ECOLOGICAL EXPERTISE, EVOLVED

Loddon Garden Village, Shinfield

Technical Appendix 11.12 - Bats

Prepared on behalf of

University of Reading

Final Report

10 September 2025

23/42-16C

Loddon Garden Village, Shinfield

Technical Appendix 11.12 - Bats

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1. INTRODUCTION

Scope

1.1 This Technical Appendix supports **Chapter 11 (Ecology)** of the Environmental Statement (ES). It sets out the detailed methodologies and results of the survey work undertaken to inform:

- The baseline evaluation of the bat assemblage supported by the Zone of Influence of the Proposed Development;
- The assessment of likely impacts on the bat assemblage;
- The design of impact avoidance and mitigation measures; and
- The design of biodiversity enhancements for bats.

Site and Development Description

1.2 The Site is a large area of land to the west of Wokingham, between the villages of Shinfield, Arborfield and Sindlesham. It is located outside of the Green Belt and is largely made up of agricultural land and grasslands, with pockets of woodland and the River Loddon running through the centre of the Site.

1.3 The description of development for the application is as follows:

"Application for the phased development of a new community at Loddon Garden Village, comprising, in outline:

- *up to 2,800 residential units to include up to 100 custom and self-build plots;*
- *2 primary schools (up to 3 forms of entry) to include early years provision and 1 secondary school (up to 12 forms of entry);*
- *one District Centre, to incorporate up to 11,000m2 of Class E (Commercial, business and Service, to include a food store of around 2,500m2), and Class F (Local Community and Learning);*
- *one Local Centre; to incorporate up to 2,400m2 of Class E;*
- *a Sports Hub to include sports pitches and pavilion space;*
- *up to 4,250m2 of further Class E, Class F, and sui generis development to include commercial, health care and public house;*
- *comprehensive green infrastructure including a Country Park, landscaping and public open space, and ecological enhancement measures;*
- *20 gypsy and traveller pitches;*

- *comprehensive drainage and flood alleviation measures to include Sustainable Urban Drainage Systems (SUDS) and engineering measures within Loddon Valley for the River Loddon;*
- *internal road network including spine road with pedestrian and cycle connections and associated supporting infrastructure;*
- *new and modified public rights of way;*
- *associated utilities, infrastructure, and engineering works, including the undergrounding of overhead lines;*
- *Ground reprofiling to accommodate infrastructure, flood alleviation and development parcels;*
- *Up to 0.5ha of land adjoining St Bartholomew's church for use as cemetery;*
- *Electricity substation (up to 1.5ha).*

All matters reserved other than access, incorporating:

- *a new pedestrian, cycle and vehicular access to Lower Earley Way via a new 4th arm to the Meldreth Way roundabout;*
- *a new pedestrian, cycle and vehicular bridge over the M4;*
- *a new pedestrian, cycle and vehicular bridge over the River Loddon;*
- *a new vehicular access to the A327 Reading Road, via a new arm to the Observer Way roundabout;*
- *a new pedestrian, cycle and vehicular access to Thames Valley Science Park;*
- *an initial phase of internal roads with associated drainage, landscape and engineering works and ground reprofiling, between the A327 and the south eastern boundary of the site.*

Application includes full permission for the change of use of 40.4 hectares of agricultural land to Suitable Alternative Natural Greenspace (SANG), 18.35 hectares of SANG link, and provision of Biodiversity Net Gain measures, the demolition and clearance of 20,809 m2 of buildings and structures at the Centre for Dairy Research (CEDAR) and at Hall Farm, the demolition of 3 existing dwellings on Carter's Hill Lane, and the retention of specified buildings at Hall Farm."

Policy and Legislative Context

Legislation

1.4 Full details of the legislation of relevance to ecology and nature conservation are included in **Technical Appendix 11.1**, however those of particular relevance to bats are summarised below.

1.5 There are 18 species of bat in the UK, seven of which are Species of Principal Importance in England. All bats and bat roosts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are also a European Protected Species protected under the Habitats Regulations 2017 (as amended). It is an offence to:

- Intentionally or deliberately kill, injure or capture bats;
- Intentionally, deliberately or recklessly disturb bats in such a way as to be likely to significantly affect the ability of any significant group of bats to survive, breed, or rear or nurture their young or the local distribution of or abundance of a species of bat;
- Intentionally, or recklessly damage, destroy or obstruct any place used for shelter or protection (i.e. bat roosts) or intentionally or recklessly disturb a bat whilst it is occupying such a place;
- Damage or destroy a breeding site or resting place of a bat; and
- Possess, sell or transport a bat, or anything derived from it.

1.6 Development proposals affecting bats or their roosts require a European Protected Species mitigation licence from Natural England.

1.7 Certain bat species are listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (as amended) and are Species of Principal Importance for the conservation of biodiversity in England. Public authorities have a responsibility to give specific consideration to the Section 41 list when exercising their normal functions. For planning authorities, consideration for Species and Habitats of Principal Importance will be exercised through the planning and development control processes.

Planning Policies and Biodiversity Strategies

1.8 Full details of the planning policy of relevance to ecology and nature conservation are included in **Technical Appendix 11.1,** however those of particular relevance to breeding birds are summarised below.

National Planning Policy Framework

1.9 The National Planning Policy Framework (NPPF) (2024) sets out the Government's planning policies for England and how they should be applied. With regard to protecting the natural environment, Section 15 of the NPPF requires that planning decisions should enhance the natural environment and provide net gains for biodiversity.

Local Planning Policy

1.10 The Wokingham Borough Council Adopted Core Strategy: Development Plan Document (January 2010) sets out the framework for the development of the borough, through a series of policies and strategies. Of particular relevance to Badgers is Policy CP7 – Biodiversity.

1.11 The Wokingham Borough Local Plan Update 2023-2040 was submitted to the Secretary of State for examination by an independent Planning Inspector in February 2025. Whilst not currently enforced, consideration has been given to these emerging policies during the course of the impact assessment, and design of mitigation, compensation and enhancement strategies.

Berkshire Local Nature Recovery Strategy

1.12 The draft Berkshire Local Nature Recovery Strategy was published in February 2025, with finalisation of the strategy anticipated in the summer of 2025. Formed as a requirement of The Environment Act 2021, Local Nature Recovery Strategies aim to identify priority actions for local biodiversity, including habitat and species, to create a collaborative landscape level approach to nature restoration. There are currently six species of bats listed within the draft species list (Royal Borough of Windsor and Maidenhead, 2025).

2. SURVEY AND ASSESSMENT METHODOLOGY

2.1 The approach to ecological impact assessment taken in this report is in line with guidance from the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment (CIEEM, 2018), as set out in **Technical Appendix 11.2**.

Defining the Zone of Influence

2.2 The area over which the activities as associated with the Proposed Development are considered to potentially affect the breeding bird assemblage, the Zone of Influence (ZoI), has been predicted by considering the activities and resultant biophysical changes arising during the construction and operational phases, as summarised below.

Likely Biophysical Changes

2.3 The predicted biophysical changes of relevance to the bat assemblage are as follows:

Activities and Resultant Biophysical Changes During the Construction Phase

- Noise, lighting and vibration which may cause disturbance to bat assemblages, altering their natural behaviours and impacting fitness and habitat use;
- Building demolition and tree felling resulting in the loss of roosting opportunities and may injury/kill individuals;
- Vegetation/habitat clearance which may cause the loss of foraging/supporting habitats and result in habitat fragmentation.

Activities and Resultant Biophysical Changes During the Operational Phase

- Noise, lighting and vibration which may cause disturbance to bat assemblages, altering their natural behaviours and impacting fitness and habitat use;
- Creation of new roosting opportunities;
- Implementation of habitat management plans resulting in the creation of new, and enhancement of existing habitats for bats.

2.4 In the case of wide-ranging species such as bats, this extends beyond the confines of the Site to include any populations which reside beyond the Site boundaries but may use supporting habitats within the Site for foraging or dispersal. As such some of the changes affecting bats, such as disturbance, may have effects beyond the construction footprint, whilst others may affect the assemblage of bats both within the Site boundary and beyond, for example loss of roost sites, severance of movement corridors and altered availability of foraging habitat.

2.5 Due to their mobile nature, the ZoI for bats is likely to extend further afield, potentially up to 6km (based on Bat Conservation Trust Core Sustenance Zones (2020) and the bat species most likely to be recorded during bat survey work and the biological records search). The CSZ is considered to be the area surrounding a communal bat roost within which development work can be assumed to impact the commuting and foraging habitat of bats using the roost (Bat Conservation Trust, 2016).

Desktop Study

2.6 A biological records search was commissioned from Thames Valley Environmental Records Centre (TVERC) in July 2024, in order to obtain existing records of bats and their roosts within a 5km radius of the Site, thereby incorporating the potential ZoI and providing context with other bat populations in the local area.

2.7 Additionally, a search of the Multi-Agency Geographic Information for the Countryside (MAGIC) website was conducted for records of past or present granted European Protected Species Licence (EPSL) applications within the Site.

