-entry surveys to characterise the type of roosts. Should these structures be impacted by the proposed works and depending on the scale of the works, it may be necessary to apply for a European Protected Species (EPS) licence to allow works to proceed in line with current legislation on bats. This licence application will likely need to be informed by emergence / re-entry surveys.
- Ten trees located within the castle grounds have the potential to support roosting bats; of these six were identified with moderate bat roosting potential and four with low bat roosting potential. Should any of these trees assessed as having moderate potential for roosting bats require removal; with up to two aerial inspections are recommended to determine the presence/ likely absence of bats. Dependent upon the findings of these surveys, further emergence / re-entry surveys may be required to ensure legal compliance and / or to inform an application for a protected species licence application. For trees with low potential for roosting bats, it is recommended that potential roosting features (PRFs) present within trees are soft felled under the supervision of a bat licenced ecologist.
- [redacted]
- The East Stour River (Waterbody 4) located to the north of the castle, supports a small population of water vole (recorded during previous surveys on the site). Depending on the scope of the proposed works it may be possible to undertake the works using reasonable avoidance measures outlined in a Method Statement. Any works undertaken would need to be sensitive and apply precautionary measures to prevent killing or injury water vole. However, if the proposed works have the potential to impact water vole, a protected species licence may be required. It is recommended that once the scope and extent of

the proposed works are finalised, an ecologist is consulted to determine whether the works have potential to impact water voles in the East Stour River.

1 Introduction

1.1 Background

Arcadis Consulting (UK) Limited was commissioned to provide input into an outline planning application on behalf of Folkestone and Hythe District Council (the 'Client'), referred to as Otterpool Park. The application was submitted in 2019 by the Client.

A detailed suite of habitat and protected species surveys were undertaken as part of the outline planning application for Otterpool Park, these surveys were undertaken between 2016 and 2018. The submitted outline planning application (OPA) boundary encompassed 579ha in area and did not include Westenhanger Castle, however where this area fell within the ZOI (zone of influence) of developments on site, surveys for flora and faunal receptors were conducted in this area. Since the submission of the planning application, the Client has acquired Westenhanger Castle and its grounds and it has been incorporated into the OPA area for the masterplan for the Otterpool Park development.

Arcadis Consulting (UK) Limited were subsequently commissioned to undertake a Phase 1 habitat survey to identify ecological constraints and inform a suite of proposed improvement works at Westenhanger Castle (hereafter referred to as the site). A range of maintenance and improvement works, including vegetation clearance and archaeological investigations are proposed at the castle and surrounding area, to be conducted prior to and concurrent with the development works on the wider Otterpool Park development site. This report is in relation to the proposed works in the castle and surrounding area. The area surveyed to inform this report is presented in Image 1, and is subsequently referred to as 'the site'. However, results from assessments conducted to inform the wider OPA planning application were also utilised to inform assessments presented within this report.

It is understood that the works that are proposed do not require planning permission. As such, this report is compiled to ensure that the proposed actions do not contravene any wildlife legislation. These works will also need to be informed by arboricultural surveys and assessments, it is understood that the Client is providing input in relation to arboriculture through their in-house team.

Habitat Suitability Index (HSI) assessments, for great crested newts (GCN) (*Triturus cristatus*), environmental DNA (eDNA) surveys, detailed bat building and ground-based tree assessments were also undertaken as part of this assessment.

1.2 Site location

The site (including the castle area and the areas of works in the surrounding curtailment) is located off Stone Street, Westenhanger, Hythe and is within the jurisdiction of Folkestone and Hythe District Council, Kent. The survey area included habitats and structures within the grounds of Westenhanger Castle. Habitats present within the survey area included scattered trees, amenity and/or semi-improved grassland, ponds, a small watercourse located on the boundary of the survey area, and structures and/or buildings.

The wider landscape is largely agricultural in nature with the majority of the site surroundings being arable and pasture fields, a now disused horse racing course with an artificial lake ('Folkestone Racecourse Lake'), areas modified from historical use (airfields), existing historic settlements and a relatively new industrial area. The M20 motorway and a railway line serving Westenhanger Station are located to the north of the site and the Kent Downs AONB (Area of Outstanding Natural Beauty) extends beyond this to the north and to the east. The survey area is centred on Ordnance Survey grid reference TR 12324 37175.

An aerial image illustrating the site and an indicative redline of the area of works is presented in Image 1.

Image 1: Aerial imagery of the site (detailed survey area presented within the red line)

1.3 Proposed works

The proposed improvement works are likely to take place across two phases; the first in Autumn 2020 and the second at a subsequent date, yet to be determined. Within the Autumn phase of the works, the key activities proposed are to remove trees from the moat to the south of the castle and clear ivy and other vegetation from a curtailment wall to the south of the castle. These works are being conducted to enable archaeological investigation and a part of a plan to improve views of the castle, and to change the aesthetic setting of the castle.

The subsequent phase of the works will constitute a suite of changes to the setting of the castle and renovation of areas of the castle, and may include: replacement of wooden beams and roof sections within the castle, further tree removal, excavation of areas of the dry moat for investigation, repairs to the castle structure and walls and re-flooding the moat. These works are to be conducted as part of ongoing maintenance of the structures and surrounds, but also to allow archaeological investigation to occur, to improve the visibility of the castle from the surrounds, to return the surroundings of the castle to a historically sensitive form and to enhance the opportunities to utilise the structure and surrounds for business.

This report presents the findings of the Phase 1 habitat survey conducted to inform upon any constraints to these works.

The proposed works will be split across two phases. The first phase is scheduled to take place in Autumn 2020, whereas the second phase of proposed works will be undertaken at yet to be determined date.

1.3.1 Autumn 2020 proposed works

It is understood that the proposed works comprise:

- Clearance of trees located to the south of the moat and within the dry areas of the moat; and
- Clearance of ivy and other vegetation located on a historical wall located to the south of the moat.

1.3.2 Future proposed works

The subsequent proposed works are understood to comprise (but are yet to be fully detailed):

- Renovation works relating to buildings on the castle site;
- Archaeological investigations including those within the moat areas;
- Further vegetation removal; and
- Reflooding sections of the moat.

2 Methodology

This report outlines the results of the extended Phase 1 habitat survey, the eDNA surveys and detailed bat surveys conducted on the site. The methodologies followed for specific receptors which informed this report are outlined in the following sub-sections.

2.1 Desk study

Desk-based ecological information was requested from Kent & Medway Biological Record Centre (KMBRC) as part of the original outline planning application in March 2018 and later updated in 2020. Records were requested for within 2km for non-statutory designated sites (Local Wildlife Sites (LWSs) Roadside Nature Reserves (RNRs)) and protected or otherwise notable species. The search area was extended to 5km for 'nationally designated statutory sites' (including Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs)) and to 10km for 'Internationally Designated sites', Natura 2000 sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites).

The MAGIC (Multi-Agency Geographical Information for the Countryside at Magic.defra.gov.uk, was consulted to obtain information regarding the presence of ancient woodlands listed on the Ancient Woodland Inventory (AWI).

Desk study results and survey data compiled for the wider Otterpool Park project was reviewed as part of the Westenhanger Castle Phase 1 habitat survey: The relevant reports are outlined in section 2.2 below.

2.2 Phase 1 Habitat Survey

The Phase 1 habitat survey and detailed bat inspection were undertaken on the 25 March 2020 by Marielle James (Arcadis Senior Ecologist, MCIEEM, GradCIEEM), bat licence number 2019-39454-CLS-CLS and Rory Roche (Arcadis Ecologist). The Phase 1 habitat survey categorised and mapped the dominant habitat types on site (JNCC, 2010). Dominant plant species were noted, as were any uncommon species, non-native invasive species or species indicative of valuable habitat types. All habitats on site were assessed for their potential to support protected and notable species. Survey data from the below sources was also reviewed:

- Phase 1 habitat and hedgerow survey data from the Otterpool Park Environment Statement. Technical Appendix 7.4 (Arcadis, 2018d); and
- Arboricultural overview information from the Otterpool Park Environmental Statement. Technical Appendix 7.3 (Arcadis, 2019f).

Following the initial walkover, the Strategic Projects Development Surveyor from Folkestone and Hythe District Council, Richard Piper also attended site with Brandon Murray (Arcadis Principal Ecologist, MCIEEM) and Ewan Gibson (Arcadis Ecologist, ACIEEM) on 30 April 2020. During this visit, eDNA and Habitat Suitability Index (HSI) assessments of the on-site ponds were conducted, led by Brandon Murray (Arcadis Principal Ecologist), details of these assessments are presented below.

2.3 Extended Phase Habitat Survey - Protected Species Survey

The Phase 1 habitat survey included an assessment of the value of habitat suitability for use by protected species or species of conservation concern. This included a consideration of the following:

- The likely value of any aquatic and/or terrestrial habitat on site for use by foraging and hibernating amphibians, particularly with regard to protected species such as GCN. Survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.9 (Arcadis, 2018a) was also reviewed;
- The likely value of any terrestrial habitat on site for use by foraging and hibernating reptiles, where applicable, survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.6 (Arcadis, 2019b) was also reviewed;
- The presence of nesting habitat for breeding birds (such as mature trees, dense scrub, hedgerows and buildings, and/or field margins suitable for ground nesting birds) and evidence of bird nesting including bird song, old nests, faecal marks etc. Evidence or potential of the usage of structures or features of the

survey area by barn owls was also assessed. Survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.15 (Arcadis, 2019c);

- The likely value of the site for roosting, commuting and foraging bats. Survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.13 (Arcadis, 2018b);
- The likely value and suitability of hedgerows and scrub vegetation for supporting a population of hazel dormice (Muscardinus avellanarius). Survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.8 (Arcadis, 2019d);
- The likely value of the site for otter (Lutra lutra). Where applicable, survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.10 (Arcadis, 2019e);
- The likely value of the site for water vole (Arvicola amphibius). Where applicable, survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.10 (Arcadis, 2019e);
- A search for any characteristic signs of badger (Meles meles), activity, including setts, latrines, paths, footprints, hairs and feeding signs. Survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.7 (Arcadis, 2018c); and
- The likely value of the site for other protected or otherwise notable species or groups, including invertebrates. Where applicable, survey data from the Otterpool Park Environmental Statement. Technical Appendix 7.17 (Arcadis, 2019a).

2.4 Bat building assessments

Detailed bat building (external & internal inspections) and ground-based tree assessments of structures and trees which may be affected by the proposed works were assessed for their potential to support roosting bats. These surveys were undertaken on the 25 March 2020 by Marielle James (Arcadis Senior Ecologist, MCIEEM, GradCIEEM), bat licence number 2019-39454-CLS-CLS and Rory Roche (Arcadis Ecologist), in accordance with the bat survey guidelines for professional ecologists (Collins 2016).

