ECOLOGICAL EXPERTISE, EVOLVED

Loddon Garden Village

Technical Appendix 11.13 – Hazel Dormice

Prepared on behalf of

University of Reading

Final Report

10 September 2025

23/42-17C

Loddon Garden Village

Technical Appendix 11.13 – Hazel Dormice

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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 Hazel Dormouse *Muscardinus avellanarius* population supported by the Zone of Influence of the Proposed Development;
- The assessment of likely impacts on the Hazel Dormouse population;
- The design of impact avoidance and mitigation measures; and
- The design of biodiversity enhancements for Hazel Dormice.

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 **Appendix 11.1**, however those of particular relevance to Hazel Dormice are summarised below.

1.5 The Hazel Dormouse is a Species of Principal Importance in England. It is legally protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded

significant further protection as a European Protected Species under the Habitats Regulations 2017 (as amended). Collectively, this legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture Dormice;
- Intentionally, deliberately or recklessly disturb Dormice in such a way as to be likely to significantly affect the ability of any significant group of Dormice to survive, breed, or rear or nurture their young or the local distribution of or abundance of the species;
- Intentionally or recklessly damage, destroy or obstruct access to places used by Dormice for shelter or protection (whether occupied or not) or intentionally or recklessly disturb a Dormouse whilst it is occupying such a place;
- Damage or destroy a breeding site or resting place of a Dormouse;
- Possess or transport a Dormouse (or any part thereof) unless under licence; and
- Sell or exchange Dormice.

Planning Policies and Biodiversity Strategies

1.6 Full details of the planning policy of relevance to ecology and nature conservation are included in **Appendix 11.1,** however those of particular relevance to freshwater fish are summarised below.

National Planning Policy Framework

1.7 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

1.8 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.

1.9 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

1.10 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. The Hazel Dormouse is included within the draft species list of the Berkshire Local Nature Recovery Strategy (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 **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 Hazel Dormouse population, 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 freshwater fish assemblage are as follows:

Activities and Resultant Biophysical Changes During the Construction Phase

- Noise, lighting and vibrations which may cause disturbance to Hazel Dormice and their nests, altering natural behaviours and impacting fitness; and
- Vegetation/habitat clearance which may injure and/or kill individuals, disturb and/or destroy Hazel Dormice nests, cause the loss of foraging habitats and result in habitat fragmentation.

Activities and Resultant Biophysical Changes During the Operational Phase

- Increased presence of pets, increase risk of predation of Hazel Dormouse; and
- Habitat creation and enhancement works resulting in new habitats and improved connectivity for Hazel Dormice.

2.4 Some of the changes that could potentially affect the Dormouse population, such as pet predation could have effects beyond the construction footprint, whilst others are likely to affect the Dormouse population through localised habitats changes. With this in mind, the potential ZoI that has been considered within this Appendix includes the Site and habitats within 400m of new residential development.

Desktop Study Methodology

2.5 A biological records search was commissioned from Thames Valley Environmental Records Centre (TVERC) in July 2024, in order to obtain existing records of Hazel Dormice within a 2km radius of the Site, thereby incorporating the potential ZoI and providing context with other Dormouse populations in the local area.

Field Survey

Habitat Assessment

2.6 The Dormouse Habitat Assessment, conducted in April 2022, identified hedgerows and woodland, including a small strip of ancient woodland on Site with the potential for supporting Hazel Dormice.

2.7 A Dormouse habitat assessment was undertaken by licenced Dormouse ecologist Anna Showan BSc (Hons) MSc ACIEEM (2019-40058-CLS-CLS) in April 2022. Broadly, the methods used to assess Dormouse habitat in the ZoI aimed to provide an understanding, of the four main factors that are likely to influence the general value of that habitat areas for Dormice:

- The quality of that habitat area for food resource and diversity, and (to a significantly lesser degree) the availability of favoured nesting material available for Dormice;
- The structure of the arboreal habitat in that specific area, in terms of what is known to be optimal for Dormice;
- The extent (area) of potentially suitable arboreal habitat for Dormice in that habitat area; and
- The connectivity that exists between that habitat area and other potentially suitable habitat areas, in terms of arboreal links.