Field Survey Methodology

Preliminary Building Roost Assessments for Bats

2.8 The survey methodology was based on best practice guidelines that were current at the time of survey (Collins, 2016)[1] and comprised searching buildings externally and internally, where accessible, for evidence of current or historic occupation by roosting bats. The searches were carried out between June and July 2022 and February 2023 by Philip Brown BSc (Hons) MSc and Natalie Compton BSc (Hons) MCIEEM, both Natural England level 2 bat survey class licence holders. They were supported by Liam Mayle BSc (Hons) MSc, Camille Tellier BSc (Hons), Craig Sellwood LLB (Hons) LPC ACIEEM and Alex Pacanins Colban BSc (Hons).

2.9 The search included looking for suitable features for bats to roost and associated access/ egress points. The search also included looking for direct evidence of bat use such as:

- the presence of bats;
- bat droppings on surfaces on and/or immediately adjacent to the building;
- feeding signs; and
- staining or scratch marks around suitable roosting features or potential access points into the building.

2.10 Where external surfaces and features of buildings were accessible, they were searched for evidence of bats, using an endoscope, high-powered torch, and binoculars. The internal inspection comprised of a search of the roof voids for evidence of bats where available.

2.11 Where droppings were found these were sent for further DNA analysis.

[1] At the time of which these surveys were undertaken the Bat Surveys – Good Practice Guidelines 3rd Edition (Collins, 2016) was the most up to date version of the guidance however this has now been superseded by Bat Surveys – Good Practice Guidelines 4th Edition (Collins, 2023) released in September 2023.

2.12 Based on the information collected during surveys the building or features were categorised as having 'Negligible', 'Low', 'Moderate' or 'High' suitability for roosting bats or as a confirmed roost. Descriptions of these suitability classes are given in **Table 2.1**, taken from Collins (2016).

Table 2.1 Guidelines for assessing potential suitability of buildings for roosting bats (from Collins, 2016)

Suitability	Description
Negligible	Negligible habitat features on site likely to be used by roosting 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 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 (PRFs) but with none seen from the ground or features seen with only very limited roosting potential.
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).
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.

Ground Level Tree Assessment

2.13 A survey of trees within the Site was completed between July 2023 and March 2024 by Philip Brown, Natalie Compton, Liam Mayle, Craig Sellwood, Katharine Luckhurst BSc (Hons) MSc and Matthew Robinson BSc (Hons) MSc.

2.14 The surveys comprised a search from ground level, with the aid of binoculars, for features with suitability to support bats, including woodpecker holes, loose bark, cracks and crevices, broken off limbs and dense Ivy *Hedera helix*, as well as signs of bats, such as scratching and staining.

2.15 A GPS point was taken for each tree assessed and the following information was recorded:

- Tree species;
- Approximate height;
- Approximate diameter at breast height;
- Any potential roost feature, its type, aspect, height and any other descriptive features;
- Suitability for roosting bats; and
- Any constraints to survey.

2.16 The surveys were completed in suitable weather conditions.

2.17 The *Bat Surveys – Good Practice Guidelines 3rd edition* (Collins, 2016) was the most up to date version of the guidance when the Ground Level Tree Assessment (GLTA) surveys began on-site however this has now been superseded by *Bat Surveys – Good Practice Guidelines 4th edition* (Collins, 2023) which was released in September 2023. Consequently, completion of the GLTA spanned the transition from the 3rd to the 4th edition bat survey guidelines and as such trees were assessed under one or other of these sets of guidelines.

2.18 Based on the information collected during the surveys, trees were categorised for their suitability for bats in accordance with either the 3rd or 4th edition of the guidelines. The definition of suitability assessed both before and after 15 September 2023 are set out below in **Tables 2.2** and **2.3**.

Good Practice Guidelines 3rd Edition - GLTA undertaken before 15 September 2023

2.19 Based on the information collected during the surveys conducted prior to the 15th September 2023, trees were categorised for their suitability for bats in accordance with *Bat Surveys – Good Practice Guidelines 3rd Edition* (Collins, 2016). PRFs were assessed for suitability for roosting bats as being either Negligible, Low, Moderate, High or confirmed if direct evidence of roosting was recorded (see **Table 2.2** below).

Table 2.2: Guidelines for assessing potential suitability of buildings for roosting bats (taken from Collins, 2016)

Suitability	Description
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
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)
High	A structure or tree with one of 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.

Good Practice Guidelines 4th Edition - GLTA undertaken after 15 September 2023

2.20 Based on the information collected during the surveys conducted after the 15th September 2023, trees were categorised for their suitability for bats in accordance with *Bat Surveys – Good Practice Guidelines 4th Edition* (Collins, 2024). Based on the features recorded, trees were identified as having either PRF-I or suitable to support low numbers of roosting bats only or PRF-M or suitable to support multiple bats (see **Table 2.3** below).

Table 2.3: Guidelines for assessing potential suitability of buildings for roosting bats (taken from Collins, 2023)

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.

PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony.

Tree groups and Woodland

2.21 Where groups of trees close to one another shared similar potential roosting features these trees were assessed as groups and assigned an overall bat roost suitability.

2.22 Based on early-stage parameter plans current proposals for the site include the retention of all woodlands within the Site. Consequently, only trees along the boundaries of woodlands were assessed as the trees most likely to be impacted by development.

Bat Emergence/Re-entry Surveys - Buildings

2.23 Bat dusk emergence and dawn re-entry surveys were undertaken of buildings assessed as having suitability to support roosting bats between August and September 2022 and July and September 2023.

2.24 Surveys were carried out by experienced bat surveyors equipped with bat detectors (Pettersson D240X, EM Touch Pro, Batlogger M and Batlogger M2. Where detectors did not have a built-in recorder Edirol Roland R-09HR was used to record calls. An appropriate number of surveyors were positioned around each building to allow lines of sight to all accessible aspects of potential roosting features in order to compile information on species, numbers, access points and roosting locations in accordance with best practice guidelines (Collins 2016). Radio contact was maintained throughout surveys in order to communicate the origin and direction of flight of bat species. Recordings were later analysed using appropriate software, e.g. BatSound/BatExplorer/Kaleidoscope to confirm identification to species/genus, as necessary. From September 2023, surveyors were also equipped with Night Vision Aids which consisted of 1x Sony 4K Handycam FDR-AX53, paired with 1x Nightfox XB10 IR torch and 1x Nightfox XB5 IR torch. Any emergences or suspected emergences captured on the Night Vision aids were reviewed using Dropbox replay.

2.25 The number of survey visits each building was subject to was determined based on the results of the Preliminary Bat Roost Assessment. Confirmed roosts and high suitability buildings were subject to three survey visits, moderate suitability buildings two survey visits and low suitability buildings one survey visit.

2.26 Dusk emergence surveys commenced at least 15 minutes prior to sunset and continued for at least 1.5 hours after sunset. Dawn re-entry surveys commenced at least 2 hours prior to sunrise and continued until 15 minutes after sunrise.

2.27 Details of survey timings and weather conditions are provided in **Annex 1.**

2.28 Once evidence of roosting activity was established regard was given, based upon the ecology of each species, the time of year and number of individuals noted in making an assessment of the likely characterisation of the roost in accordance with guidelines set out in Collins 2016 and summarised in **Table 2.5** below.

Table 2.5: Roost Characteristics Taken from Collins 2016

Roost Type	Definition

Day Roost	A place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by a whole colony.
Feeding Roost	A place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
Transitional/occasional roost	Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Swarming site	Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites.
Maternity roost	Where female bats give birth and raise their young to independence.
Hibernation roost	Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity.
Satellite roost	An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

Bat Activity Surveys

2022

2.29 The Site was divided into 13 walked transect routes referenced as transect A – Land transect NM4 with the aim of covering all key areas for bats across the Site. The transect routes are shown on **Map 11.15.2** (Eco Valley), **Map 11.15.3** (Hall Farm), **Map 11.15.4** (Innovation Valley), and **Map 11.15.5** (North of the M4).

2.30 Surveys were undertaken in line with best practice guidelines in force at the time of the surveys (Collins, 2016). Each transect route was walked once a month from April to October 2022. In July and August 2022 transect routes comprised of a dusk and pre-dawn transect survey within one 24-hour period.

2.31 During each survey, details such as species/species group, numbers of bats and direction of flight (where observed) and behaviour, e.g. commuting, foraging and social calling were noted.

2.32 On each occasion (unless otherwise stated) at least one suitably experienced ecologist equipped with a handheld bat detector (Batlogger M1, Batlogger M2, Anabat Scout, Batbox Duet or Peterson D200) walked a pre-defined route. The starting location along each route and direction the transect was walked was changed across the surveys to reduce sampling bias as far as reasonably possible. Each dusk survey commenced at 15 minutes prior to sunset and

continued for approximately 2 hours or from two hours before sunrise until sunrise for the pre-dawn surveys.

2.33 Surveyors walked each transect at a steady pace recording bat activity (as described above) along the route of each transect. The number of 'bat passes' per species/species group were recorded in addition to bat behaviour. In this report a bat pass is defined as 'the number of echolocation registrations within a 10 second interval'. For example, this could be a single registration, such as a bat flying past a 'stopping point' whilst commuting elsewhere, to repeated registrations, e.g. associated with foraging'. On this basis, a maximum of 6 bat passes can arise from an individual bat per minute.