The assessment comprised an external and internal inspection of the buildings within the survey area (where access permitted) to identify features with potential to support roosting bats (Preliminary Roost Features – PRFs) following the Bat Conservation Trust (BCT) Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins 2016).

The external visual inspection assessed the buildings according to features present that may have the potential for use by bats. These included recording potential roosting features such as holes, apertures and other opportunities for bats to roost including the type, quality and connectivity of the surrounding habitat.

These were then categorised according to their potential as detailed in the BCT guidelines:

- negligible;
- low;
- moderate; and
- high.

The internal inspection assessed potential bat entry/ exit points; potential roosting locations within the structure, and assessed potential evidence of bat activity or features with roosting potential were confirmed by the presence of the following signs:

- bat droppings (these may accumulate under an established roost), where these were found they were sent for species identification using DNA extraction techniques;
- insect wings (from feeding);
- oil (from fur) and urine stains;
- scratch marks;

- actual sightings (including corpses).

Results of the internal building assessment are presented in section 3.2.4.

A large number of buildings/ structures were originally assessed for their potential to support roosting bats as part of the Otterpool Park outline planning application. These buildings were separated across building 'areas' and further divided into 'clusters'. To remain consistent, this naming convention has been adopted for the Phase 1 habitat survey. The table below outlines the building areas and clusters relevant to the survey site (Westenhanger Castle and surroundings as identified in Image 1). The location of these structures is presented on Figure 3 (Appendix A).

Table 1: Building areas, clusters and buildings assessed

Survey area	Building Cluster	Buildings
2	2A	2f, 2g, 2h, 2j
	2B	2a

2.5 Ground-based tree assessments

Trees within the moat of the castle grounds were assessed from ground level for their potential to support roosting bats, using a pair of binoculars and a high powered torch. These surveys were undertaken on the 25 March 2020 by Marielle James (Arcadis Senior Ecologist, MCIEEM, GradCIEEM), bat licence number 2019-39454-CLS-CLS and Rory Roche (Arcadis Ecologist), in accordance with the bat survey guidelines for professional ecologists (Collins 2016). Any Potential Roosting Features (PRFs) were recorded. These included but were not limited to:

- knot holes (cavities with a collar resulting from natural branch loss and fungal infection);
- woodpecker holes and cavities created by fungal infection;
- tear outs (cavities within an inverted tear shape wound created when a limb was torn from the main stem or other major limb);
- impact shatters (cavities extending longitudinally into limb originating from a break along its length typically caused by impact with part of another tree);
- butt rot (hollow section of main stem resulting from fungal infection); and
- lifted bark (substantial areas of lifted bark typically resulting from fungal infection).

Each tree was assigned a category which relates to the value of the features identified during the ground level tree inspection. Only trees with high, moderate or low potential were recorded. A description of these categories is presented in Table 2: Roost Potential Categories. Results of the ground-based tree assessments are presented in section 3.2.4.

Table 2: Roost Potential Categories

Tree Category	Description
Confirmed roost	Trees where evidence of bats such as droppings and/or staining or bats themselves are found.
High potential	Trees with multiple, highly suitable features capable of supporting larger roosts.
Moderate potential	Trees with definite bat potential, supporting fewer features than high potential trees or with potential for use by single bats.

Tree Category	Description
Low potential	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or tree supports some features which may have limited potential to support bats.
Negligible potential	Trees with no potential to support bats.

2.6 Bat dropping DNA Analysis

Bat dropping DNA analysis was carried out to identify the bat species using the buildings. Bat droppings were collected from Buildings 2f and 2h during the survey on 25 March 2020 by Marielle James (Arcadis Senior Ecologist) and Rory Roche (Arcadis Ecologist). Droppings were sent to Swift Ecology who performed DNA extraction and sequencing.

The results and conclusions of the DNA analysis are based on targeted quantitative Polymerase Chain Reaction (qPCR) analysis involving an investigation of mitochondrial DNA (mtDNA). The results obtained are reported with accuracy and the interpretation represents the most probable conclusion for the DNA sequence given current levels of species data.

2.7 HSI and eDNA surveys for GCN

Subsequent to the initial walkover, HSI, eDNA and GCN egg search surveys were conducted on the water bodies located within and adjacent to the survey area (within 500m of the proposed works). All water bodies were assessed for their potential to support amphibians, including great crested newt, using the HSI assessment tool for great crested newts developed by Oldham et al. (2000). The value of terrestrial habitat within the survey area for use by foraging and hibernating amphibians was also assessed during the scoping survey.

These surveys were conducted by Brandon Murray (GCN Class Licence number 2015-17257-CLS-CLS) on 30 April 2020. Where existing data was not available (from the extensive surveys conducted on the site in relation to the wider Otterpool Park proposals), or the HSI suggested that the status of the waterbody with relation to GCN may have changed, environmental DNA (eDNA) assessments were conducted. In total, six waterbodies were surveyed using HSI techniques in 2020.

The HSI assessment assesses 10 pond criteria and allocates the pond a likelihood of supporting GCN, according to five 'HSI Pond suitability' assessment results (allocated a numerical value from 0 to 1. These are as follows: score of < 0.5 = poor; score of 0.5-0.59 = below average; score of 0.6-0.69 = average, score of 0.7-0.79 = good; and a score of > 0.8 = excellent habitat suitability.

The eDNA survey is a technique whereby water samples are taken from a pond and sent to a laboratory for testing to determine the presence or absence of GCN DNA within the water. These surveys need to be conducted in a certain manner according to the prescriptions of a Natural England Technical Advice Note (Biggs et al. 2014). The protocol followed was according to the testing lab instructions, shown in Appendix C, which meets the protocol set by Natural England. The testing was conducted by eDNA testing company ADAS. Overall, four ponds were surveyed using eDNA techniques in Spring 2020. The locations of the ponds surveyed is presented on Figure 1, Target Notes 1 – 6, Appendix A.

As part of the eDNA surveys, surveyors checked suitable vegetation within/on the verges of ponds was searched for characteristic "folds" indicative of vegetation selected for egg deposition. If folded vegetation was identified, then this was slowly dissected to see if it contained an egg and to distinguish if the egg belonged to great crested newt or other newt species. It was important that once eggs were found within the pond, no further egg searches were carried out as the pond has already been identified as a breeding site and further searches would only disturb the eggs. This technique was dependant on the presence of suitable vegetation.

2.8 Limitations

The majority of the buildings and grounds were accessible during the surveys, however, it was not possible to gain access to small areas of Building 2h. In the south west area of the building, some rooms contained a first floor/ roof void, this was in poor condition, with wooden floorboards missing and/or damaged. It was considered unsafe for surveyors to access these areas. Although it was not possible to access these areas of the building, this is not considered to be a significant limitation as surveyors were able to access the remaining areas of the building. Evidence of bats were recorded within this building during the survey.

At the time of the survey, the details of the subsequent works were unknown. The recommendations within this report are based on professional judgemental in terms of the proposed course of action. Discussion between the Client and ecologists should take place to clarify the proposed subsequent works and determine a proportional programme of surveys and mitigation, as details of the proposed works evolve.

3 Results

3.1 Habitats

The location of habitats present in and around the study area is presented in Figure 1 in Appendix A.

Detailed arboricultural information was not collected as a component of these works, as this was beyond the scope of the survey. It is understood that detailed arboricultural information will is being provided by the Client's in-house team.

Within the castle survey area, the following habitats were present:

- Scattered scrub;
- Scattered trees;
- Earth bank;
- Hedge with trees species-poor (conifer);
- Intact hedge native species-rich;
- Intact hedge species-poor;
- Hedge with trees native species rich;
- Hedge with trees species-poor;
- Fence;
- Ditch;
- Wall;
- Broad-leaved semi-natural woodland;
- Broad-leaved parkland scattered trees;
- Plantation woodland;
- Dense/continuous scrub;
- Introduced shrub;
- Tall ruderal;
- Amenity grassland;
- Arable;
- Semi-improved neutral grassland;
- Species-poor semi-improved grassland;
- Improved grassland;
- Bare ground;
- Building;

- Hardstanding;
- Standing water; and
- Riparian corridor (‘Riparian corridor' is a custom defined habitat within the site consists of a 1 - 3m wide stream /river largely surrounded on both banks by trees and scrub).

A description of these habitats is provided in the section below.

3.1.1 Habitat descriptions

3.1.1.1 Scattered scrub

This was largely present along the East Stour River and was present along the northern boundary of the castle walls. Species recorded included Bramble (*Rubus fruticosus agg.*), Elder (*Sambucus nigra*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crateagus monogyna*) and Ivy (*Hedera helix*).

3.1.1.2 Scattered trees

A large number of individual and scattered trees are present across the survey area. Where trees are not within hedgerows, woodlands or parkland, they are recorded as this habitat type. Species present included Pendunculate Oak (*Quercus robur*), Poplar (*Populus* sp.), Willow (*Salix* sp.), Lime (*Tilia x europaea*), Field Maple (*Acer campestre*) and Alder (*Alnus glutinosa*). An arboricultural assessment (i.e. to BS5837:2012) was not conducted as a component of these works. It is understood that this is being prepared by the Client in house.

3.1.1.3 Hedge with trees species-poor (conifer)

These hedgerows had fewer than five woody species and also contained trees. These hedgerows were present west of the Castle and the East Stour River and to the north east of the survey area. Species recorded included predominately cypress (*Cupressus sp.),*

3.1.1.4 Intact hedge native species-rich

Intact hedges with five or more species present, with no trees recorded, were present across the site. Species present within these hedges include Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Elder (*Sambucus nigra)*, Dog-rose (*Rosa canina)*, Hazel (*Corylus avellane)*, Willow (*Salix sp.)*, Ash (*Fraxinus excelsior*) and Holly (*Ilex aquifolium)*.

3.1.1.5 Intact hedge species-poor

These hedgerows supported fewer than five species and were intact. The majority of these hedgerows were dominated by Hawthorn, Blackthorn or Privet (*Ligustrum sp.).*

3.1.1.6 Hedge with trees native species rich

These hedgerows supported five or more woody species and a varied ground flora, with hedgerow trees also present. Hedgerow tree species included Pedunculate Oak, Ash, Field Maple, Alder, Poplar.

3.1.1.7 Hedge with trees species-poor

These hedgerows had fewer than five woody species and also contained trees. These hedgerows are present across the site. Species recorded included Hawthorn, Blackthorn (*Prunus spinosa*), Pendunculate Oak.

3.1.1.8 Fence

There are a large number of agricultural fences across the site, with the majority of the fences recorded within the Phase 1 map being barbed wire / stock fencing.

3.1.1.9 Ditch

A number of ditches are present to the south of Westenhanger Castle, largely associated with the Folkestone Racecourse Lake. These vary in size, water flow and depth. These ditches are tributaries of the East Stour River.

