ECOLOGICAL EXPERTISE, EVOLVED

Loddon Garden Village

Technical Appendix 11.14 – Water Vole & Otter

Prepared on behalf of

University of Reading

Final Report

10 September 2025

23/42-18C

Loddon Garden Village

Technical Appendix 11.14 – Water Vole & Otter

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Loddon Garden Village

Technical Appendix 11.14 – Water Vole & Otter

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Loddon Garden Village

Technical Appendix 11.14 – Water Vole & Otter

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 Water Vole *Arvicola amphibius* and Otter *Lutra lutra* populations supported by the Zone of Influence of the Proposed Development;
- The assessment of likely impacts on the Water Vole and Otter populations;
- The design of impact avoidance and mitigation measures; and
- The design of biodiversity enhancements for Water Vole and Otter.

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 Water Vole and Otter are summarised below.

Water Vole

1.5 The Water Vole is a Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (as amended), therefore local planning authorities should consider such species when determining planning applications.

1.6 The Water Vole is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and receives full protection under Section 9 of the Act. This protection makes it an offence to:

- Intentionally kill, injure or take wild Water Voles;
- Possess or control live or dead wild Water Voles or any derivative part of a Water Vole;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection;
- Intentionally or recklessly disturb wild Water Voles whilst occupying a structure or place used for that purpose; and
- Intentionally or recklessly obstruct access to any structure or place which any wild Water Vole uses for shelter or protection.

1.7 In terms of developments, the above means that if areas used by Water Voles are to be altered, unnecessary damage should be avoided, and all reasonable steps are taken to minimise impacts on Water Voles and their burrows.

Otter

1.8 The European Otter 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 Otters;
- Intentionally, deliberately or recklessly disturb Otters in such a way as to be likely to significantly affect the ability of any significant group of Otters to survive, breed, or rear or nurture their young or the local distribution of or abundance of Otters;
- Intentionally or recklessly damage, destroy or obstruct access to places used by Otters for shelter or protection (whether they occupied or not) or intentionally or recklessly disturb an Otter whilst it is occupying such a place; and
- Damage or destroy a breeding site or resting place of an Otter.

1.9 Development proposals affecting the Otter require a European Protected Species licence from Natural England.

Planning Policies and Biodiversity Strategies

1.10 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

1.11 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

1.12 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.

1.13 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

1.14 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. Both Water Vole and Otter are included 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 **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 freshwater fish 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 freshwater fish assemblage are as follows:

Activities and Resultant Biophysical Changes During the Construction Phase

- Noise, lighting and vibration which may cause disturbance to Water Vole/Otter, altering their natural behaviours and impacting fitness and habitat use;
- Dust generation and environmental incidents (e.g. spillages and pollution incidents) altering the water quality, impacting upon the supporting habitats of Water Vole/Otter;
- Construction of structures/culverts reducing connectivity and fragmenting habitats.

Activities and Resultant Biophysical Changes During the Operational Phase

- Increased levels of public access which may lead to increased levels of disturbance from people and dogs;
- Changes in water quality arising from run-off impacting upon the supporting habitats of Water Vole/Otter;
- Changes to water level and flow, impacting upon habitat suitability for Water Vole/Otter;
- Increased presence of pets, increasing risk of predation for Water Vole; and
- Implementation of habitat management plans resulting in the enhancement of existing habitats for Water Vole/Otter.

2.4 Some of the changes that could potentially affect Water Vole and Otter, such as water pollution, have effects beyond the construction footprint, whilst others are likely to affect Water Vole and Otter through localised habitats changes. With this in mind, the potential ZoI that has been considered within this Appendix includes the River Loddon and its downstream habitats.

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 Water Vole and Otter

populations within a 2km radius of the Site, thereby incorporating the potential ZoI and providing context with other populations in the local area.

Field Survey Methodology

2.6 The surveys followed standard best practice methods given in the Water Vole Mitigation Handbook (Dean *et al*, 2016), The New Rivers and Wildlife Handbook (Ward *et al*, 1994) and utilised a method for assessing the quality of Water Vole habitat (Harris *et al*, 2009).