2.34 Bat Echolocation recordings were analysed using Kaleidoscope.

2.35 Weather conditions and sunset/sunrise times for each survey visit undertaken are presented in **Annex 2.**

2024

2.36 During the 2024 update bat activity surveys, eight transects were undertaken across Hall Farm, north of the M4 and one route across Eco Valley. The routes are shown on **Map 11.15.3, 11.15.5 and 11.15.6**. Surveys were undertaken in line with best practice guidelines (Collins, 2023). Each transect route was subject to an update survey in either June or July (to cover the summer season) and then repeated in September 2024 (to cover the autumn season).

2.37 On each occasion (unless otherwise stated) each suitably experienced ecologist equipped with a handheld bat detector (Batlogger or Batlogger M2) walked a pre-defined route. Each survey started at with a fixed point, which was undertaken for no less than 30 minutes. Once surveyors were content there was no further significant commuting, the transect route was walked, with the direction of the transect changed across the surveys to reduce sampling bias as far as reasonably possible. Each fixed point survey began at sunset and the entire survey, including fixed point and walked transect, lasted for at least two hours after sunset.

Automated Bat Detector Surveys

2022

2.38 Automated bat detector surveys were undertaken in line with the best practice guidelines in force at the time of survey (Collins 2016). Automated static detectors were deployed to sample different habitats across the Site and gather further information on the bat assemblage and relative bat activity. Two automated static detectors were deployed for each transect route.

2.39 Automated bat detectors with full spectrum or zero crossing recording capability (Anabat Express and Anabat Swift units) were deployed to 26 strategic locations on 7 occasions (monthly) between April and October 2022. On each occasion automated detectors recorded bat activity from 30 minutes before sunset until 30 minutes after sunrise for a minimum of 5 consecutive nights.

2.40 Weather information for each survey period was provided by Weathernet from the nearest weather station. Survey dates and weather information is provided in **Annex 3.**

2.41 Automated Bat Detector results are recorded as the number of bat passes (the number of registrations made as a result of bat calls) during the specified period. As with bat activity

surveys above, this gives an indication of the level and type of bat activity within the audible field of the detector but does not provide data as to the number of individual bats present.

2.42 Bat calls were analysed using appropriate software (Kaleidoscope pro) and identified to species/species group based on parameters in Russ (2021) and Middleton et al. (2014).

2024

2.43 Automated bat detector surveys were undertaken in line with the best practice guidelines (Collins, 2023). Automated static detectors were deployed to sample different habitats across the Site and gather further information on the bat assemblage and relative bat activity. Two automated static detectors were deployed for each transect route (amounting to a total of 12 static detectors deployed).

2.44 Automated bat detectors with full spectrum recording capability (Anabat Express and Anabat Swift units) were deployed at 12 strategic locations between June and October 2024. On each occasion automated detectors recorded bat activity from 30 minutes before sunset until 30 minutes after sunrise for a minimum of 5 consecutive nights.

2.45 Weather information for each survey period was provided by Weathernet from the nearest weather station. Survey dates and weather information is provided in **Annex 2.**

Survey Constraints

Preliminary Building Roost Assessments for Bats

2.46 Some buildings were not available for internal inspection due to health and safety constraints or access constraints. In such cases buildings were assessed for suitability to support roosting bats based on external features recorded and subject to further survey, in the form of dusk emergence/dawn re-entry surveys. As the buildings were subject to further survey works to determine roost presence and characterisation this is not considered to be a major constraint to the data presented in this report.

2.47 In September 2023 a new edition of the bat survey guidelines was issued which included a variation to the definitions of bat roost suitability for buildings. The definitions (for Low, Moderate and High suitability) vary only slightly and does not change the level of further survey effort (in the form of dusk emergence/dawn re-entry surveys) that the buildings were subject to. Consequently, this is not considered to be a significant constraint to the date presented in this report.

Bat Emergence/Re-entry Surveys

2.48 The most up to date version of the bat survey guidelines at the time the emergence/re-entry surveys were conducted was Collins (2016). It is not anticipated that this will have any significant impact on the robustness of the survey outcomes or recommendations of this note.

2.49 Due to project timescales, it was not possible to time surveys to coincide with different stages in a bat's life cycle such as the main maternity period (May-July) which may reduce the chances of recording behaviours associated with certain types of roosts, such as maternity roosts. As a consequence, the surveys may have missed the opportunity to appropriately classify the roost types present within the buildings.

2.50 Due to absence of echolocation it is not always possible to determine the species of bat. Where this is the case, the bat will be noted as being of unidentified species.

Ground Level Tree Assessment

2.51 As detailed above an updated version of the bat survey guidance was released in September 2023 (Collins, 2023). Therefore, trees assessed before September 2023 were categorised as low, medium or high suitability under the Bat Surveys – Good Practice Guidelines 3rd Edition (Collins, 2016) which was the most up to date at the time of survey. After this date trees were categorised as PRF-I or PRF-M in line with the 4th edition. However all trees identified as having suitable bat roosting features will be subject to further surveys in the form of tree climbing or emergence surveys to confirm suitability and/or presence of bat roosts. Therefore, this is not considered a significant constraint to the data presented in this report.

2.52 Based on early-stage parameter plans, current proposals for the site include the retention of all woodlands within the Site. For this reason, trees along the boundaries of the woodlands only have been assessed as those most likely to be impacted by development.

2.53 In some instances, only one side of a tree was accessible (due to impassable ditches or fences or lack of access to the adjacent field). Where this was the case, a precautionary approach was taken to the assessment of the tree's bat roosting suitability.

Bat Activity Surveys

2022

2.54 As a result of inaccessibility due to ground conditions, presence of livestock, or health and safety considerations transect routes were altered to allow for safe routes where possible. Key bat foraging and commuting habitats were still sampled where possible and thus this is not considered a significant constraint to the survey results.

2.55 Bat Activity Transect routes are limited to a very brief 'snapshot' in time of the bat activity along each transect route but allow for a mobile approach and visual observation of the activity on-site.

2.56 Heat maps act as a representation of bat 'passes'. This could be representative of one bat making several passes or 10 bats passing once each. These are recorded as a 'hotspot' which may demonstrate key areas across the site for bats. Whilst these outcomes can be indicative of the significance of a particular feature, as they are representative of the number of passes recorded rather than the number of individuals present, they should not be viewed as definitive in isolation and are considered in conjunction with other evidence including automated bat detector surveys and professional judgement.

2.57 It is not always possible to identify some bats to species level from recordings alone and where that was the case identification was made to the genus level only.

2.58 Bat species that typically have quieter echolocation calls may be under-recorded across the potential Zone of Influence as the quieter calls makes them less likely to be detected compared to other bat species.

2.59 It is not always possible to determine the species of bat for example if the bat was not echolocating at the time it passed. Where this is the case, the bat will be noted as being of unidentified bat species.

2024

2.60 As bat activity surveys were undertaken in June/July and September 2024, thereby capturing the Summer and Autumn seasons, no surveys were undertaken during the Spring period of the bat active season. However, these surveys were updates to the 2022 surveys and were designed to validate the findings of previous results and to confirm no significant changes were observed in bat assemblages.

Automated Bat Detector Surveys

2022

2.61 Due to project timescales static bat detectors were not deployed in April for NM4. However, the existence of bat activity survey data for this period, spring survey data from the following months and as surveys are being repeated in 2024, this is unlikely to pose a significant constraint to the outcomes of this report.

2.62 On occasion automated bat detectors were stolen or failed to record the full five-night period as due to technical faults. Where this was the case efforts were made to redeploy detectors within the same period. In some instances, this was not possible, these occasions are listed below together with the type of constraint on the data.

- Location 3 – October – No Data
- Location 8 – September – No Data
- Location 12 – May – No Data
- Location 14 – August - No Data
- Location 17 - July - No Data
- Location 18 - April - No Data
- Location 22 – May - No Data

2.63 No one location failed to record data during more than one month. This together with the presence of bat activity transect survey data means this is not considered to be a significant constraint to the data presented in this report.

2024

2.64 Static bat detectors were deployed from June - October 2024 thereby missing the early bat season activity in April & May 2024. However as these surveys were updates to the 2022 surveys and the results largely validated the findings of the 2022 suite of surveys this is not considered a significant constraint to the survey data collected in 2024 and the final evaluation of the bat assemblage.

Evaluation Methodology

2.65 The evaluation of the bat assemblage has been undertaken in accordance with the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Marine (CIEEM, 2018).

2.66 Once the relevant data has been collated as above, the ecological value of roosting, and commuting and foraging opportunities on-site will be assessed as per the guidance set out in Reason & Wray (2023). This methodology assigns bats a rarity based upon their population within a specified geographical rage (in this instance Southern England). In respect of roosting sites, the roost classification is considered alongside the rarity of the occupying species to assign the roost its particular value.

2.67 When valuing the commuting and foraging habitats available on-site scores are assigned to the bat species assemblage within the ZoI.