3.1.1.10 Wall

A small number of walls were recorded across the survey area. These are associated with Westenhanger Castle and were largely formed of stone and/ or brick.

3.1.1.11 Broad-leaved semi-natural woodland

An area of broad-leaved semi-natural woodland is located to the north of the survey area, along the railway corridor. Trees were recorded as young or semi-mature. Species present included Sycamore (*Acer pseudoplatanus*), Ash, Hawthorn and Field Maple.

3.1.1.12 Broad-leaved parkland scattered trees

Scattered semi-mature and mature broad-leaved trees are present across the site. A parkland setting surrounds Westenhanger Castle with a number of standard trees and/or tree blocks across this area. Tree species present include Sycamore, Norway Maple (*Acer platanoides),* Horse Chestnut (*Aesculus hippocastanum*), Beech (*Fagus sylvatica)*, Common Lime*,* Hawthorn, Ash and Pedunculate Oak.

3.1.1.13 Plantation woodland

An area of plantation woodland is present south of Westenhanger Castle, adjacent to the Castle moat. This is predominantly Hawthorn.

3.1.1.14 Dense/continuous scrub

Areas of dense scrub was present surrounding Pond 19, located to the south of the site, and are largely comprised of Hawthorn, Willow and Bramble.

3.1.1.15 Introduced shrub

This habitat was largely associated with gardens or landscaping in the Westenhanger Castle grounds.

3.1.1.16 Tall ruderal

Tall ruderal habitats were present to the west of the survey area. The majority of these areas were dominated by Common Nettle (*Urtica dioica*), Willowherb (*Epilobium sp.)* and Dock (*Rumex sp.*).

3.1.1.17 Amenity grassland

Amenity grassland was present across the Westenhanger Castle grounds. It is characterised by its low species diversity, coupled with its management and usage (mown and utilised for amenity purposes). Dominant species include Perennial Ryegrass (*Lolium perenne*), White Clover (*Trifolium repens*), Lesser Celandine (*Ficaria verna*), Violet (*Viola sp.*) and Primrose (*Primula vulgaris*).

3.1.1.18 Arable

Arable fields are present to the south of the survey area. The majority of arable fields have been being used to grow rape and cereals.

3.1.1.19 Semi-improved neutral grassland

This habitat was present to the north west of the survey area. Species present included Tufted Hair-grass (*Deschampsia cespitosa)*, Cock's-foot (*Dactylis glomerata)*, Red Fescue (*Festuca rubra*), Common Bent (*Agrostis capillaris*), Common Yellow-sedge (*Carex demissa)*, Meadowsweet (*Filipendula ulmaria)*, Cut-leaved Crane's-bill (*Geranium dissectum)*, False Oat- grass (*Arrhenatherum elatius*), Meadow Foxtail (*Alopecurus pratensis*), Meadow Buttercup (*Ranunculus acris*), Germander Speedwell (*Veronica chamaedrys*), Wall Barley (*Hordeum murinum*), Common Mouse-ear (*Cerastium fontanum*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Lesser Stitchwort (*Stellaria graminea*), Ribwort Plantain (*Plantago lanceolata*), Field Wood-rush (*Luzula campestris*), Yarrow (*Achillea millefolium*), Ground Ivy (*Glechoma hederacea*), Common Nettle (*Urtica dioica*), Hogweed (*Heracleum sphondylium*).

3.1.1.20 Species-poor semi-improved grassland

This habitat was present to the south of the survey area, and species present included Common Bent, Sweet Vernal-grass (*Anthoxanthum odoratum*), Timothy Grass, False Oat-grass, Red Fescue, Yorkshire-fog (*Holcus lanatus*), Spear Thistle (*Cirsium vulgare*).

3.1.1.21 Improved grassland

This habitat was present to the east of the survey area. Dominant species include Perennial Rye-grass, Cock's-foot (*Dactylis glomerata*) and Yorkshire fog (*Holcus lanatus*).

3.1.1.22 Bare ground

Bare ground is found where farm tracks or areas with significant disturbance are present. Bare ground was present to the north east of the survey area and was formed of aggregate.

3.1.1.23 Building

Several buildings and/ or structures are located within the survey area. These buildings were previously surveyed by Arcadis as part of the outline planning application and the building references referred to in this report (Arcadis, 2018b). Buildings on site included the main Castle, farm buildings and commercial buildings.

3.1.1.24 Hardstanding

Hardstanding areas are present across the site, comprised mostly of roads and car parking areas

3.1.1.25 Standing water

Six ponds are located within 250m of the site. Three ponds are located within the site boundary, all six ponds were previously surveyed by Arcadis as part of the outline planning application and the pond references referred to in this report (Arcadis, 2018a).

3.1.1.26 Riparian corridor (Riparian corridor' within the site consists of a 1 - 3m wide stream /river largely surrounded on both banks by trees and scrub.).

A watercourse, the East Stour River, runs from adjacent to Westenhanger Castle in the north of the site, east-to west. This is largely shallow (less than 1m deep) and up to 2 – 3 m wide, and largely slow flowing. The river within the site has minimal emergent vegetation. The bankside vegetation included Willow, Common Nettle, Bramble and limited areas of Pond Sedge (*Carex riparia*)and Common Reed (*Phragmites australis*).

3.1.1.27 Invasive Plant Species

No non-native invasive plant species were recorded during the 2020 Phase 1 habitat survey, however, a few non-native invasive plant species, including Virginia Creeper (*Parthenocissus quinquefolia*), which was recorded adjacent to the railway north of the castle, Parrot's Feather (*Myriophyllum aquaticum)* and Canadian Pondweed (*Elodea canadensis)* were recorded during the previous Arcadis habitat surveys conducted in 2018.

3.2 Protected and Notable Species

This section reports the results of the assessments conducted in 2020 for great crested newts and bats), and results of assessments conducted in relation to the previous planning application, where relevant. Where features were given identification numbers for the OPA submission in 2019, these are also utilised here.

3.2.1 Amphibians

3.2.1.1 HSI and eDNA assessments

Eight ponds are located within 500m of the site (ponds 19, 20, 21a, 21b, 22, 23, 23a and 24), two of these ponds, 23 and 23a, are located within the site boundary (as presented in Image 1).

Previous HSI and population surveys were conducted on these eight ponds in 2017 (Arcadis, 2018a). These results recorded a small GCN population in pond 23. The remaining ponds were negative for GCN , indicating likely absence.

During the 2020 Extended Phase 1 habitat survey, surveyors incidentally recorded GCN eggs within pond 23, confirming continued presence and GCN breeding activity. Furthermore, the hedgerows, scrub and grassland habitats provide suitable terrestrial habitat required for sheltering, commuting and foraging GCN.

In 2020, eight ponds were initially assessed using HSI techniques. In one area, outside of the survey boundary, but within 500m of the proposed works, was an area of ephemeral waterbodies, 20, 21a and 21b. These ponds were located to the west of the Folkestone Racecourse Lake. At the time of the survey, these ponds were considered to be interconnected, as the area encompassing the ponds was flooded, connecting all three ponds. These ponds were therefore assessed as a single feature, both within the HSI and the eDNA.

For ponds 19 and 23, conditions on site had not significantly changed since the last assessment in 2017, therefore no eDNA survey was undertaken. Pond 19 was significantly stocked with fish and is considered unsuitable for GCN, and pond 23 was confirmed as having GCN presence (GCN eggs were present).

The results of the 2020 HSI assessments are presented below in Table 3.

Based upon the results of the HSI assessments, a subset of the ponds were assessed using eDNA techniques. In summary, three ponds (22, 23 and 23a) were found to support GCN and are located in the immediate vicinity of or within 100m of the proposed works. No further consideration in relation to GCN is required in relation to the other ponds within the vicinity of the castle. The results letters from ADAS (the analysis company) presented in Appendix D.

Table 3: 2020 HSI and eDNA survey results. TNs in Figure 1

HSI element / Further Survey		Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note/ SI Value	Pond no. / Target Note/ SI Value
Pond		Pond 19	Pond 20/21a/21b	Pond 22	Pond 23	Pond 23a	Pond 24
Target Note		TN 6	TN 5	TN 1	TN 2	TN 3	TN 4
SI1	Geographic location	1	1	1	1	1	1
SI 2	Pond area	0.85	0.05	0.5	0.6	0.1	0.3
SI 3	Pond permanence	0.9	0.1	0.9	0.1	0.1	0.9
SI 4	Water quality	0.67	0.67	0.67	0.67	0.67	0.67
SI 5	Shade	0.7	1	0.2	1	1	1
SI 6	Water fowl effect	0.67	1	1	1	1	1
SI 7	Fish presence	0.01	1	0.67	1	1	0.33
SI 8	Pond Density	1	1	1	1	1	1
SI 9	Terrestrial habitat	1	1	0.67	0.67	0.67	0.33
SI 10	Macrophyte cover	0.35	1	0.3	1	0.9	0.45
HSI Score		0.49	0.57	0.62	0.70	0.58	0.62
HSI Value		Poor- as per 2017	Below average	Average	Good	Below average	Average

HSI element / Further Survey	Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note / SI Value	Pond no. / Target Note/ SI Value	Pond no. / Target Note/ SI Value
eDNA subsequently conducted	No	Yes	Yes	No as GCN, presence confirmed	Yes	Yes
eDNA results	N/A – pond unsuitable for GCN	Negative	Positive	N/A – not conducted – presence confirmed due to eggs	Positive	Negative

3.2.2 Reptiles

Dedicated reptile surveys were undertaken between May and September 2017 (Arcadis, 2019b). Ten survey visits were conducted across the original Otterpool Park OPA survey area, including an area of grassland to the north of Westenhanger castle. Reptile species recorded during these surveys included slow worm (*Anguis fragilis*) grass snake (*Natrix natrix)* and common lizard (*Zootoca vivipara*).

The hedgerow, scrub and grassland habitats provide suitable terrestrial habitat for sheltering, commuting/ foraging opportunities for reptiles on site.

3.2.3 Birds

Breeding bird and barn owl surveys were undertaken in 2017 (Arcadis, 2019c). Eight surveys were undertaken between March and June 2017. A total of 85 species were recorded during the field surveys, of these 31 were considered notable species. Eight species listed under Schedule 1 Part 1 of the Wildlife and Countryside Act (WCA) (as amended) (HMSO, 1981) were also recorded during the surveys, species recorded included barn owl (*Tyto alba*), black redstart (*Phoenicurus ochruros*), brambling (*Fringilla montifringilla*), fieldfare (*Turdus pilaris),* Kingfisher (*Alcedo atthis*), Mediterranean gull (*Ichthyaetus melanocephalus),* merlin (*Falco columbarius),* red kite (*Milvus milvus)* and redwing (*Turdus iliacus).*

Furthermore, buildings across the scheme were assessed for their potential to support barn owl in 2017 – 2018. A precautionary assessment that barn owl may be breeding on site was made, although this was not confirmed during the 2017-2018 surveys. Building 2a in Cluster 2B was considered to be a potential nest site.