Water Vole Habitat Assessment

2.7 As assessment of Water Vole habitat suitability was undertaken in June 2022 by Katrina Diedericks BSc (Hons) utilising criteria set out within the 2nd edition of the Water Vole Conservation Handbook (Strachan and Moorehouse, 2006). All waterbodies and ditches on the Site were walked and the presence/absence of key habitat elements was noted.

2.8 An update assessment of habitat suitability was undertaken in June 2024. Alongside the original criteria, a comparison was made utilising the Water Vole Habitat Suitability assessment (Harris *et al*, 2009).

Water Vole & Otter Presence/Absence Survey

2.1 Presence/likely absence survey for Water Vole can be undertaken between April and September, comprising of two site visits: one between mid-April and June and the second between July and September. Any field signs indicating Water Vole presence were noted and these included:

- Faeces
- Latrines
- Feeding stations/lawns
- Burrows
- Footprints

2.9 Otters can be surveyed at any time of the year and were therefore undertaken in conjunction with the seasonally constrained Water Vole Survey. Any field signs indicating Otter presence were noted and these included:

- Spraint
- Footprints
- Tracks
- Feeding signs/remains
- Holts

2.10 Walk-over surveys of watercourses within the Site, which included recording any signs of Water Vole and Otter, were undertaken in June and September 2022 by Katrina Diedericks BSc (Hons)

and Katie Cammack BSc (Hons) MSc MCIEEM. The surveys were conducted from one bank, with the aid of binoculars where required, and from the channel where it was safe to do so. The length of the River Loddon within the Site boundary, as well as 250m up and downstream, was surveyed by canoe. In addition, the River Loddon was resurveyed from the banksides in June 2024.

2.11 Metadata for the surveys are detailed below in **Table 2.1**.

Table 2.1. *Summary of Metadata for the Water Vole and Otter Surveys*

Date	Temperature	Cloud cover	Rain	Wind (BF)
20.06.2022	21ºC	5%	No rain	1-2
30.06.2022	19 ºC	40%	No rain	1-2
22.09.2022	20 ºC	60%	No rain	0-1
27.09.2022	14 ºC	60%	Light drizzle	1-2
17.06.2024	22ºC	10%	No rain	0-1

Survey Constraints and Limitations

2.12 The River Loddon's banks are densely vegetation and in places steep, limiting access along its length. Whilst this was somewhat overcome with the use of the canoe in 2022, some parts of the channel were still too densely vegetated and overgrown to allow for an in-depth inspection.

Evaluation Methodology

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

2.14 The importance of the receptor (i.e. the Water Vole or Otter populations) 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 Water Vole or Otter populations.

3. ECOLOGICAL BASELINE

Desktop Study

3.1 Four records of Water Vole were returned within a 2km radius of the Site. Three of these records were from Dinton Pastures, whist the fourth was located at Maiden Erlegh Local Nature Reserve. The most recent of these records was from 1997.

3.2 Sixteen records of Otter from six locations were returned during the desktop study. The majority of these were located approximately 950m downstream of the Site on the River Loddon.

Habitat Description

Water Vole Habitat Suitability Assessment

3.3 The habitat assessment completed in 2022 identified 10 watercourses on the Site which were considered optimal for Water Vole. These are shown on **Map 11.14.1**, with the results detailed in **Table 3.1** below.