3. ECOLOGICAL BASELINE

Desktop Study

3.1 The desktop study returned a total of 10 species and three species groups which may be utilising the Site. These were:

- Barbastelle *Barbastella barbastellus;*
- Brown Long-eared bat *Plecotus Auritus;*
- Common pipistrelle *Pipistrellus pipistrellus;*
- Daubenton's bat *Myotis daubentonii;*
- Lesser Notule (or Leisler's bat) *Nyctalus leisleri;*
- Long-eared bat species *Plecotus sp.;*
- Myotis bat species *Myotis sp*;
- Nathusius's Pipistrelle *Pipistrellus nathusii;*
- Natterer's bat *Myotis nattereri;*
- Noctule bat *Nyctalus noctule;*
- Nyctalus bat species *Nyctalus sp*;
- Pipistrelle bat species *Pipistrellus sp;*
- Serotine *Eptesicus serotinus; and*
- Soprano Pipistrelle *Pipistrellus pygmaeus.*

3.2 Records within the Site were returned for all of the above listed bat species with the exception of Leisler's bat, Nathusius's pipistrelle, Natterers bat and Barbastelle.[2]

3.3 A search of the online MAGIC mapping system returned one record of an active granted European Protected Species Licences (EPSL) within the Site namely; 2020-49081-EPS-NSIP1 for the damage to a breeding site and resting place for Daubenton's bat and Soprano Pipistrelle due to expire in 2025. The location is shown on **Map 11.15.7**.

Field Survey Results

Preliminary Building Roost Assessments for Bats

3.4 A total of 74 out of 82 buildings present within the Site were assessed for their suitability to support roosting bats, their locations are shown on **Maps 11.15.8a-i**. Nine buildings were not

[2] *It should be noted that the scarcity of historical bat records on-site is not synonymous with confirmed absence of this species as may be attributed to lack of survey records in this area.*

inspected (B13b, B18a, B58, B59, B60, B63, B63a, B64 and B64a) due to access constraints. A summary of buildings surveyed, whether they were subject to an external or internal inspection and their assessed suitability can be found in **Annex 4.** In summary:

- **Seven buildings** were **confirmed as supporting roosting bats** (namely buildings B12, B15, B17, B18, B22, B24 and B27) which was verified by the collection of droppings which were sent for DNA analysis (see **Annex 4**). Buildings B12, B15, B17, B22 and B27 was confirmed to support Brown Long-eared bats via DNA analysis. B17 was also confirmed to support Common Pipistrelle bats. B18 was confirmed to support Soprano Pipistrelle bats.

- **Six buildings** were assessed as having **high suitability** for supporting roosting bats (namely B13, B14, B18a, B22a, B36 and B37).

- **Ten buildings** were assessed as having **moderate suitability** for supporting roosting bats (namely B07, B12a, B25, B26, B38, B39, B43, B45, B47 and B47a).

- **Thirteen buildings** were assessed as having **low suitability** for supporting roosting bats (namely B03a, B04, B11, B20a, B25a, B34, B35, B35a, B40, B41, B42, B44 and B46).

3.5 The remaining 22 buildings were assessed as being of negligible suitability for supporting roosting bats.

Ground Level Tree Assessment

3.6 A total of 378 individual trees and 34 groups of trees were considered to be suitable to support roosting bats. An itemised list of all assessed trees can be found at **Annex 5 and 6** and their locations are shown at **Maps 11.15.9a – e**.

Good Practice Guidelines 3rd Edition - GLTA results

3.7 Using the Collins (2016) methodology 164 trees were assessed. **Table 3.1** sets out the total numbers of trees falling into each of the high, moderate and low categories.

Table 3.1: Individual Tree Suitability Numbers for Trees Assessed Under Collins 2016.

Bat Roosting Suitability	Total Number of Trees
High	44
Moderate	48
Low	64
Negligible	8

3.8 In addition to the above 21 groups of trees were assessed using the Collins 2016 methodology. The counts for each suitability are provided at **Table 3.2** below.

Table 3.2: Tree Group Suitability Numbers for Trees Assessed Under Collins 2016.

Bat Roosting Suitability	Total Number of Tree Groups
Moderate	1
Low	20

Good Practice Guidelines 4th Edition - GLTA results

3.9 Using the methodology set out in Collins (2023) 214 individual trees were assessed for roosting suitability see **Table 3.3** below.

Table 3.3: Individual Tree Suitability Numbers for Trees Assessed Under Collins 2023.

Bat Roosting Suitability	Total Number of Trees
PRF – I	103
PRF – M	111

3.10 13 Groups of trees were assessed using the Collins 2023 methodology. All 13 groups were assessed as PRF – I.

Bat Emergence/Re-entry Surveys

3.11 Between May 2022 and October 2023 surveys were conducted in respect of buildings on-site. A summary of the buildings surveyed and related metadata can be found at **Annex 1.** Below is a summary of those surveys where emergence or re-entry activity was recorded indicating roosting behaviour by bat species. Full details of emergences on each occasion can be found at **Annex 7.**

3.12 In total, bat emergences or re-entries were recorded at nine of the buildings surveyed. Those buildings are:

- B17;
- B18;
- B18a;
- B22;
- B24;
- B26;
- B27;
- B35; and
- B35a.

3.13 Further details are provided below.

Building 17

- 1st August 2023: five Pipistrelle species bats were recorded emerging from a gap at the base of chimney on the northern elevation of the building.

- 15th August 2023: one Common Pipistrelle bat was recorded entering and then emerging adjacent to the chimney at the ridge of the roof.

- 11th September 2023: nine Soprano Pipistrelle and one Common Pipistrelle were recorded emerging from the gable end of the roof on the eastern elevation of the building. Three Soprano Pipistrelle bats were recorded emerging from a ridge tiles.

Building 18

- 3rd August 2023: a total of nineteen Soprano Pipistrelle bats were recorded emerging from the apex of the northern gable end and a further four recorded emerging from lower down on the eastern edge of the northern gable end. Eight unidentified bat species and one Soprano Pipistrelle was recorded emerging from the apex of the southern gable end.

- 24th August 2023: two Soprano Pipistrelles were recorded re-entering the southeast elevation where the soffit meets the chimney wall. One unidentified bat species was recorded re-entering the northern gable end.

- 9th September 2023: thirteen bats, comprised of Soprano Pipistrelle and *Myotis* species, were recorded emerging from the apex of the southern gable end of the building. As the bats emerged together it was not possible to provide separate species counts.

Building 18a

- 4th August 2023: one Soprano Pipistrelle was recorded re-entering the northern elevation likely beneath a ridge tiles.

- 22nd August 2023: five emergences by Soprano Pipistrelle bats were recorded emerging from the opening under the boat house.

- 7th September 2023: no bats were recorded emerging from B18a.

Building 22

- 24th July 2023: one Common Pipistrelle was recorded emerging from the northwest hip tile of the roof and a further two Common Pipistrelle from the apex of the northern gable end. One long-eared species bat (Likely Brown Long-eared Species based on the DNA analysis results) emerged from the northern gable end.

- 8th August 2023: one Soprano Pipistrelle was recorded re-entering beneath the soffit on southwest corner of the building. One Common Pipistrelle was recorded entering the southern gable end. One unidentified bat species was recorded re-entering a lifted tile by the northern chimney.

- 23rd August 2023: two Common Pipistrelle bats were recorded emerging from the eastern dormer window. Four Soprano Pipistrelle bats were recorded emerging from above the western dormer windows. Four unidentified bats emerged, one from the southwest aspect of the building, one from the northwest end and two from directly above the log storage on the west side of the building.

Building 24

- 23rd August 2022: one Long-Eared bat was recorded entering a lifted tile on the southern elevation (near the eastern end, third tile down). One Soprano pipistrelle bat was also recorded entering a loose tile on the northern elevation (western corner) close to the ridge of the roof.

Building 26

- 23rd August 2022: two Common Pipistrelle bats were recorded re-entering a gap beneath the soffit on the northern western corner of the building.

Building 27

- 15th August 2023: one Soprano pipistrelle was recorded re-entering the southwest elevation of the building beneath a roof tile near the ridge.

- 23rd August 2022: two Soprano Pipistrelle bats and eighteen Long-Eared bats were recorded entering the gable on the end of the northeast elevation of the building.

Building 35

- 1st August 2023: one unidentified bat species emerged from the lead flashing at the base of the south-western chimney.

- 16th August 2023: two Soprano Pipistrelle bats emerged from the southern gable end of the building.

- 4th September 2023: one Soprano Pipistrelle and one unidentified Pipistrelle species bat emerged from the apex of the southeast gable end of the building. Four Pipistrelle species bats emerged, two from the southwestern chimney, one from the northwest bottom edge of the roof, and one from the middle of the northeastern gable end.

Building 35a

- 1st August 2023: three unidentified bat species emerged from an undisclosed feature on the northwest aspect of the building.

- 21st August 2023 three Soprano Pipistrelle bats were recorded emerging from the south-eastern elevation at the base of the roof.

- 7th September 2023: one Common Pipistrelle was recorded as emerging from an undisclosed feature on the northwest side of the building flying in an easterly direction.