The scattered trees, hedgerows, scrub, grassland and waterbodies present within the site provide suitable habitat for a range of bird species.

During the 2020 walkover, evidence of barn owl (pellets and chalky droppings) were recorded inside Building 2a on the eastern aspect of the barn. Barn owl presence is confirmed on site.

3.2.4 Bats

External building assessments were undertaken between October 2016 and August 2018 for roosting bats (Arcadis, 2018b). Buildings within the site were assessed for their potential to support roosting bats.

Emergence and re-entry surveys were also conducted on buildings within the site during 2017 and 2018. During the surveys a soprano pipistrelle (*Pipistrellus pygmaeus*) roost and a roost for an unidentified bat species were recorded in Building 2h in cluster 2A.

The results of the 2020 building assessments and ground-based tree assessments are outlined below. The mosaic of hedgerow/ scrub, grassland and watercourses on site provide good opportunities for foraging and commuting bats.

3.2.4.1 Building Assessment results

A total of five structures were assessed for their potential to support roosting bats on the site. One of these structures, structure 2j, a wooden boat, was assessed as having negligible roosting potential, structure 2g, the surviving castle walls were assessed as low roosting potential and three buildings, 2a, 2f and 2h, were confirmed as bat roosts due to the presence of bat droppings.

The table below (Table 4) outlines the areas assessed, the clusters within these areas and the buildings within each of these clusters. This naming convention is consistent with the results from the 2016-2018 surveys. The location of each of these buildings is presented in Figure 3 (Appendix A). Full details of the assessments conducted, and the results are presented in Table 5: Results of the bat building assessment.

Table 4: Building areas, clusters and buildings assessed

Survey Area	Building Cluster	Building no / roost category					
		Negligible	Low	Moderate	High	Confirmed Roosts	Total No. of buildings assessed
2	2A	2j	2g	-	-	2h, 2f	4
	2B	-	-	-	-	2a	1
TOTAL		**1**	**1**	**0**	**0**	**3**	**5**

Table 5: Results of the bat building assessment

Area & cluster number	Building reference	Building type	Building description	Date of assessment	Surrounding habitat	Internal inspection conducted?	Potential roosting features	Evidence of bats	Photograph	Summer roost potential (initial assessment)	Further survey recommended
2A	2f	Converted barn with marquee attached on the south eastern aspect	Single storey stone building with pitched, tile roof. On southern aspect, there is an outbuilding extension, open on the eastern aspect. This is used for storage. Ridge tiles, brickwork and mortar in good condition and well-sealed. Internally, rooms well-sealed, and no gaps or crevices observed on the ground floor. Within the loft, roof lining boarded, insulation was present within the sloped area of the eaves.	25 March 2020	Scattered trees, small watercourse located to the north and moat containing water on the south east of the structure. Arable and grassland with hedgerows surrounds the complex of buildings in wider landscape.	Yes – building and loft inspection	Large opening in soffit on the south eastern corner of building, above entranceway. Lifted tiles on eastern and southern aspect of building. Gaps under the soffit on the southern aspect of building, in outbuilding extension. Gap on the north east corner of stonework which extends in.	Small number of scattered droppings found within loft, midway along the loft floor on the western aspect and towards the south eastern corner of the loft. Droppings were medium sized and characteristic of Brown Long Eared (BLE)/ *Myotis* spp. Some potential feeding remains (Peacock butterfly *Aglais io*) were found towards the south east aspect of the loft; on top of loft insulation.	  	Confirmed bat roost	Yes – three separate surveys. Two dusk emergence and one dawn re-entry survey.
2A	2g	Old castle walls with defensive towers	Stone wall attached to Manor House on the eastern aspect. Two defensive towers are present on the northern extent. Wall is solid stone structure. Small thatched gazebo, with wooden structure located south east of the wall.	25 March 2020	Scattered trees, small watercourse located immediately to the north of structure. Arable and grassland with hedgerows surrounds the complex of buildings in wider landscape.	N/A	Majority of the stonework and mortar forming the wall is in good condition. Openings, where old support beams would have been, extend within stonework. Gazebo had negligible potential to support roosting bats.	N/A	  	Low	Yes – at least one emergence / re-entry survey

Area & cluster number	Building reference	Building type	Building description	Date of assessment	Surrounding habitat	Internal inspection conducted?	Potential roosting features	Evidence of bats	Photograph	Summer roost potential (initial assessment)	Further survey recommended
2A	2h	Manor house with medieval castle turret and defensive walls.	Two storey stone and brick building with pitched, tiled roof. Dormer windows with hanging tiles present on eastern, southern and western aspects. Internally, building had a complex of rooms over the two floors and loft present. Building had a complex of rooms and different roof void areas.	25 March 2020	Scattered trees, small watercourse located immediately to the north of structure. Arable and grassland with hedgerows surrounds the complex of buildings in wider landscape.	Yes	Numerous gaps present around the front porch of the building. Loose/ lifted tiles present on all aspects of building. Hanging tiles present on dormer windows. A gap present around the doorframe on the north western aspect of building. <u>Ground Floor:</u> Large gaps and cracks between brickwork and timber beams in hallway and at bar on the northern extent of building. <u>First Floor:</u> Gap between brickwork and timber beams on ceiling <u>Loft:</u> Gaps between timber beam jolts	Scattered droppings found on the ground floor bar on north eastern aspect. Droppings were of small size and characteristic of *Pipistrellus* spp. Numerous droppings were found attached to the chimney breasts located on the northern aspect and north western aspect. Droppings were of mixed sizes and characterisitc of *Pipistrellus* spp and BLE/ *Myotis* spp. <u>Loft Spaces:</u> Scattered droppings found in loft space on the south western aspect of building. Droppings small size and characeristic of *Pipistrellus* spp. Numerous bat droppings were recorded on the loft hatch door on the first floor landing. Droppings were medium size and characterisitc of BLE/ *Myotis* spp.	  	Confirmed bat roost	Yes – three separate surveys. Two dusk emergence and one dawn re-entry survey.
2A	2j	Wooden boat	Large, old wooden boat located east of Manor House. Paintwork appeared in good condition.	25 March 2020	Scattered trees, small watercourse located to the north west of structure. Arable and grassland with hedgerows surrounds the complex of buildings in wider landscape.	No	No Features potentially suitable to support roosting bats were observed.	None		Negligible	None

Area & cluster number	Building reference	Building type	Building description	Date of assessment	Surrounding habitat	Internal inspection conducted?	Potential roosting features	Evidence of bats	Photograph	Summer roost potential (initial assessment)	Further survey recommended
2B	2a	Large 'L' shaped farm barn; used for storage.	Stone barn with pitched, tiled roof. Building had open access for all doorways and windows. Large porches with pitched roofs and timber cladding over doorways on the north east and north west aspect of barn. Internally, wooden beams with no roof lining exposing the rafters. Eastern aspect was a large open area within the barn. The south western area of the building had brick walls and a first level floor (in disrepair). In some areas the roof was being repaired and replaced, new roof lining was observed on the southern aspect.	25 March 2020	Scattered trees, small watercourse located immediately to the north of structure. Arable and grassland with hedgerows surrounds the complex of buildings in wider landscape.	Yes – building only	Multiple access points via open doorways and windows observed. Lifted tiles present on all aspects of building. Gaps under eaves between the timber frames and stonework on all aspects of building. Multiple gaps between internal timber frames and joists. On south western aspect of building, cracks and crevices in internal brickwork	Scattered bat droppings were found adjacent to doorway, on top of farm equipment, on the eastern aspect of building. Droppings were of a small size and characteristic of *Pipistrellus* spp. Potential feeding remains (Peacock butterfly) were found internally, adjacent to the northern building wall.	 	Confirmed bat roost	Yes – three separate surveys. Two dusk emergence and one dawn re-entry survey.

3.2.4.2 Bat DNA Analysis

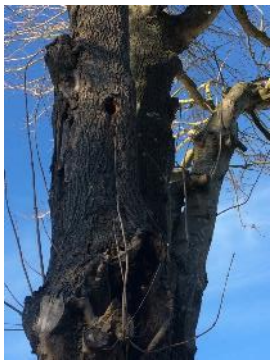
Bat droppings were collected in Building 2a on a previous survey in April 2018 and the DNA analysis confirmed this as common pipistrelle roost (Arcadis, 2018b), therefore no further analysis of eDNA was required.

Droppings were observed in Buildings 2a, 2f and 2h during the Phase 1 habitat survey walkover in 2020. Fresh bat droppings were collected from Buildings 2f and 2h. The results of DNA analysis confirmed that building 2f is a brown long-eared roost and Building 2h is a common pipistrelle, brown long-eared and Natterer's bat roost.

3.2.4.3 Ground-based tree assessments

The results of the ground-based tree assessments are presented in Table 6 below. To summarise, 10 trees were identified with PRF's. Six trees were assessed as having moderate bat roosting potential and four trees were assessed as having low bat roosting potential. The location of these trees is presented in Figure 2, Appendix A.

Table 6: Ground-based Tree Assessment Results

Tree reference	Grid reference	Species	Description of feature(s)	Bat roosting potential	Photograph	Further survey recommended
T1	TR 12317 37139	Maple *Acer sp.*	Woodpecker hole on main stem 5-6m from ground on S aspect, Several cavities/ wounds on main stem on SW aspect.	Moderate		Yes – aerial inspection survey
T2	TR 12324 37129	Maple sp.	Cavity on main stem 2m from ground on E aspect. Pruning cut 5-6m from ground on S aspect	Moderate		Yes – aerial inspection survey

Tree reference	Grid reference	Species	Description of feature(s)	Bat roosting potential	Photograph	Further survey recommended
T3	TR 12343 37126	Unknown species	Tree covered in light ivy growth. Ivy not considered a PRF but may obscure PRFs.	Low		Yes – Soft felling under ecological supervision
T4	TR 12392 37189	Sycamore *Acer pseudoplatanus*	Knot hole 2-3m from ground on SE aspect.	Moderate		Yes – aerial inspection survey
T5	TR 12421 37214	Maple sp.	3x pruning cuts 10-12m from ground on E aspect Pruning cut 10m from ground on S aspect. Large vertical wound on main stem at ground level – extends 2m high, on E aspect.	Moderate		Yes – aerial inspection survey

Tree reference	Grid reference	Species	Description of feature(s)	Bat roosting potential	Photograph	Further survey recommended
T6	TR 12431 37218	Maple sp.	Tree covered in epicormic growth which may obscure PRFs. Epicormic growth not considered a PRF.	Low		Yes – Soft felling under ecological supervision
T7	TR 12437 37235	Maple sp.	Tree covered in epicormic growth which may obscure PRFs. Epicormic growth not considered a PRF.	Low		Yes – Soft felling under ecological supervision
T8	TR 12445 37241	Sycamore	2x wounds on limbs extending from main stem, approx. 12+ from ground,	Moderate	N/A	Yes – aerial inspection survey
T9	TR 12495 37242	Ash *Fraxinus excelsior*	Feature on main stem at ground level which extends 3m high.	Low		Yes – Soft felling under ecological supervision

Tree reference	Grid reference	Species	Description of feature(s)	Bat roosting potential	Photograph	Further survey recommended
T10	TR 12357 37211	Ash	Tear out on main stem which may extend into cavity, 2-3m high, on NW aspect	Moderate		Yes – aerial inspection survey

3.2.5 Badger (confidential)

[redacted]

3.2.6 Otter and Water vole

Water vole surveys were undertaken between spring 2017 and summer 2018 (Arcadis, 2019e). Forty-six waterbodies were surveyed throughout the site, the East Stour River, located within the survey area, north west of the castle (Waterbody 4) recorded a low population of water vole.