Table 3.1 2022 Water Vole habitat assessment results

Locations	Assessment					
	*Water present all year round of adequate depth	Suitable food source all year round of a sufficient density	Either burrowing or nest building habitat present	No disturbance (poaching, human impact)	Connected to other suitable habitats (not isolated or fragmented)	Suitability Score
1	N	Y	Y	Y	Y	Sub-optimal
2	Y	Y	Y	Y	Y	Optimal
3	Y	Y	Y	Y	Y	Optimal
4	N	N	Y	N	Y	Unsuitable
5	N	N	Y	Y	Y	Sub-optimal
6 + 7	Y	Y	Y	Y	Y	Optimal
8 + 9	Y	Y	Y	Y	Y	Optimal
10 to 12	Y	N	Y	Y	Y	Sub-optimal
13 + 14	Y	N	Y	Y	Y	Sub-optimal
15 + 16	N	N	Y	Y	Y	Sub-optimal
17 + 18	Y	Y	Y	Y	Y	Optimal
20 + 21	N	N	Y	Y	Y	Sub-optimal
22 + 23	Y	Y	Y	Y	Y	Optimal
24 to 26	Y	N	Y	Y	Y	Sub-optimal
27	N	N	Y	Y	Y	Sub-optimal
28	N	N	Y	Y	Y	Sub-optimal
29 to 31	N	Y	Y	Y	Y	Sub-optimal
32	N	N	Y	Y	Y	Sub-optimal
33 to 36	N	Y	Y	Y	Y	Sub-optimal
37 +38	Y	Y	Y	Y	Y	Optimal
39 + 40	Y	Y	Y	Y	Y	Optimal
41	Y	N	Y	Y	Y	Sub-optimal

42 to 44	Y	Y	Y	Y	Y	Optimal
River Loddon	Y	Y	Y	Y	Y	Optimal

3.4 The 2024 Water Vole habitat suitability assessment reviewed 26 surveyed sections along the River Loddon, comparing results from the Water Vole Conservation Handbook Method (**Map 11.14.1**) and the Water Vole Habitat Suitability Method (**Map 11.14.2**) against the 2022 baseline survey. The assessment found that 10 sections were classified as suitable under the Conservation Handbook Method, while the Habitat Suitability Method identified a higher proportion of optimal habitat across the surveyed area (**Table 3.2**).

3.5 Several sections remained unchanged, while some showed a decline in suitability, particularly where they transitioned from sub-optimal to unsuitable. Conversely, certain areas showed improvements in suitability, including newly created Sustainable Drainage Systems (SuDS) that provided additional optimal habitat. Seasonal flooding remains a key factor influencing habitat classification, impacting sections that might otherwise be considered suitable. Overall, the results highlight both stable and changing habitat conditions, with areas of declining suitability balanced by habitat improvements in specific locations,

Table 3.2 Water Vole habitat assessment comparison

Waterbody References		2022 Results	2024 Results		Comparison		Discussion
					2022	2024	
2022	2024	WV Conservation Handbook Method	WV Conservation Handbook Method	WV Habitat Suitability Method	Decline, Same, or Improvement		
1	1	Sub-optimal	Unsuitable	Sub-optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WV Habitat Suitability criterion.
2	2	Optimal	Optimal	Optimal	=	=	No Change
3	3	Optimal	Optimal	Sub-optimal	=	-	No change when comparing with the same assessment criteria. However, reduced suitability when comparing with WV Habitat Suitability criterion.
4	4	Unsuitable	Unsuitable	Unsuitable	=	=	No Change
5	5	Sub-optimal	Unsuitable	Sub-optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WV Habitat Suitability criterion.
6 + 7	6	Optimal	Optimal	Optimal	=	=	No Change
8 + 9	7	Optimal	Optimal	Optimal	=	=	No Change
10 to 12	8	Sub-optimal	Sub-optimal	Sub-optimal	=	=	No Change
13 + 14	9	Sub-optimal	Sub-optimal	Sub-optimal	=	=	No Change
15 + 16	10	Sub-optimal	Sub-optimal	Unsuitable	=	-	No change when comparing with the same assessment criteria. However, reduced suitability when comparing with WV Habitat Suitability criterion.
17 + 18	11	Optimal	Optimal	Optimal	=	=	No Change