3.14 Emergence and re-entry surveys were also undertaken on further buildings across the Site assesses as being suitable to support roosting bats in 2022 and 2023 although no bats were recorded emerging or re-entering. A summary of the buildings surveyed can be found at **Annex 7.**

Bat Activity Surveys

2022

3.15 Results from the walked transect surveys have been summarised as heat maps which show the number of recorded bat passes over the course of the entire 2022 survey period (**Maps 11.15.10a – 10k**).

3.16 A total of seven bat species or genus were recorded during the course of all bat activity surveys, including:

- Long-eared bat;
- Common Pipistrelle;

- *Myotis* sp.;
- Noctule;
- Serotine;
- Soprano Pipistrelle; and
- Western Barbastelle.

3.17 **Map 11.15.10a** shows the total number of bat passes recorded across all bat species during bat activity surveys conducted in 2022. **Maps 11.15.10b – k** presents the total number of bat passes per species across the 2022 active bat season.

3.18 High numbers of bat passes were recorded within the woodlands across the Site, particularly the ancient woodlands such as St Johns Copse and surrounding woodlands in the western aspect of the Site. The data also shows a pattern of dispersal from these woodlands with bats recorded utilising the network of hedgerows that connect these pockets of woodland to the west of the Site (northwest of the River Loddon). The northwest of the River Loddon is more densely vegetated with woodland and linking hedgerows around arable field margins than that of eastern side of the River Loddon which contains larger fields utilised for dairy cattle with limited connecting green canopy in the form of hedgerows that bats can utilise as linear corridors for commuting. Bat activity appears to be congregated towards the peripheries of the Site in the eastern extent around the woodlands and lines of trees that form the boundary of the Site. As expected, minimal bat activity was recorded within the arable fields themselves partially where those fields lack suitable boundary canopy or species diversity to provide suitable forage. **Map 11.15.10a** shows the red hotspots of higher levels of activity as well as the connecting routes utilised by bats to navigate the landscape.

3.19 As a consequence of the activity survey results key bat foraging and commuting habitat has been shown in **Map 11.15.11**.

2024

3.20 Results from the walked transect surveys have been summarised as heat maps which show the number of recorded bat passes over the 2024 updated bat survey period (**Maps 11.15.12a – h**).

3.21 A total of at least six bat species or genus were recorded during the course of all bat activity surveys, including:

- Long-eared bat;
- Common Pipistrelle;
- *Myotis* sp.;
- Noctule;
- Serotine;
- Soprano Pipistrelle.

3.22 Bats were also recorded that could not be identified to species or genus level due to lack of echolocation recordings.

3.23 High numbers of bat passes were recorded within the woodlands across the Site, particularly the ancient woodlands such as St Johns Copse and surrounding woodlands in the western aspect of the Site and some of the woodland habitat to the centre of Site surrounding the River Loddon.

3.24 *Myotis* bats were mostly record south of the river Loddon utilising the woodland pockets closely connected to the river as well as boundary features, particularly the larger lines of trees within the southern extent of the Site (see **Map 11.15.6c).**

3.25 Long eared bats were recorded predominately in a patch of woodland towards the north-east of the Site (see **Map 11.15.6b**).

3.26 Serotine bats were recorded towards the centre of the Dairy Centre suggesting a potential roost nearby (see **Map 11.15.6f**)**.** Activity was then recorded in the woodlands and hedgerows, including the public footpath, surrounding this central point of the Dairy Centre.

3.27 Noctule and Pipistrelle bats (including Common and Soprano) were more widespread across the Site with key activity recorded around the hedgerows extending west to east from the River Loddon and woodlands surrounding the river.

3.28 Results largely confirm the previous findings of the 2022 surveys in terms of key foraging and commuting habitat recorded.

Automated Bat Detector Surveys

2022

3.29 At least 9 species of bat were recorded by the automated static detectors during the 2022 active bat survey period including:

- Long-eared bat;
- Common Pipistrelle;
- Leisler's bat;
- *Myotis* species;
- Nathusius' Pipistrelle;
- Noctule;
- Serotine;
- Soprano Pipistrelle; and
- Western Barbastelle.

3.30 The locations of the automated static bat detector deployment locations are shown on **Map 11.15.13** and **Map 11.15.14.**

3.31 **Annex 8 and 9** shows the total bat passes recorded at each static detector location across the 2022 active bat season. **Maps 11.15.15a-g** shows the total number of bat passes per night per species at each static location split across the months of April – October 2022.

3.32 In total 146,499 bat passes were recorded across the entire survey period. Of those passes recorded a total of 137,508 were either Common or Soprano Pipistrelle (not including unidentified Pipistrelle species) making up 94% of all bat passes recorded across all detector locations.

3.33 Across Locations 12-15 and 22 Soprano Pipistrelle was the most frequently recorded species. For the remaining locations Common Pipistrelle was the most frequently recorded species. Common Pipistrelle is common and widespread in England. Soprano Pipistrelle is also a common and widespread species in England.

3.34 Low numbers of passes by Serotine, Nathusius Pipistrelle, Noctule, Leisler's bat, Myotis species and Barbastelle were also recorded.

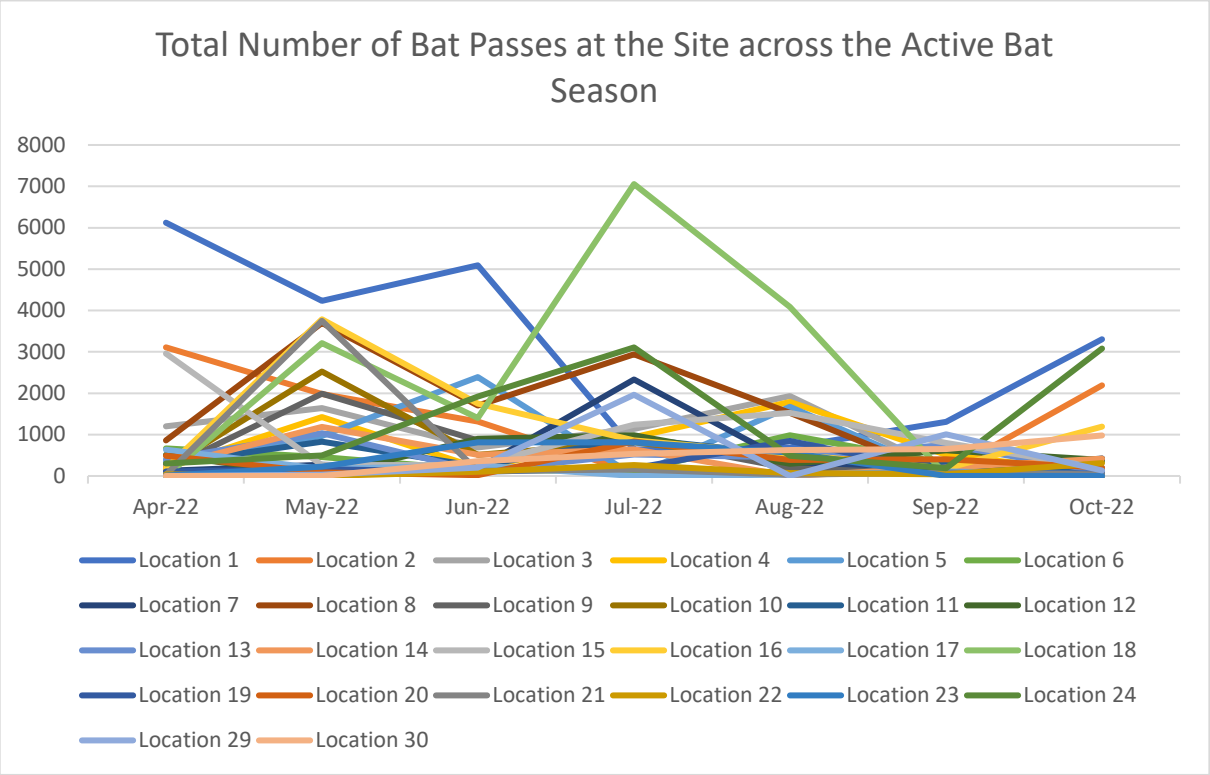
3.35 Serotine are restricted primarily to southern England and Noctule/Leisler's bat are considered frequent and widespread.

3.36 The distribution and status of *Myotis* bats depends on the species and can range from widespread to restricted and from common to rare.

3.37 Although distributed across southern England and Wales, Barbastelle are rare in both the UK and across Europe, although there is potential that this species is under-recorded (JNCC, undated).

3.38 **Figure 3.1** below shows the total number of bat passes recorded at both locations across the active bat season.

Figure 3.1 Total Number of Bat Passes across the Site per month



3.39 Throughout the active bat season most static locations showed a consistent level of activity through the season showing sustained commuting and/or foraging. This suggests the habitats sampled across the Site are likely to support bats with suitable forage and commuting routes throughout the year as part of the wider Loddon Valley resource available to bats.

3.40 Location 18 showed a peak in bat activity in July 2022, during the maternity window, which might suggest a maternity roost nearby. In July mother bats will feed and take care of their pups and so having suitable forage nearby can help mothers with suckling babies.