Otter surveys conducted between 2017 and 2018 and identified probable otter signs to the west of the site, along the East Stour River between Harringe Lane and Somerville Court Farm on a single occasion. No evidence of otter was found within the site during the 2017-2018 surveys.

During the 2020 walkover, the watercourse located north of the castle grounds was assessed, no signs of water vole or otter were recorded during this assessment. However, the watercourse is considered to provide suitable burrowing/ foraging habitat for water voles and has potential to support foraging and commuting otters. Water vole have also been recorded within this stretch of the East Stour in previous surveys, and a precautionary assessment that water vole may be present is made.

4 Summary of Results and Recommendations

Table 7 below provides a summary of the survey data collected by Arcadis as part of the original Otterpool Park outline planning application undertaken between 2016 – 2019 and the results of the surveys conducted in March – April 2020. Potential impacts to habitats and protected/ notable species as a result of the scheme has been separated by the two phases of proposed works with a brief summary of recommendations for further survey work and mitigation outlined as appropriate..

Table 7: Summary Survey Results and Recommendations

Ecological Feature	Date of assessment	Description	Potential Impacts	Recommendations	Mitigation	Photograph	Further Surveys recommended
Habitats	25 March 2020	Scattered scrub, hedgerows, scattered mature and semi-mature trees, plantations woodland, waterbodies and amenity grassland are present on the site. Seven waterbodies, six ponds and one stream, are located within 250m of the site. Three ponds are located within the site boundary and the East Stour River, is located to north of the site, where it flows to from the north to the west of the site. Several buildings and/ or structures are located within the survey area. These buildings were previously surveyed by Arcadis as part of the outline planning application and the building references referred to in this report (Arcadis, 2018b). Buildings on site included the main Castle/ Manor house, farm buildings and commercial buildings.	**Autumn 2020 Works** Scrub, scattered trees, plantation woodland and hedgerow habitat is likely to be removed, south of the Castle. **Subsequent Proposed Works** Scrub and plantation woodland hedgerow habitat is likely to be removed Reflooding of the moat will impact the current grassland habitat but create a valuable biodiversity habitat. Proposed renovation works are likely to be undertaken on a number of buildings within the site.	**Autumn 2020 Works** It is recommended that the extent of any vegetation clearance is identified prior to the commencement of the works. An arboricultural survey in accordance with BS 5837:2012 should be undertaken. It is understood that the Client is providing this deliverable in-house. This should identify root protection areas and provide information on the arboricultural value of these features and provide advice on suitable protection measures. **Subsequent Proposed Works** Once the scope of the subsequent works are determined, it is recommended an ecologist is consulted to discuss the works and any potential impacts to habitats and protected species.	**Autumn 2020 Works & Subsequent Works** The retention/ replacement of habitats should be implemented. Habitats to be replaced should be re-provisioned (either in-situ or ex-situ), preferably using native species and a mixture of trees and shrubs that provide nectar, fruit or seeds to maximise foraging opportunities for invertebrates, birds and bats An ecologist and arboriculturist should contribute to the evolution of the development and landscaping design to minimise biodiversity loss and to maximise the replacement of green infrastructure with regards to biodiversity. The proposed works should aim to be sustainable and produce a net gain for biodiversity and nature conservation, which compliments the commitment to achieve biodiversity net gain as outlined in the Otterpool Park OPA application. Additional biodiversity enhancements could include the creation of unmown strips of grass and the provision of artificial bird and/or bat boxes targeted towards species that are notable regionally or nationally.	 	Yes

Ecological Feature	Date of assessment	Description	Potential Impacts	Recommendations	Mitigation	Photograph	Further Surveys recommended
Amphibians including Great Crested Newts (GCN)	April – May 2017 (Arcadis, 2018a) 25 March 2020	Eight ponds are located within 250m of the site (ponds 19, 20, 21a, 21b, 22, 23, 23a & 24). HSI and presence/ likely absence surveys were undertaken in 2017. A small GCN population was recorded in pond 23 (Arcadis, 2018a). During the 2020 walkover, surveyors found GCN eggs within pond 23, confirming continued presence and GCN breeding activity. HSI assessments were undertaken on all six ponds. The conditions for ponds 19 and 23 had not changed since the 2017 surveys. eDNA survey results confirmed GCN presence in ponds 22 and 23a. The hedgerows, scrub and grassland habitats provide suitable terrestrial habitat required for sheltering, commuting and foraging habitat. In summary, three ponds (22, 23 and 23A) are known to support GCN and are located within 100m of the proposed works.	**Autumn 2020 Works** The proposed works are considered unlikely to impact the ponds on site directly. However, there is the potential to disturb and/or injure/kill resting or hibernating newts during habitat clearance operations. **Subsequent Works** It is not possible to determine the potential impact upon GCN at this stage of the proposal evolution. Once the scope of the subsequent works are determined, it is recommended an ecologist is consulted to discuss the works and any potential impacts to GCN.	**Autumn 2020 Works & Subsequent Works** Depending on the details of the proposed works it may be possible to undertake the works using reasonable avoidance measures outlined in a Method Statement. This would include mitigation such as timing of works, methodology and supervision by a suitability qualified ecologist to mitigate constraints. However, if the proposed works have the potential to significantly impact GCN a protected species licence may be required. This will need to be informed by updated population surveys.	**Autumn 2020 Works & Subsequent Works** Habitats of value e.g. ponds for GCN should be retained and where possible enhanced. Enhancement and habitat creation e.g. replanting/ provision of hibernacula, should take place around the East Stour River corridor and within the Westenhanger Castle grounds.	N/A	No (further surveys may be required if a licence is necessitated)
Reptiles	May – September 2017 (Arcadis, 2019b) 25 March 2020	Dedicated reptile surveys were undertaken between May and September 2017 (Arcadis, 2019b). Ten survey visits were conducted across the original Otterpool Park OPA survey area. Reptile species recorded during these surveys included slow worm (Anguis fragilis) grass snake (Natrix natrix) and common lizard (Zootoca vivipara). The hedgerow, scrub and grassland habitats provide suitable terrestrial habitat for sheltering, commuting/ foraging opportunities for reptiles on site.	**Autumn 2020 Works & Subsequent Works** There is the potential to disturb and/or injure/kill resting or hibernating newts during habitat clearance operations.	**Autumn 2020 Works & Subsequent Works** Any habitat removal should be undertaken following Precautionary Working Methods (PWM) to minimise the risk of incidental injury or mortality of reptiles. Habitat manipulation (clearance undertaken in stages) should be used to encourage the dispersal of reptiles into suitable adjacent habitats.	**Autumn 2020 Works & Subsequent Works** Habitats of value for reptiles should be retained and where possible habitats enhanced along the East Stour River corridor and within the Westenhanger Castle grounds.	N/A	No
Birds	March – June 2017 (Arcadis, 2019c) 25 March 2020	Breeding bird and barn owl surveys were undertaken in 2017 (Arcadis, 2019c). Eight survey visited were undertaken between March & June 2017. A total of 85 species were recorded during the field surveys, of these 31 were considered notable species. Eight species listed under Schedule 1 Part 1 of the WCA (HMSO, 1981) were also recorded during the surveys, species including barn owl (Tyto alba). Furthermore, buildings across the scheme were assessed for their potential to support barn owl between 2017 and 2018. A precautionary assessment that barn owl may be breeding on site was made, although this was not confirmed during the 2017-2018 surveys. Building 2a was considered to be a potential nest site. The scattered trees, hedgerows, scrub, grassland and waterbodies present within the site provide suitable habitat for a range of bird species on site. During the 2020 walkover, evidence of barn owl (pellets and chalky droppings) were recorded inside Building 2a on the eastern aspect of the barn.	**Autumn 2020 Works** There is the potential to disturb and/or injure/kill nesting birds within during clearance operations e.g. hedgerow/ scrub clearance. **Subsequent Works** There is the potential to disturb and/or injure/kill nesting birds within during clearance operations e.g. hedgerow/ scrub clearance. There is the potential to disturb barn owls through potential renovation works relating to Building 2a, which was found to support barn owl. This is a schedule 1 species on the WCA therefore has increased protection against disturbance whilst breeding.	**Autumn 2020 Works** Avoid vegetation clearance during the core bird nesting season (March to August inclusive) or undertake a nesting bird check prior to removal of suitable nesting bird habitats. **Subsequent Works** Avoid vegetation clearance during the core bird nesting season (March to August inclusive) or undertake a nesting bird check prior to removal of suitable nesting bird habitats. Depending on the details of the proposed works, if there is the potential to disturb nesting barn owls, a Natural England Licence in relation to barn owls may be required. It is recommended works in the bird breeding	**Autumn 2020 Works** Habitats should be replaced, and could be incorporated into landscape designs for off-site areas to achieve net gain.	 Barn owl pellet	Further survey work may be required in relation to barn owls and any renovation works on Building 2a. This would involve determining if the building is occupied by barn owl when works are scheduled to take place.