2.8 Using the above criteria as a guide, habitats with potential to support Dormice, such as woodland, hedgerows, treelines and scrub, were classified as providing no suitability, sub-optimal suitability and optimal suitability.

2.9 Habitats classified as having no suitability provided no conceivable structure for Dormice, for example, through a lack of sufficient vegetation cover and / or high levels of intense management.

2.10 Habitats of sub-optimal suitability to support Dormice may provide suitable species composition and an appropriate structure, but commonly suffers from regular farmland management practices, or may exhibit gaps (i.e. breaks in vegetation cover along hedgerows), which, whilst reducing the overall attraction of a hedgerow to Dormice to an extent, are of a short enough length to not severely impede Dormouse movement.

2.11 Habitats of optimal suitability may contain species of known value to Dormice, such as Hazel *Corylus avellana* or Honeysuckle *Lonicera periclymenum*. Optimal habitats exhibit dense vegetation cover and have good connectivity, which do not suffer from significant gaps or breaks and are not subject to intense management practices.

Dormouse Nest Tube Survey

2.12 The nest tube survey methodology followed the Dormouse Conservation Handbook 2nd Edition (Bright *et al*, 2006). These guidelines recommend that a minimum of 50 nest tubes are deployed in suitable and connected habitat to determine the presence or absence of Dormice. Dormouse nest tubes were installed at 20m intervals in suitable habitat throughout the Site in accordance with best practise guidance specified in the Dormouse Conservation Handbook (Bright *et al*,

2006). Nest tubes were secured just below branches in all hedgerows and woodlands to encourage Dormice to nest within them. Dormouse nest boxes were also placed within the three woodlands to supplement the survey effort in these areas.

2.13 The thoroughness of a Dormouse survey can be measured using an index of probability (**Table 2.1**), assuming that 50 tubes have been placed in suitable habitat. It is recommended that a search effort based on a score of less than 20 is not sufficient to detect likely absence (Bright et al., 2006). The points system can be multiplied if using more than 50 tubes for the survey (for example, doubled where using 100 tubes for example). However, the point system is no longer of relevance once Dormouse are confirmed as being present.

Table 2.1 Index of Probability of Finding Dormice Present in Nest Tubes in Any One Month (Bright et al., 2006).

Month	Index of Probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

2.14 A total of 316 nest tubes and 35 nest boxes were erected in suitable habitat within the development Site by Jay Allen BSc (Hons) (2016-22285-CLS-CLS) on 9th August 2022. The location of these tubes is shown on **Map 11.13.1**.

2.15 Given the size of the Site, the lack of Dormouse records in the local landscape and negative survey results for nearby development, survey efforts were focused on habitats considered optimal to support Dormice and best connected to the local landscape. If Dormice were present on the Site, these habitats are the most likely to support them and focusing survey efforts in this area therefore presented the best chance of confirming presence or likely absence.

2.16 The dates of visits are shown in **Table 2.2** below.

Table 2.2 Dates of Dormouse presence/likely absence surveys

Date of survey	Points per 50 tubes	Total points
26/09/22	7	42
19/10/22	2	12
22/11/22	2	12
12/04/23	1	6
16/05/23	4	24

21/06/23	2	12
27/07/23	2	12
Total Points	**20**	**120**

2.17 Due to the timing of the project programme, the land to the north of the M4 was surveyed at a later date. A total of 101 tubes were deployed across this parcel in on 23rd July 2024, and the dates of the subsequent visits are shown in **Table 2.3** below.