3.41 Similarly, Location 1 showed a peak in activity both in April 2022 and June 2022. In April bats will have emerged from hibernation roosts and are looking to feed on most nights moving regularly between several roost sites suggesting this Location might provide valuable forage for recently hibernating bats upon awakening. A peak in June might be representative of being nearby to a maternity roost as mothers will often give birth in June and will be reliant on feeding most nights to build reserves to feed pups.

3.42 Locations 24 and 2 had peaks in October 2022 which is when most mating takes place, and bats begin to build fat reserves in order to survive winter. These results may suggest that this location may be close to a mating site and/or provide valuable foraging habitat to sustain bats pre-hibernation.

2024

3.43 At least 9 species of bat were recorded by the automated static detectors during the 2024 active bat survey period including:

- Long-eared bat;

- Common Pipistrelle;
- Leisler's bat;
- *Myotis* species;
- Nathusius' Pipistrelle;
- Noctule;
- Serotine;
- Soprano Pipistrelle; and
- Western Barbastelle.

3.44 The locations of the automated static bat detector deployment locations are shown on **Map 11.15.16.**

3.45 **Annex 3 and 4** shows the total bat passes recorded at each static detector location across the 2024 active bat season. **Maps 11.15.17a-e** shows the total number of bat passes per night per species at each static location split across the months of June – October 2024.

3.46 Across Locations 13-24 either Soprano Pipistrelle or Common Pipistrelle were the most frequently recorded species. Common Pipistrelle and Soprano Pipistrelle are both common and widespread in England.

3.47 Low numbers of passes by Serotine, Nathusius Pipistrelle, Noctule, Leisler's bat, *Myotis* species and Barbastelle were also recorded.

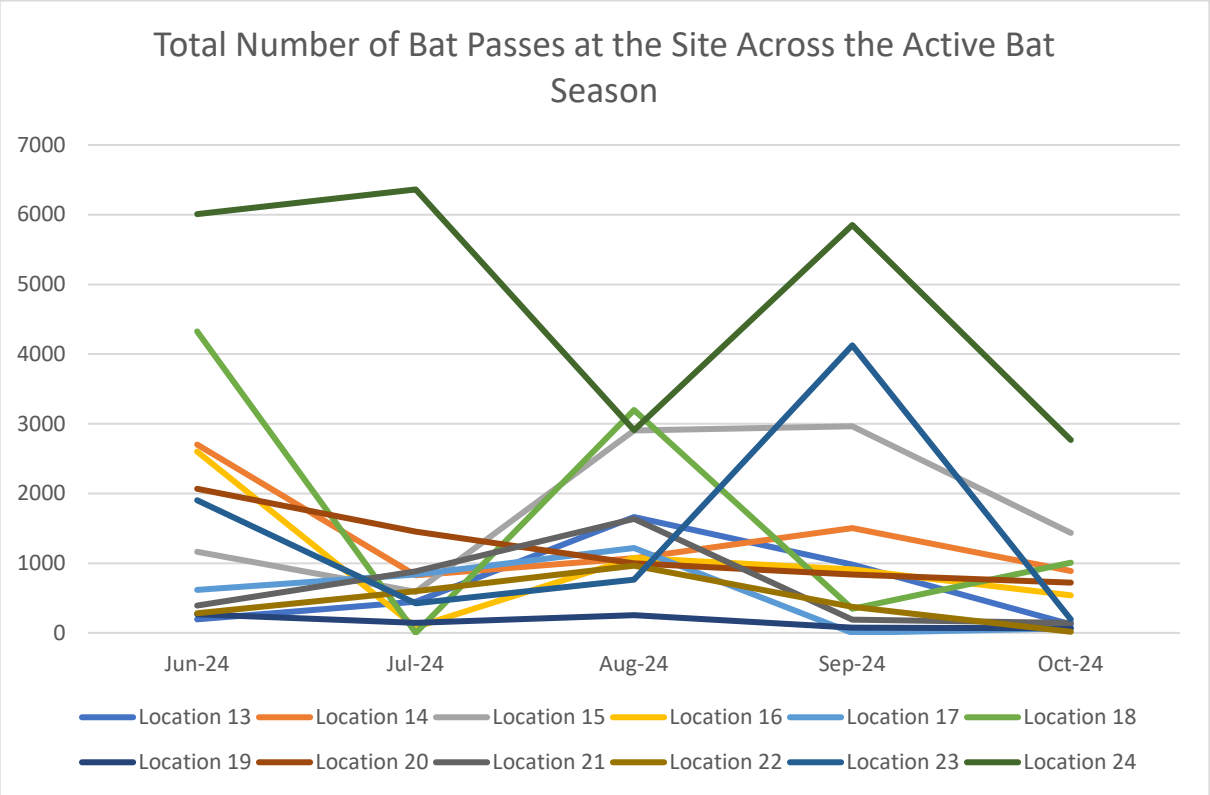
3.48 Serotine are restricted primarily to southern England and Noctule/Leisler's bat are considered frequent and widespread.

3.49 The distribution and status of *Myotis* bats depends on the species and can range from widespread to restricted and from common to rare.

3.50 Although distributed across southern England and Wales, Barbastelle are rare in both the UK and across Europe, although there is potential that this species is under-recorded (JNCC, undated).

3.51 **Figure 3.1** below shows the total number of bat passes recorded at all locations across the 2024 active bat season.

Figure 3.1 Total Number of Bat Passes across the Site per month



3.52 Although statics were not deployed during April and May 2024 the remaining months confirmed a consistent level of activity through the season showing sustained commuting and/or foraging across the Site. This confirms the habitats sampled across the Site are likely to support bats with suitable forage and commuting routes throughout the year as part of the wider Loddon Valley resource available to bats.

3.53 Location 24 showed a clear peak in bat activity in July 2024, during the maternity window, which might suggest a maternity roost nearby. In July mother bats will feed and take care of their pups and so having suitable forage nearby can help mothers with suckling babies. A second peak was recorded in September 2024 at Location 24. In September bats will begin mating as well as increasing food intake ahead of the hibernation period and as such the habitats present at Location 24 may provide ample foraging resource for bats prior to hibernation.

3.54 Similarly, Location 18 showed a peak in activity both in June and August 2024 which may indicate roosts nearby although there was a lull in activity observed in July 2024.

3.55 The majority of the remaining location showed a sustained level of activity across much of the months suggesting regular commuting/foraging across the landscape with no definitive peaks at a particular time of year.

2025 Surveys

3.56 Additional surveys for bats have been undertaken across the course of the 2025 bat survey season including: night-time bat walkover surveys; static detector surveys; external building inspection; emergence surveys; bat trapping; Nathusius' Pipistrelle lekking surveys; and climbed tree inspections.

3.57 The full results of these surveys will be provided in an addendum to this report upon completion of all surveys.

Summary

3.58 A number of bat roosts have been recorded on-site including a maternity roost for Brown Long-eared bats. Based on early design plans it is likely that many of the buildings onsite will be demolition to facilitate the development which will subsequently result in the loss of bat roosts across the Site. All native species of bat and their roost benefit from protection under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended). Development proposals affecting bats or their roosts require a European Protected Species mitigation licence from Natural England. Further details on licencing requirements including appropriate mitigation, compensation and enhancements can be found with the *Loddon Garden Village Bat Mitigation Advisory Note* (EPR, 2024).

3.59 A number of buildings assessed as having suitability to support roosting bats will still need to be subject to further surveys in the form of dusk emergence surveys to determine roost presence and roost characterisation. Where buildings have not been subject to a full suite of survey visits in 2022 and 2023 these will also be subject to further surveys.

3.60 Likewise, once tree retention and removal plans are available, trees assessed as having features suitable to support roosting bats will require further surveys to verify suitability, confirm roosting and roost type. Full details on the further surveys required can be found with the *Loddon Garden Village Bat Advisory Note* (EPR, 2024).

4. EVALUATION

Roosting Bats

4.1 Based upon the available data it can be concluded that, of those buildings surveyed to date there are bats roosting in at least 112 buildings on-site. Of the remaining buildings on-site three require additional investigation to determine whether there are bats roosting within, seven have not been inspected and 59 of those buildings inspected did not have bats roosting at the time of survey.

4.2 Surveys undertaken in EPR to date have resulted in the identification of:

Table 3.4: Bat Roosts recorded by EPR in 2022 and 2023

Building Reference	Roosts supported
12	Brown Long-eared Day Roost
15	Brown Long-eared Day Roost
17	Brown Long-eared Day Roost Common Pipistrelle Day Roost Soprano Pipistrelle Day Roost
18	Soprano Pipistrelle Day Roost *Myotis* Species Day Roost
18a	Soprano Pipistrelle Day Roost
22	Brown Long-eared Day Roost Common Pipistrelle Day Roost Soprano Pipistrelle Day Roost
24	Brown Long-eared Day Roost Soprano Pipistrelle Day Roost
26	Common Pipistrelle Day Roost
27	Brown Long-eared Maternity Roost Soprano Pipistrelle Day Roost
35	Soprano Pipistrelle Day Roost Unknown Pipistrelle species Day Roost
35a	Common Pipistrelle Day Roost Soprano Pipistrelle Day Roost

4.3 Using the evaluation method for assessing importance of roosts (Reason & Wray, 2023) Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bats are all considered widespread in Southern England. *Myotis* species (with the exception of Bechstein's which are most often tree roosting species) are considered Widespread but not as abundant in Southern England. For non-breeding day roosts for Common Pipistrelle, Soprano Pipistrelle, *Myotis* species and Brown Long-eared bats using the evaluation method this leads to a Zone of Influence important valuation for day roosts within the Site. For Maternity roosts for Brown Long-eared bats this leads to a County level importance value for the Site. Therefore, the Site is considered up to **County Level Importance** for roosting bats within the Site.