Ecological Feature	Date of assessment	Description	Potential Impacts	Recommendations	Mitigation	Photograph	Further Surveys recommended
				season are avoided in / around this structure.			
Bats	October 2016 – August 2018 (Arcadis, 2018b) March 25 2020	The mosaic of hedgerow/ scrub, grassland and watercourses on site provide good opportunities for foraging and commuting bats and there is confirmed bat roosting within the site. External building assessments were undertaken between October 2016 and August 2018 for roosting bats (Arcadis, 2018b). Buildings within the site were assessed for their potential to support roosting bats. Emergence and re-entry surveys were conducted on buildings within the site during 2017 and 2018. During the surveys a soprano pipistrelle (Pipistrellus pygmaeus) roost and an unknown bat roost were identified in Building 2h. Extensive foraging activity of common (Pipistrellus pipistrellus) and soprano pipistrelles were observed, to the north and south of Building 2h. Noctules were also recorded foraging/ commuting during these surveys. Detailed external and internal building inspections were undertaken on 25 March 2020. In summary, one building was assessed as having low potential to support roosting bats, and three buildings recorded evidence of roosting bats, 2a, 2f and 2h (See Figure 3, Appendix A). Ground-based tree assessments were also undertaken during the 2020 walkover. A number of trees were identified with moderate and low bat roosting potential. The detailed results of the building inspections and tree assessments are outlined below in Tables 5 and 6. Locations of trees with bat roosting potential are shown on Figure 2 (Appendix A).	**Autumn 2020 Works** A number of trees located on site were assessed as having potential to support roosting bats. Loss of potential bat roosts during tree removal works. **Subsequent Works** Several buildings and trees located on site were either confirmed as bat roosts or have the potential to support roosting bats. Loss of confirmed/ potential bat roosts during renovation and/ or tree removal works.	**Autumn 2020 Works - Trees** Should trees assessed as having moderate potential to support roosting bats require removal; up to two aerial inspections are recommended to determine the presence/ likely absence of bats. Dependent upon the findings of these surveys, further emergence / re-entry surveys may be required to ensure legal compliance or to inform an application for a protected species licence application. For trees with low potential for roosting bats, it is recommended that PRFs present within trees are soft felled under the supervision of a bat licenced ecologist **Subsequent Works - Buildings** Prior to the proposed works taking place, additional survey work is required to confirm roost type and bat species' present. These surveys must be undertaken during the bat active period between May and August inclusive. Following the further surveys and prior to the commencement of works it may be necessary to apply for a European Protected Species (EPS) licence from Natural England to allow certain refurbishment works to proceed in line with current legislation on bats. This will depend upon the exact details and methodologies of the works. Trees Recommendations as outlined above in the Autumn 2020 works.	**Autumn 2020 Works & Subsequent Works** Where possible bat roosts within trees and buildings should be retained. Disturbance or removal of any roosts is likely to require a protected species licence and would include the provision of alternative roosting opportunities for bats such as bat barns/ houses and/ or bat boxes. Habitats of value for bats should retained and where possible habitats enhanced along the East Stour River corridor and within the Westenhanger Castle grounds.	See Tables 5 and 6 in section 3.2.4.	Buildings For buildings, 2a, 2f and 2h (confirmed bat roosts), - three separate surveys. Two dusk emergence and one dawn re-entry survey will be requireed if the strucutre is to be impacted. For building 2g (low bat roosting potential) - at least one emergence / re-entry survey will be requireed if the strucutre is to be impacted.. Trees Trees with moderate roosting potential (T1, T2, T4, T5, T8 & T10) – up to two aerial/ tree climbing inspections are undertaken on each tree to determine the presence/ likely absence of roosting bats if these trees are to be removed or impacted. Trees with low roosting potential (T3, T6, T7 & T9) – potential roosting features present within trees should be soft felled under the supervision of a bat licenced ecologist. -

Ecological Feature	Date of assessment	Description	Potential Impacts	Recommendations	Mitigation	Photograph	Further Surveys recommended
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dormouse	April 2017 – November 2018 (Arcadis, 2019d) March 25 2020	Targeted dormouse surveys were undertaken between April 2017 to November 2018 and included the Otterpool Park OPA survey area. Within the survey area no dormice were recorded and are not considered to be present (Arcadis, 2019d). Hedgerow/ scrub habitat is present on site, however, based on aerial imagery and an assessment of these habitats on site during the 2020 walkover, these habitats are not considered suitable to support dormouse populations within the immediate site as there is limited connectivity and continuity of woodland and scrub habitat. However, it is known that dormouse are present in Harringe Brooks woods to the west of the site. The likelihood of dormouse occurring on the site is therefore assessed as negligible.	**Autumn 2020 Works & Subsequent Works** No foreseen impacts.	**Autumn 2020 Works & Subsequent Works** None required.	**Autumn 2020 Works & Subsequent Works** None required.	N/A	No
Otter & Water Vole	2017 – 2018 (Arcadis, 2019e) March 25 2020	Otter and water vole surveys were undertaken between spring 2017 and summer 2018 (Arcadis, 2019e). Forty-six waterbodies were surveyed throughout the site. There was confirmed water vole presence, including the watercourse located north of the castle site (Waterbody 4) which recorded a low population of water vole. Otter surveys conducted between 2017 and 2018 and identified probable otter signs to the west of the site, along the East Stour River between Harringe Lane and Somerville Court Farm. No evidence of otter was found within the site during the 2017-2018 surveys. During the 2020 walkover, the watercourse located north of the castle grounds was assessed, no signs of water vole or otter were recorded during this assessment. However, the watercourse is considered to provide suitable burrowing/	**Autumn 2020 Works** No foreseen impacts. **Subsequent Works** Water vole and otter may be impacted by the reflooding of the moat when works break into the stream. This will need to be reassessed once the details of the works are finalised.	**Subsequent Works** Depending on the details of the proposed works it may be possible to undertake the works using reasonable avoidance measures outlined in a Method Statement. Any works undertaken would need to be sensitive and apply precautionary measures to prevent killing or injury water vole. However, if the proposed works have the potential to significantly impact water vole a protected	Subsequent Works Where possible the proposed works should avoid impacting water vole burrows within the East Stour River. Retention and enhancement of habitats to ensure water vole can continue to utilse the site.		Update surveys are likely to be reuired to inform the subsequent works.

Ecological Feature	Date of assessment	Description	Potential Impacts	Recommendations	Mitigation	Photograph	Further Surveys recommended
		foraging habitat for water voles and has potential to support foraging and commuting otters. Water vole have also been recorded within this stretch of the East Stour in previous surveys, and a precautionary assessment that water vole may be present is made. No evidence of otter was recorded during the 2020 walkover, however, the river has potential to support commuting otters.		species licence may be required. It is recommended that once the scope and extent of the proposed works are finalised, an ecologist is consulted to determine whether the works have potential to impact water voles in the East Stour River.			

5 Summary

Recommendations for further survey work and mitigation measures in relation the proposed works on site are described below.

5.1 Autumn 2020 proposed works

5.1.1 GCN and Reptiles

Three ponds (22, 23 and 23A) are known to support GCN and are located within 100m of the proposed works. Habitats on site have the potential to support reptiles.

Dependent upon the details of the works and the proposed vegetation removal methodology, it may be necessary to obtain a protected species licence in relation to the potential presence of GCN in the works area. However, there is potential that the works can be conducted and managed in such a way that this can be avoided (an approach referred to as reasonable avoidance measures). This is likely to include recommendations on the timing of works, works methodologies and that any vegetation clearance is conducted under a precautionary method statement and under the supervision of a suitably qualified ecologist.

To safeguard reptiles, any habitat removal should be undertaken following Precautionary Working Methods (PWM) to minimise the risk of incidental injury or mortality of reptiles. Habitat manipulation (clearance undertaken in stages) should be used to encourage the dispersal of reptiles into suitable adjacent habitats.

5.1.2 Nesting Birds

Habitats on site have the potential to support nesting birds.

Any vegetation clearance required to facilitate the works should be undertaken outside of the breeding bird season (between October and February). Where this is not possible, the clearance must be undertaken under the supervision of a suitability qualified ecologist.

5.1.3 Bats

Ten trees were recorded across the survey area with potential to support bat roosts. Six trees were assessed as having moderate bat roosting potential and four trees were assessed as having low bat roosting potential.

Should any of these trees assessed as having moderate potential for roosting bats require removal; up to two aerial inspections are recommended to determine the presence/ likely absence of bats. Dependent upon the findings of these surveys, further emergence / re-entry surveys may be required to ensure legal compliance inform an application for a protected species licence application.

For trees with low potential for roosting bats, it is recommended that these trees are soft felled under the supervision of a bat licenced ecologist.

5.2 Subsequent proposed works

5.2.1 GCN and Reptiles

GCN presence is confirmed in three ponds located within 100m of the site. Habitat on site also have the potential to support reptiles.

Dependent upon the details of the works and the proposed vegetation removal methodology, it may be necessary to obtain a protected species licence in relation to the potential presence of GCN in the works area. However, there is potential that the works can be conducted and managed in such a way that this can be avoided (an approach referred to as reasonable avoidance measures). This is likely to include recommendations on the timing of works, working methodologies and that any vegetation clearance is conducted under a precautionary method statement and under the supervision of a suitably qualified ecologist.

To safeguard reptiles, any habitat removal should be undertaken following Precautionary Working Methods (PWM) to minimise the risk of incidental injury or mortality of reptiles. Habitat manipulation (clearance undertaken in stages) should be used to encourage the dispersal of reptiles into suitable adjacent habitats.

5.2.2 Barn Owl

Evidence of barn owl was recorded within Building 2a, including a barn owl pellet and fresh droppings on the beams of the barn.

It is recommended that the scope and extent of the proposed works are finalised, and an ecologist consulted to determine whether the works have potential to impact barn owls roosting within the building. Depending on the details of the proposed works, if there is the potential to disturb nesting barn owls, a Natural England Licence in relation to barn owls may be required, however it is recommended that works are programmed outside of the bird breeding season to avoid this. Further survey work may be required in relation to barn owls and any renovation works on Building 2a. This would involve determining if the building is occupied by barn owl when works are scheduled to take place.

5.2.3 Bats

5.2.3.1 Buildings and Structures

Five structures/ buildings were inspected for their potential to support roosting bats.

Buildings 2a, 2f and 2h were identified as confirmed bat roosts. Fresh bat droppings were collected from each building and sent for DNA analysis. Building 2h is a previously confirmed soprano pipistrelle and common pipistrelle roost, building 2f is a confirmed brown long-eared roost and Building 2h is a confirmed common pipistrelle, brown long-eared and Natterer's bat roost. Recommendations for further surveys on each building include three separate dusk emergence and/or dawn re-entry surveys to characterise the type of roosts, should these structures be impacted by the proposed works. Depending on the scale of the works, it may be necessary to apply for an European Protected Species Mitigation (EPSM) Licence to allow the works to proceed in line with current legislation on bats.

Structure 2g, the Castle Walls, was assessed as having low potential to support roosting bats and structure 2j was assessed as having negligible potential to support roosting bats. The gazebo that is located adjacent to the Castle Walls was also assessed as having negligible potential to support roosting bats. No further recommendations are made in relation to structure 2j or the gazebo.

5.2.3.2 Trees

Ten trees were identified with bat roosting potential. Six trees were assessed as having moderate bat roosting potential and four trees were assessed as having low bat roosting potential. If these trees require removal during the subsequent works, the recommendations outlined in section 5.13, above apply.