Table 2.3 Dates for Dormouse presence/likely absence surveys for land north of M4

Date of survey	Points per 50 tubes	Total points
21/08/24	5	10
24/09/24	7	14
14/10/24	2	4
25/11/24	2	4
28/04/25	1	2
-	4	8
02/06/25	2	4
Total points	**23**	**46**

Survey Limitations and Constraints

2.18 It was not possible to access some of the tubes at certain times of the year across the Site due to livestock presence and scrub encroachment. However, due to the movement of livestock between fields tubes could be checked at least bimonthly. Overall, proportionally (<10%) only a small number of tubes were inaccessible on occasion during the survey period and all boxes were found on each subsequent survey, once installed.

Evaluation Methodology

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

2.20 The importance of the receptor (i.e. the Dormouse population) has been determined with reference to its ecological value at a defined geographic scale (e.g. local, regional, national), based on factors such as conservation status, abundance and local distribution. The significance of potential ecological effects has been assessed by considering both the value of the receptor and the predicted magnitude of any impact (e.g. extent, duration, reversibility, and timing). Effects are considered significant where they are likely to result in a measurable change in the conservation status of the Hazel Dormouse population.

3. ECOLOGICAL BASELINE

Desktop Study

3.1 The desktop study from TVERC showed a single record of a Dormouse. The record is from 2011 and is located approximately 2.3 km away, to the north of the Site. This record therefore lies a considerable distance from the Site and is separated by significant development on the outskirts of Reading, as well as the M4, which lies immediately north of the Site, which is likely to act as a major (though not impenetrable) barrier to Dormouse movement.

3.2 In addition to the above, EPR has conducted Dormouse surveys in relation to other recent developments in the Reading/Shinfield area and are aware of Dormouse presence in the wider area. These records remain some distance from the Site, on the western side of the A33, approximately 4 km south-west of the Site.

Field Survey

Habitat Assessment

3.3 The Site contains a range of hedgerows, treelines, scrub and woodland pockets of varying suitability to support Dormice. The majority of habitats on Site were assessed to have sub-optimal suitability to support Dormice, primarily including hedgerows which exhibited gaps or showed signs of regular management, or woodlands that lacks a widely dense understorey.

3.4 The majority of optimal hedgerow and woodland habitat was present on the western side of the River Loddon, whilst the eastern side predominantly contained sub-optimal or negligible habitat.

3.5 Habitats classified as having optimal suitability to support Dormice, including woodland, treelines and boundary hedgerows often contained fruit, nut and nectar producing species such as Hazel, Blackthorn *Prunus spinosa* and Hawthorn *Crataegus monogyna*. Dormice use these species as important sources of food as well as for constructing their characteristic nests.

3.6 The structure of the optimal habitat is also suitable for Dormice, with good canopy cover and an understorey which is important to allow for aerial connectivity and avoidance of movement across open ground.

North of M4

3.7 The Site contains suitable habitat for Dormice, including woodland, scrub and hedgerows with fruit, nut and nectar producing species present, including Hazel, Blackthorn and Hawthorn. The hedgerows on-site are predominantly mature and provide optimal habitat on-site for supporting Dormice. Whilst the scrub on-site contains predominantly Bramble *Rubus fruticosus*, which is a favoured species by Dormice for foraging and nesting, patches are mostly discrete and isolated within horse-grazed pasture, meaning Dormice would need to cross open habitat at ground level to reach the scrub. The woodland on-site is considered sub-optimal due to a lack of suitable understorey, as a result of horse-grazing and over-shading from the canopy.

3.8 The Site is relatively well connected to the wider surrounds and notably, by the River Loddon and it's supporting riparian corridor. However, connectivity to the south, which leads into a larger

expanse of rural countryside, is hampered by the M4 motorway, which acts as a likely significant barrier to Dormouse movement.

3.9 **Map11.13.2** shows visually the results of the habitat assessment.