Commuting and foraging bats

4.4 Overall, the bat assemblage is mostly comprised of predominantly common and widespread species, particularly Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bats mainly

using the boundary habitats for foraging or commuting, and low numbers of less common species such as *Myotis* species and Noctule. Low numbers of rarer bats including Barbastelle, Leisler's, Nathusius Pipistrelle and Serotine were also picked up during static bat detector surveys, but the levels of recorded calls indicate only very infrequent transient use likely utilising the linear corridors within the Site to pass through to suitable habitats such as ancient woodlands.

4.5 Using the evaluation method for assessing the importance of a bat assemblage (Reason & Wray, 2023) leads to a **Regional importance** of the bat assemblage on Site, and their conservation status is considered to be favourable and stable.

5. REFERENCES

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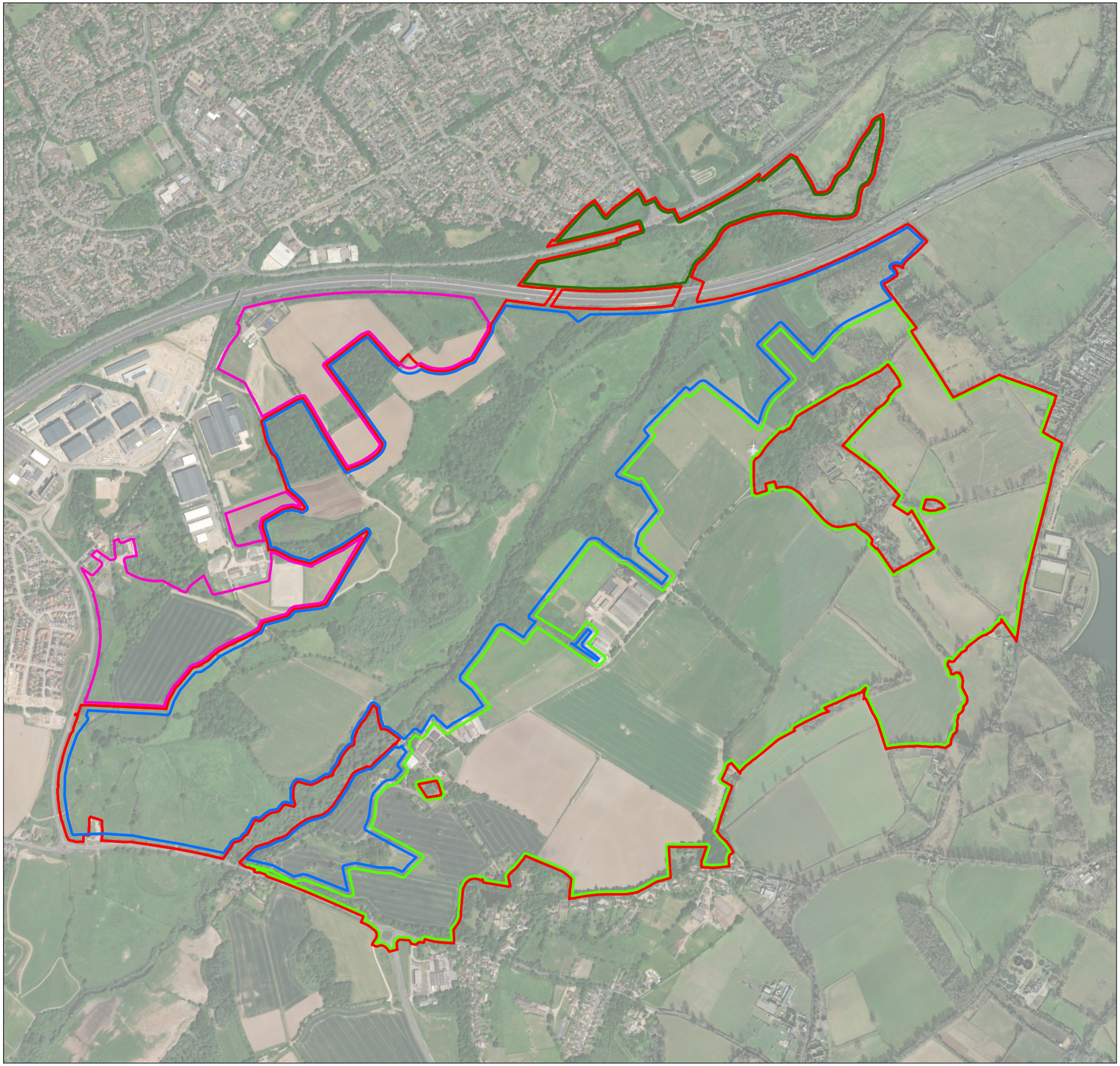
Maps



MAP 11.12.1 Site Overview

KEY

- Site Boundary
- EcoValley
- Hall Farm
- Innovation Valley
- North of M4

SCALE: 1:11,750 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

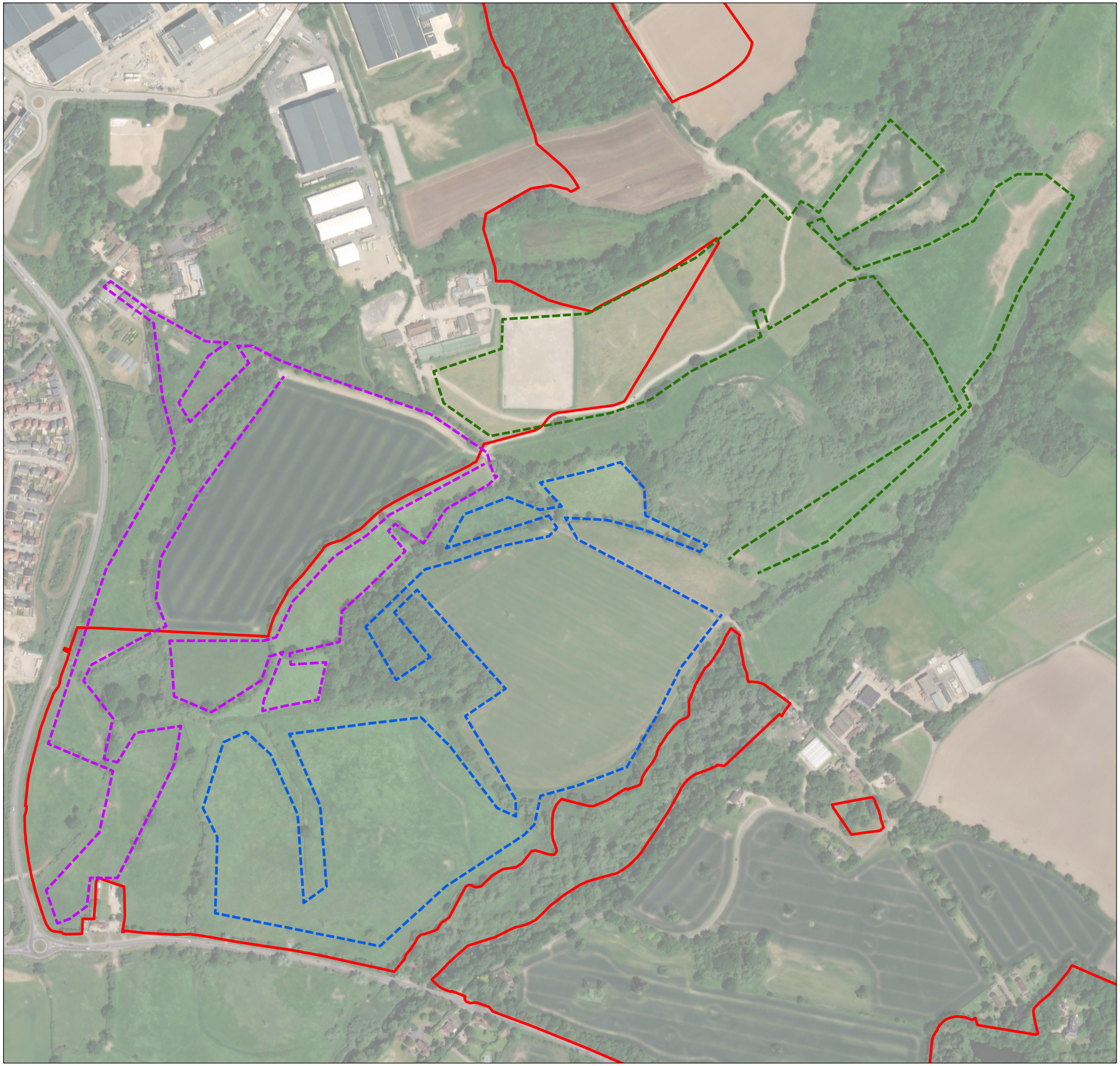
PROJECT: Loddon Garden Village

DATE: 07 August 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\Bats\Map11.12.1_SiteOverview_P2342_3965_070825.aprx