5.2.4 Badger (confidential)

[redacted]

5.2.5 Water Vole

A low population of water vole was recorded within waterbody 4, the East Stour River, located to the north of the castle during previous surveys. Water vole may be impacted by the reflooding of the moat when works break into the stream.

Depending on the scope of the proposed works it may be possible to undertake the works using reasonable avoidance measures outlined in a Method Statement. Any works undertaken would need to be sensitive and apply precautionary measures to prevent killing or injury water vole.
However, if the proposed works have the potential to significantly impact water vole a protected species licence may be required. It is recommended that once the scope and extent of the proposed works are finalised, an ecologist is consulted to determine whether the works have potential to impact water voles in the East Stour River.

6 References

Arcadis (2018a) Otterpool Park Environmental Statement. Technical Appendix 7.9 Great Crested Newt Survey Report

Arcadis (2018b) Otterpool Park Environmental Statement. Techincal Appendix 7.13 Bat Building Assessment and Emergence/ Re-entry Surveys Report

Arcadis (2018c) Otterpool Park Environmental Statement. Technical Appendix 7.7 Confidential Badger Survey Report

Arcadis (2018d) Otterpool Park Environmental Statement. Technical Appendix 7.4 Arboricultural Scoping Report

Arcadis (2019a) Otterpool Park Environmental Statement. Technical Appendix 7.17 Invertebrate Scoping Report

Arcadis (2019b) Otterpool Park Environmental Statement. Technical Appendix 7.6 Reptile Survey Report

Arcadis (2019c) Otterpool Park Environmental Statement. Technical Appendix 7.15 Breeding Bird and Barn Owl Survey Report

Arcadis (2019d) Otterpool Park Environmental Statement. Technical Appendix 7.8 Hazel Dormouse Survey Report

Arcadis (2019e) Otterpool Park Environmental Statement. Technical Appendix 7.10 Water Vole and Otter Survey Report

Arcadis (2019f) Otterpool Park Environmental Statement. Technical Appendix 7.3 Habitat and Hedgerow Survey Report

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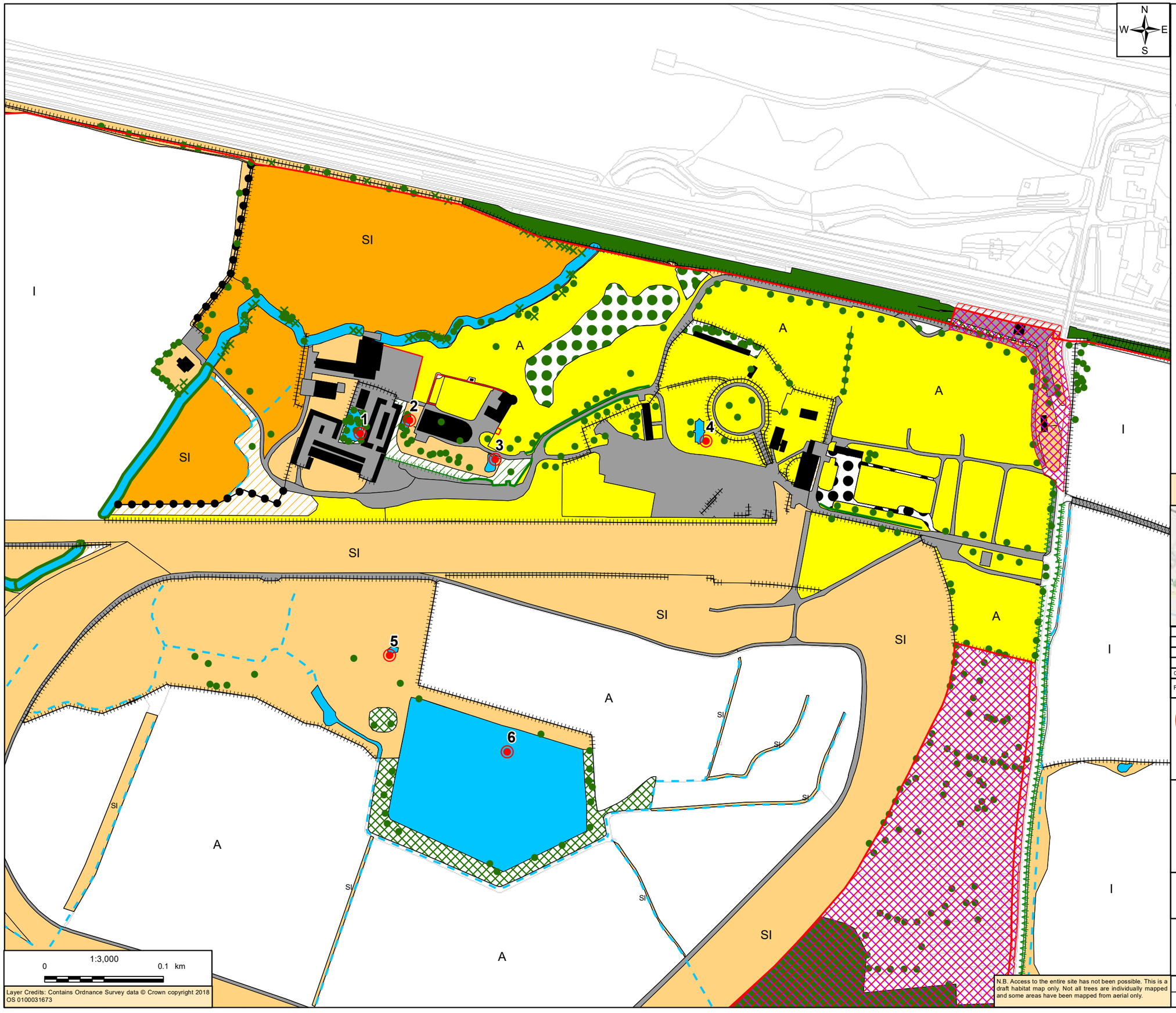
APPENDIX A: Figures

Figure 1: Phase 1 Habitat Map of Castle and Surrounding Area and Target Notes

Table 8: Target Notes

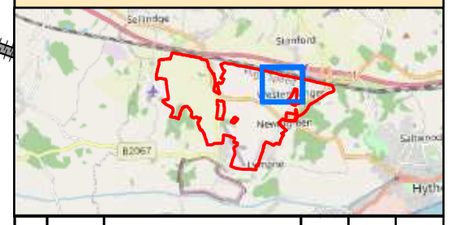
Target Note number	Target note description
1	*Pond 22 – eDNA conducted in 2020 – positive for GCN*
2	*Pond 23 – GCN population (small) known to be present*
3	*Pond 23A - eDNA conducted in 2020 – positive for GCN*
4	*Pond 24 - eDNA conducted in 2020 –GCN absent*
5	*Pond 20, 21a, 21b - eDNA conducted in 2020 –GCN absent*
6	*Pond 19 – Poor HSI, stocked with fish, no habitat change since previous surveys, GCN considered absent*



Legend

- Outline Planning Application Boundary
- Area not fully surveyed
- No Access Area (2020)
- Target notes
- Scattered scrub
- Scattered trees
- Earth Bank
- Hedge with Trees Species-poor (confier)
- Intact Hedge Native Species-rich
- Intact Hedge Species-poor
- Hedge with Trees Native Species rich
- Hedge with Trees Species-poor
- Fence
- Ditch
- Wall
- Broad-leaved semi-natural woodland
- Broad-leaved parkland scattered trees
- Plantation woodland
- Dense/continuous scrub
- Introduced shrub
- Tall ruderal
- A — Amenity grassland
- A — Arable
- SI — Semi-improved neutral grassland
- SI — Species poor semi-improved grassland
- I — Improved grassland
- Bare ground
- Building
- Hardstanding
- Standing water
- Riparian corridor *

* 'Riparian corridor' within the site consists of a 1 - 3m wide stream / river largely surrounded on both banks by trees and scrub.



REV	Date	Description	Drawn	Check	Approv
01	28/05/2020	FOR INFORMATION	NG	BM	MG

ARCADIS Design & Consultancy for natural and built assets
Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe District Council

OTTERPOOL PARK

Phase 1 Habitat Survey
Focused Area

N.B. Access to the entire site has not been possible. This is a draft habitat map only. Not all trees are individually mapped and some areas have been mapped from aerial only.

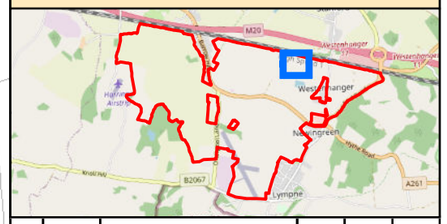
scale	original size	datum	grid
1: 3,000	A3	Sx	OSGB

Figure 2: Ground-based Tree Assessment Results 2020

N
W E
S

Legend

- Area
- Cluster
- Building with confirmed bat roosts
- Structure with low summer roosting potential
- Structure with negligible summer roosting potential
- Buildings not surveyed
- Trees with low bat roosting potential
- Trees with moderate bat roosting potential



2C
2i
2B
2a
2b
2c (d)
Area 2
2c (a)
2e
2c (b) 2c (c)
2c (e)
2d (a)
2d (b)
2d (c)
2c (f)
2A
2g
2g
2h
2f
2j
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10

0 40 Metre

REV	Date	Description	Drawn	Check	Approv
01	30-Apr-20	FOR INFORMATION	PN	JM	MG

ARCADIS Design & Consultancy for natural and built assets

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London
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Folkestone & Hythe District Council

OTTERPOOL PARK

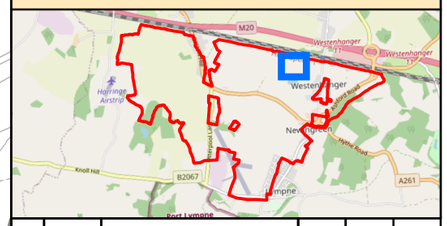
Figure 2
Bat Ground Based Tree Assessment Results 2020

scale	original size	datum	grid
1:1300	A3	Sx	BNG

Figure 3: Bat Inspection Results 2020

Legend

- Area
- Cluster
- Building with confirmed bat roosts
- Structure with low summer roosting potential
- Structure with negligible summer roosting potential
- Buildings not surveyed



REV	Date	Description	Drawn	Check	Approv
01	15-Apr-20	FOR INFORMATION	PN	JM	MG

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OTTERPOOL PARK

Figure 3
Bat Inspection Results 2020

scale	original size	datum	grid
1:1250	A3	Sx	BNG

APPENDIX B – Relevant Legislation and Policy

Legislation

Breeding Birds

Under the Wildlife & Countryside Act 1981 (as amended), a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. All birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to;

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is being built or in use;
- Take or destroy the eggs of any wild bird; and,
- Possess or control any wild bird or egg unless obtained legally.

Birds listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) are afforded additional protection, which makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Bats

All bat species are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act (2000) and the Conservation of Habitats and Species Regulations 2017 (as amended).