Dormouse Nest Tube Survey

3.10 Results of the presence/likely absence surveys undertaken between 2022 and 2023 are given in **Table 3.1** below, whilst the results of the surveys undertaken north of the M4 between 2024 and 2025 are given in **Table 3.2.**

3.11 Across the course of the surveys, one potential Dormouse nest was identified off-site within the wider Loddon Garden Village allocation land during the first survey visit to the Site in September 2022. The potential nest, composed primarily of leaves, was not fully constructed, thereby making definitive identification difficult. The potential nest is shown in **Plate 3.1** below.

Plate 3.1 Potential Dormouse survey found in September 2022.

3.12 The remaining surveys visits did not identify any confirmed, or potential evidence of Dormice. Given this lack of wider evidence on any subsequent surveys the likelihood of the potential nest being a Dormouse nest is unlikely.

Table 3.1 Results of Dormouse Nest Tube Survey between 2022 and 2023

Visit number	Date	Evidence of Dormice	Other species present
1	25/09/22	1 possible Dormouse nest	6 tubes and 1 box of Wood Mouse evidence e.g. nests/nut cache
2	19/10/22	None	9 Wood Mice found 8 tubes with Wood Mouse evidence e.g. nests/nut cache
3	22/11/22	None	24 Wood Mice found 27 tubes with Wood Mouse evidence e.g. nests/nut cache 1 tube and 1 box with other species of mouse evidence present. 1 tube with other species evidence present
4	12/04/23	None	6 Wood Mice found 45 tubes with Wood Mouse evidence e.g. nests/nut cache 1 tube with other species of mouse evidence present.
5	16/05/23	None	2 Wood Mice found 51 tubes and 2 boxes with Wood Mouse evidence e.g. nests/nut cache/feeding remains 1 tube with other species of mouse evidence present. 7 tubes and 13 boxes with other species evidence present e.g. bird nests
6	21/06/23	None	1 Wood Mouse found 24 tubes with Wood Mouse evidence e.g. nests/nut cache 1 tube with other species of mouse evidence present. 2 tubes and 4 boxes with other species evidence present e.g. bird nests
7	27/07/23	None	3 Wood Mice found 5 tubes and 1 box with Wood Mouse evidence e.g. nests/nut cache 1 tube with other species evidence present e.g. bird nests

Table 3.2 Results of Dormouse Nest Tube Survey north of M4 between 2024 and 2025

Visit number	Date	Evidence of Dormice	Other species present
1	21/08/24	None	3 Wood Mice found 1 tube with Wood Mouse evidence e.g. nests/nut cache
2	24/9/24	None	4 Wood Mice found 4 tubes with Wood Mouse evidence e.g. nests/nut cache
3	14/10/24	None	1 tube with Wood Mouse evidence e.g. nests/nut cache
4	25/11/24	None	4 tubes with Wood Mouse evidence e.g. nests/nut cache
5	28/04/25	None	2 tubes with other species evidence present
6	02/06/25	None	1 Wood Mouse found 3 tubes with Wood Mouse evidence e.g. nests/nut cache 1 tube with other species evidence present

4. EVALUATION

4.1 Due to the lack of any positive evidence of Dormice in any of the seven surveys and considering 20 points was achieved we can conclude the likely absence of Dormice on Site.

5. REFERENCES

Bright, P., Morris, P., and Mitchell-Jones, T. (2006). *The Dormouse Conservation Handbook*. Second edition. English Nature, Peterborough.

FIGURE 11.13.1 Dormouse Survey Tube/Box Locations

KEY

- Site boundary
- Dormouse tube/box
- Dormouse nest

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 24 September 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\ES\Fig11.13.1_DormouseTubes_P2342_3965_240925a.aprx

Aerial Image: Dormouse tube/box:

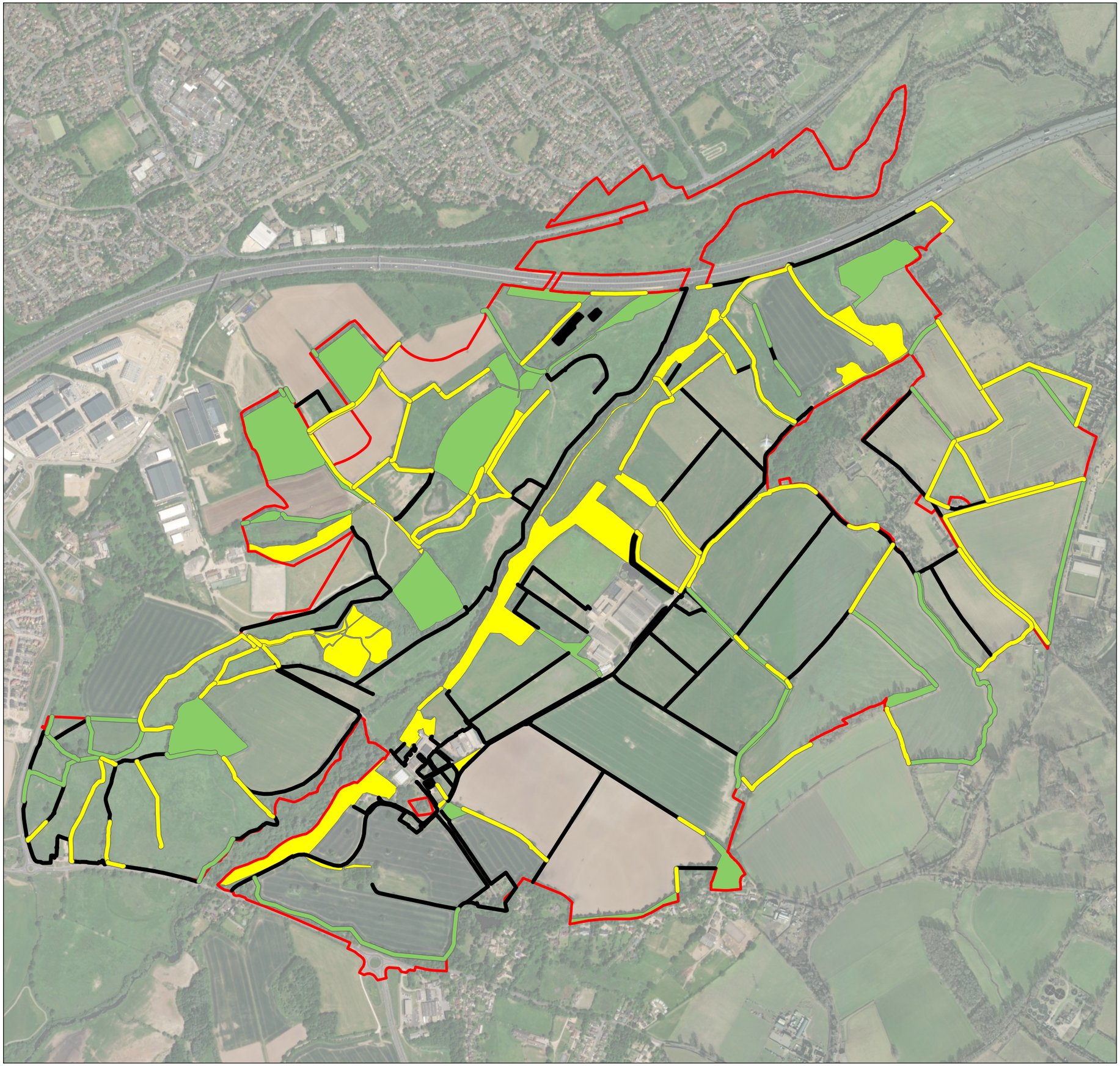

FIGURE 11.13.2 Hazel Dormouse Habitat Assessment

KEY

- Site boundary
- Optimal habitat suitability
- Sub-optimal habitat suitability
- Negligible habitat suitability

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 30 July 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\EIA\Fig11.13.2_DormouseHabitatSuitabilityAssessment_P2342_3965_300725.aprx

Aerial Image: Maxar, Microsoft