P23/42

Aerial Image: Maxar, Microsoft



MAP 11.12.2 Eco-Valley Transect Routes

KEY

- Site boundary
- A
- B
- C

SCALE: 1:5,250 at A3

0 50 100 150 200 250 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 07 August 2025

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Aerial Image: Maxar, Microsoft

MAP 11.12.3 Hall Farm Transect Routes

KEY

- Site boundary
- G
- H
- I
- J
- K
- L

SCALE: 1:9,250 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 07 August 2025

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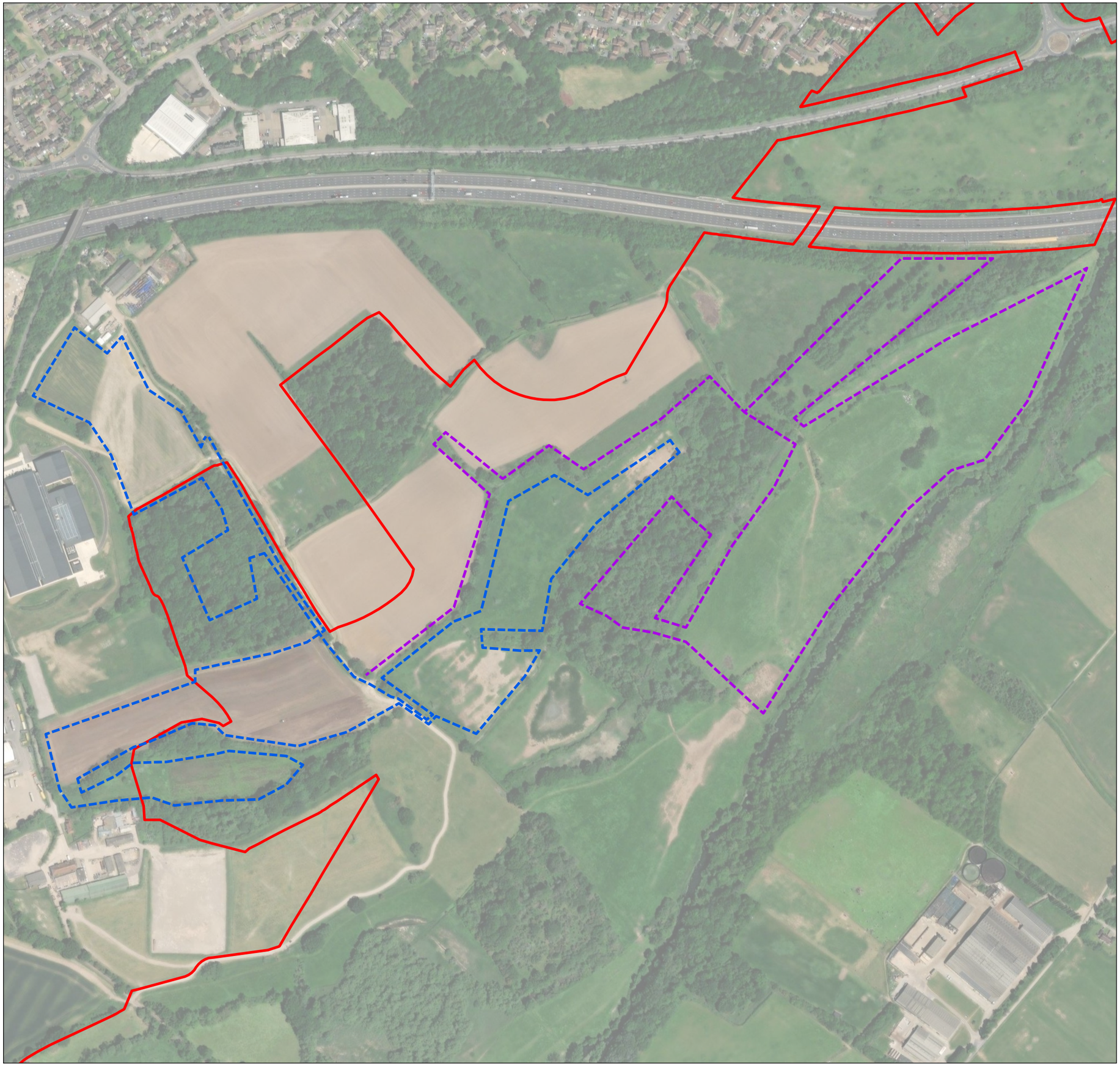
Aerial Image: Maxar, Microsoft



MAP 11.12.4 Innovation Valley Transect Routes

KEY

Site boundary

D

F

SCALE: 1:5,000 at A3

0 50 100 150 200 250 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 07 August 2025

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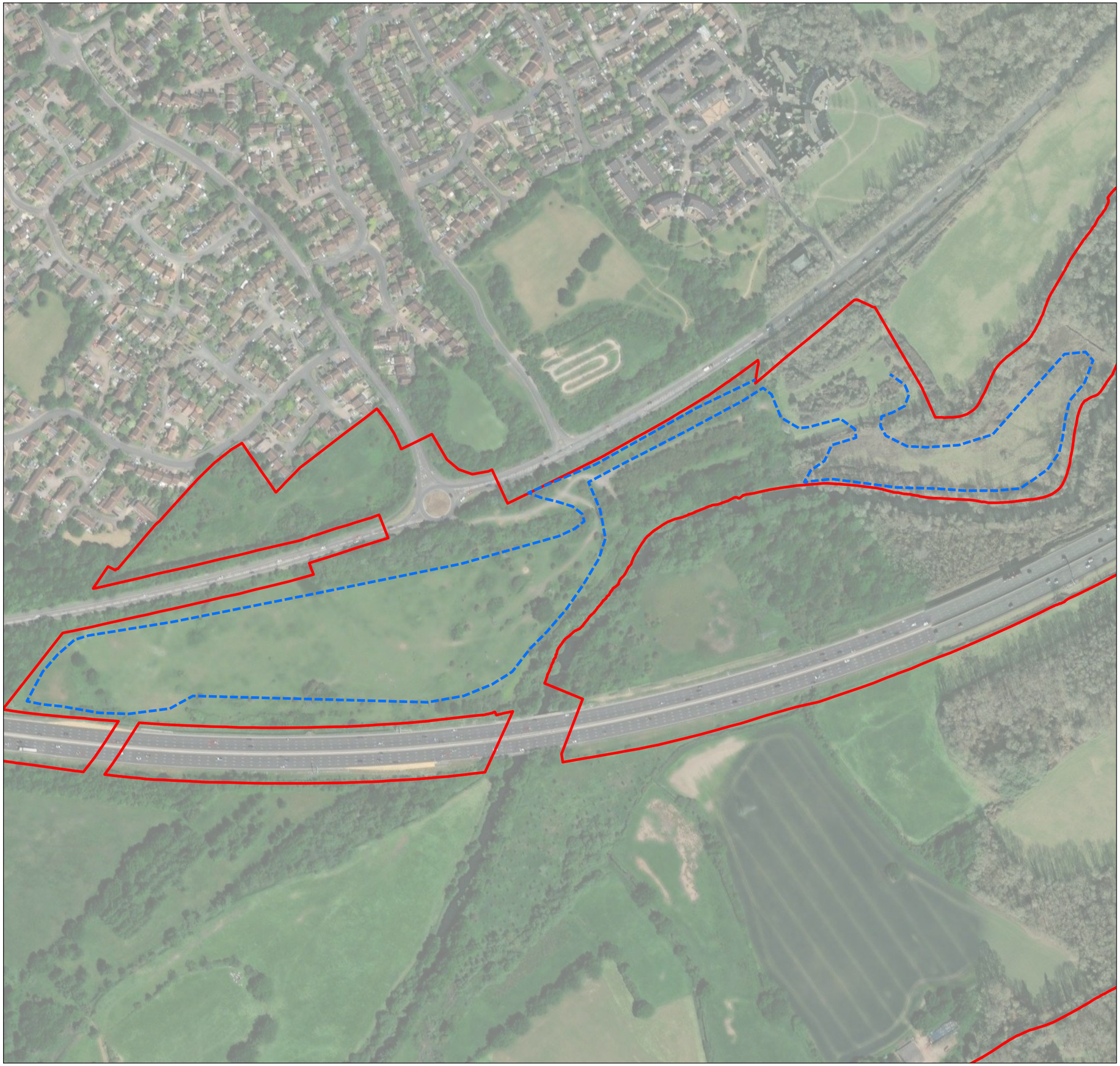
Aerial Image: Maxar, Microsoft



MAP 11.12.5 North of M4 Transect Route

KEY

Site boundary

North of M4

SCALE: 1:3,750 at A3

0 50 100 150 200 250 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 07 August 2025

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Aerial Image: Maxar, Microsoft