Bats are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are subject to the provisions of Section 9 of the Act, which make it an offence to:

- intentionally or recklessly disturb a wild animal listed on Schedule 5 whilst it is occupying a structure or place which it uses for shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a wild animal listed on Schedule 5;
- sell, offer or expose for sale, or to possess or transport for sale alive or dead wild animal listed on Schedule 5 or any part of or anything derived from a wild animal listed on Schedule 5.
- Bats are also listed on Schedule 2 (European protected species of animals) of the Conservation of Habitats and Species Regulations 2010 (as amended) and are subject to the provisions of Regulation 41 which makes it an offence to:
- deliberately capture, injure or kill any wild animal of a European protected species;
- deliberately disturb wild animals of any such species (where disturbance is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or to affect significantly the local distribution or abundance of the species);
- damage or destroy a breeding site or resting place of such an animal; or
- be in possession of, control, transport, sell or exchange, or offer for sale or exchange any live or dead animal of such a species or any part of a wild animal or anything derived from an animal or any part of an animal of such a species.

Protection of Badgers Act 1992

- Badgers are protected from inhumane killing or injury under the Protection of Badgers Act (1992). This Act also protects their setts from damage and prohibits blocking access to their setts.

Water vole

The water vole is protected by national legislation.

It is listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (HMSO, 1981) which makes it an offence to:

- intentionally kill, injure or take a water vole;
- possess or control any live or dead specimen or anything derived from a water vole;
- intentionally or *recklessly damage or destroy any structure or place used for shelter or protection by a water vole;
- intentionally or *recklessly disturb a water vole whilst it is occupying a structure or place which it uses for shelter or protection;
- intentionally or *recklessly obstruct access to any structure or place used for shelter or protection by a water vole;
- sell, offer or expose for sale, or to possess or transport for sale a live or dead water vole or any part of or anything derived from a water vole.

*The term “recklessly” was added as an amendment to the WCA 1981 as a result of the Countryside and Rights of Way Act (HMSO, 2000).

There is no licensing mechanism in place that permits development activities to proceed, that would otherwise result in the contravention of the Wildlife and Countryside Act (WCA, 1981). However, licenses are issued by Natural England for conservation purposes.

Where development activities would result in an offence being committed under the 1981 Act, it may be considered necessary to capture and remove the animals from the affected area providing this is done under a conservation licence. Natural England will only issue such a license if it will result in a conservation benefit for the species. It would be necessary to demonstrate that the potential impacts to the water vole could not reasonably have been avoided and the works must have lawful authority such as an appropriate planning permission.

Otter

The otter is protected by national legislation.

It is listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (HMSO, 1981) which makes it an offence to:

- intentionally or *recklessly disturb an otter whilst it is occupying a structure or place which it uses for shelter or protection;
- intentionally or *recklessly obstruct access to any structure or place used for shelter or protection by an otter;
- sell, offer or expose for sale, or to possess or transport for sale alive or dead otter or any part of or anything derived from an otter.

*The term “recklessly” was added as an amendment to the WCA 1981 as a result of the Countryside and Rights of Way Act (HMSO, 2000).

The otter is also included on Schedule 2 of the Conservation of Habitats and Species Regulations (HMSO, 2017) which makes it an offence to:

- deliberately capture or kill an otter;
- deliberately disturb an otter (where disturbance is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or to affect significantly the local distribution or abundance of otter).
- damage or destroy a breeding site or resting place of an otter; and
- be in possession of, control, transport, sell or exchange, or offer for sale or exchange any live or dead wild otter or any part of a wild otter or anything derived from an otter or any part of a wild otter.

Licences may be granted by Natural England under Regulation 53 of the Conservation of Habitats and Species Regulations (HMSO, 2010) for certain purposes affecting otter, including development works. Regulation 53 (2)(e) states that such licences can be granted for the purpose of “preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment”. Those activities listed under Schedule 2 (see above) would not constitute an offence if carried out in accordance with the terms of such a licence.

APPENDIX C: eDNA survey protocol (ADAS)

Dr Helen Rees
Tel: 01159 516747
Email: eDNA@adas.co.uk
www.adas.uk

eDNA Survey Protocol

Kits should be kept at room temperature in an appropriate solvent store, consistent with Home Office regulations.

Kit contents: 1 sterile Whirl-Pak bag; 2 pairs of sterile gloves; 1 sterile 30 mL sampling ladle; a sample box containing 6 x 50 mL sample tubes two thirds full of preserving fluid (contains alcohol); 1 sterile 10 mL pipette; 1 protocol sheet.

Please **keep all packaging** as you will require this for couriered return of samples (see instructions enclosed with your order).

Don't go in the water.

- Collect your eDNA water sample before you do any other surveys at the pond.
- Take the sample whilst standing on the pond bank.
- Don't tread in the pond water itself either before or during collection of the DNA water sample as there is a considerable risk of contaminating your pond sample by bringing in Great Crested Newt DNA in mud and water from other areas on your boots and equipment.

Walk around the pond, to identify areas where you can take your eDNA samples

Roughly plan where you will collect the 20 water samples from. The aim is to spread the samples out evenly around the pond edge. The samples should be taken from both open water and vegetated areas if present and if possible should avoid water that is less than 10 cm deep. If you cannot access all areas of the pond, spread the samples out as best you can without entering the water. Existing data shows that eDNA can be patchy depending on where the animals have been. Sampling in many areas considerably increases the chance of collecting their eDNA successfully.

NOTE: Before you take each ladle sample, be sure to mix the pond the water column by gently using the ladle to stir the water from the surface to close to the pond bottom WITHOUT disturbing the mud in the bottom. DNA 'sinks' and so will often be present in larger amounts close to the pond bottom**. It is important not to collect sediment as this may cause inhibition of the PCR analysis which could lead to an inconclusive result** (please see examples of different sediment levels within sampling tubes at http://www.adas.uk/Service/edna-analysis-for-great-crested-newt).

Sample Collection

- Open your kit and put on a pair of gloves.
- Open the sterile Whirl-Pak bag by tearing off the clear plastic strip along the perforated line, then pull the tabs.

Collect 20 samples of 30 mL of pond water from around the pond (in the areas you have already identified) using the sampling ladle (fill the ladle), and empty each sample into the Whirl-Pak bag.

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Sample Preservation

1. When you have collected your 20 samples, close the bag securely using the top tabs (fold over several times and bend tabs over) and shake the Whirl-Pak bag for 10 seconds. This mixes any DNA across the whole water sample.
2. Put on a fresh pair of gloves to keep the next stage as uncontaminated as possible.
3. Using the clear plastic pipette provided take 15 mL of water from the Whirl-Pak bag, and transfer into one of the six conical tubes containing preserving fluid (i.e. fill tube to the 50 mL mark).
4. **Label the box** containing the six tubes with the date, your name (sampler), the pond name, and grid reference/co-ordinates.

NOTE: Please do not overfill or under fill the tubes.

5. Close the tube and ensure the cap is tight - leaky samples could later contaminate the laboratory with DNA.
6. Shake the tube vigorously for 10 seconds to mix the sample and preservative.
7. Repeat for each of the 6 conical tubes in the kit.
8. Double check that the lids are on tightly if they have leaked during shaking please also wipe the tubes.
9. Empty the remaining water from the whirl-Pack bag back into the pond.
10. Place all used gloves, pipettes, rubbish into the sampling bag and dispose.

If storage of samples is necessary prior to their return please store refrigerated (2-4°C). Samples can be stored in this way for up to 1 month prior to analysis.

Returning the kit - Drop off option

Should you wish to return your items directly to us, they can be dropped off at **Vet School Stores. SVMS, Nottingham University, Sutton Bonington Campus, Loughborough, LE12 5RD**. (please note opening times: 8.30am - 4.00pm Monday-Friday) or outside of these times at **Main Reception** on **College Road**. Please clearly mark your box “FAO Helen Rees: ADAS”.

Booking your DHL Collection

Please email us at eDNAcouriering@adas.co.uk so we can arrange your collection.

We require the address of where the parcel will be, the number of parcels/number of kits, your contact details and the date of collection. Wherever possible we will try to book the requested date between 9am-5pm. Once we have booked your return we will email you the DHL collection documents, these will need to be printed off and attached to your parcel before your driver arrives. Please use original packaging wherever possible, if alternative packaging is used you **MUST** attach an **LQ label** ( , we send along with your DHL collection documents just in case) and write **UN1170** onto the box or DHL will not transport your parcel. Should you have any problems please call the office on 01159 516747.

APPENDIX D: eDNA survey results

Client: Brandon Murray,
Arcadis

ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

Tel: 01159 516747
Email: Helen.Rees@adas.co.uk

www.adas.uk

Sample ID: 2020-0719	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: Otterpool 22	Description: pond water samples in preservative	
Date of Receipt: 14/05/2020	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control[†]	2 of 2	Real Time PCR	18/05/2020
Degradation Control[§]	Within Limits	Real Time PCR	18/05/2020
Great Crested Newt*	2 of 12 (GCN positive)	Real Time PCR	18/05/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)[#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	19/05/2020	Date of issue:	19/05/2020

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#]Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

Client: Brandon Murray,
Arcadis

ADAS
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www.adas.uk

Sample ID: 2020-0739	Condition on Receipt: Medium Sediment	Volume: Passed
Client Identifier: Otterpool 20	Description: pond water samples in preservative	
Date of Receipt: 14/05/2020	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control[†]	2 of 2	Real Time PCR	18/05/2020
Degradation Control[§]	Within Limits	Real Time PCR	18/05/2020
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	18/05/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)[#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	19/05/2020	Date of issue:	19/05/2020

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#]Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

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www.adas.uk

Sample ID: 2020-0746	Condition on Receipt: Low Sediment	Volume: Passed
Client Identifier: Otterpool P24	Description: pond water samples in preservative	
Date of Receipt: 14/05/2020	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control[†]	2 of 2	Real Time PCR	18/05/2020
Degradation Control[§]	Within Limits	Real Time PCR	18/05/2020
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	18/05/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)[#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	19/05/2020	Date of issue:	19/05/2020

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#]Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

Client: Brandon Murray,
Arcadis

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WA6 0AR

Tel: 01159 516747
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www.adas.uk

Sample ID: 2020-0758	Condition on Receipt: Algae Present	Volume: Passed
Client Identifier: 23A Otterpool	Description: pond water samples in preservative	
Date of Receipt: 14/05/2020	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control[†]	2 of 2	Real Time PCR	18/05/2020
Degradation Control[§]	Within Limits	Real Time PCR	18/05/2020
Great Crested Newt*	11 of 12 (GCN positive)	Real Time PCR	18/05/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)[#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	19/05/2020	Date of issue:	19/05/2020

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

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[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#]Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)

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