20 +21	12	Sub-optimal	Unsuitable	Optimal	-	+	Reduced suitability when comparing with the same assessment criteria. However, improved when comparing with WVHabitat Suitability criterion.
22 +23	13	Optimal	Sub-optimal	Optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WVHabitat Suitability criterion.
24 to 26	14	Sub-optimal	Optimal	Sub-optimal	+	=	Improved suitability when comparing with the same assessment criteria. However, no change when comparing with WVHabitat Suitability criterion.
Not Previously Included	14a	Newly created SuDs feature	Sub-optimal	Optimal	N/A		Not previously included
27	15	Sub-optimal	Unsuitable	Sub-optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WVHabitat Suitability criterion.
28	16	Sub-optimal	Sub-optimal	Optimal	=	+	No change when comparing with the same assessment criteria. However, increased suitability when comparing with WVHabitat Suitability criterion.
29 to 31	17	Sub-optimal	Unsuitable	Sub-optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WVHabitat Suitability criterion.
32	18	Sub-optimal	Unsuitable	Unsuitable	-	-	Reduced suitability when comparing with the same assessment criteria and with WV Habitat Suitability criterion.
33 to 36	19	Sub-optimal	Sub-optimal	Sub-optimal	=	=	No Change

37 +38	20	Optimal	Optimal	Optimal	=	=	No Change
39 +40	21	Optimal	Optimal	Optimal	=	=	No Change
41	22	Sub-optimal	Unsuitable	Sub-optimal	-	=	Reduced suitability when comparing with the same assessment criteria. However, no change when comparing with WVHabitat Suitability criterion.
42 to 44	23	Optimal	Optimal	Optimal	=	=	No Change
River Loddon	24	Optimal	Optimal	Sub-optimal	=	-	No change when comparing with the same assessment criteria. However, reduced suitability when comparing with WVHabitat Suitability criterion.
New subsection of the River Loddon	25	Not previosuly surveyed due to access issues	Sub-optimal	Optimal	N/A		Not previously included

Field Survey Results

Water Vole & Otter Presence/Absence Survey

Water Vole

3.6 Neither of the surveys undertaken in 2022, or 2024 recorded any evidence of Water Vole activity. No field signs, including latrines, feeding remains, burrows, or footprints were identified in any of the surveyed sections. Although some areas were found to contain potentially suitable habitat, no direct evidence was detected.

3.7 During the survey, burrows were identified along sections of the banks of the River Loddon; however, these were assessed as being likely created and utilised by the invasive Signal crayfish *Pacifastacus leniusculus* rather than Water Vole. The burrows exhibited characteristics consistent with Crayfish activity, including their size, shape, and positioning relative to the waterline.

Otter

3.8 In 2022, an Otter spraint was found on the banks of the River Loddon, whilst likely feeding remains were found further downstream. The locations of these are shown on **Map 11.14.3**.

3.9 In 2024, old Otter spraint and feeding remains were found in a similar location to the evidence found in 2022. The results of the 2024 survey are shown on **Map 11.14.4**.

3.10 There are a number of anecdotal records of Otter using the River Loddon and surrounding habitats, provided by members of farm staff. This includes a sighting of two Otter crossing from the river to Rushy Mead through the adjoining grassland field.

4. EVALUATION

4.1 The River Loddon experiences hydrological conditions that are largely unsuitable for sustaining a stable Water Vole population, primarily due to annual flooding and high-flow events. Water Voles require relatively stable water levels and well-vegetated banks for burrowing and foraging; however, the frequent inundation of riparian habitats along the Loddon floodplain poses significant challenges for their survival. Flooding can destroy burrow systems, displace individuals, and reduce the availability of key food resources, leading to population instability.

4.2 Additionally, the presence of fine sediment deposition and bank erosion in some stretches may further limit suitable burrowing habitat. Given these conditions, the River Loddon does not currently provide a suitable environment for a sustainable Water Vole population. Water Vole are therefore currently considered likely absent from Site.

4.3 Otter are known to be present in the local landscape, albeit the scarcity of field signs suggests Otters may use the stretch of the River Loddon within the Site infrequently, likely for occasional foraging or commuting. The lack of fresh and persistent evidence suggests that Otter do not use the Site on a consistent basis. Despite this, the River Loddon is likely to be a key habitat within the landscape for the local Otter population, facilitating their movement through the local area. The Otter population is therefore considered to be of **Local** importance, and its conservation status is favourable and stable.

5. REFERENCES

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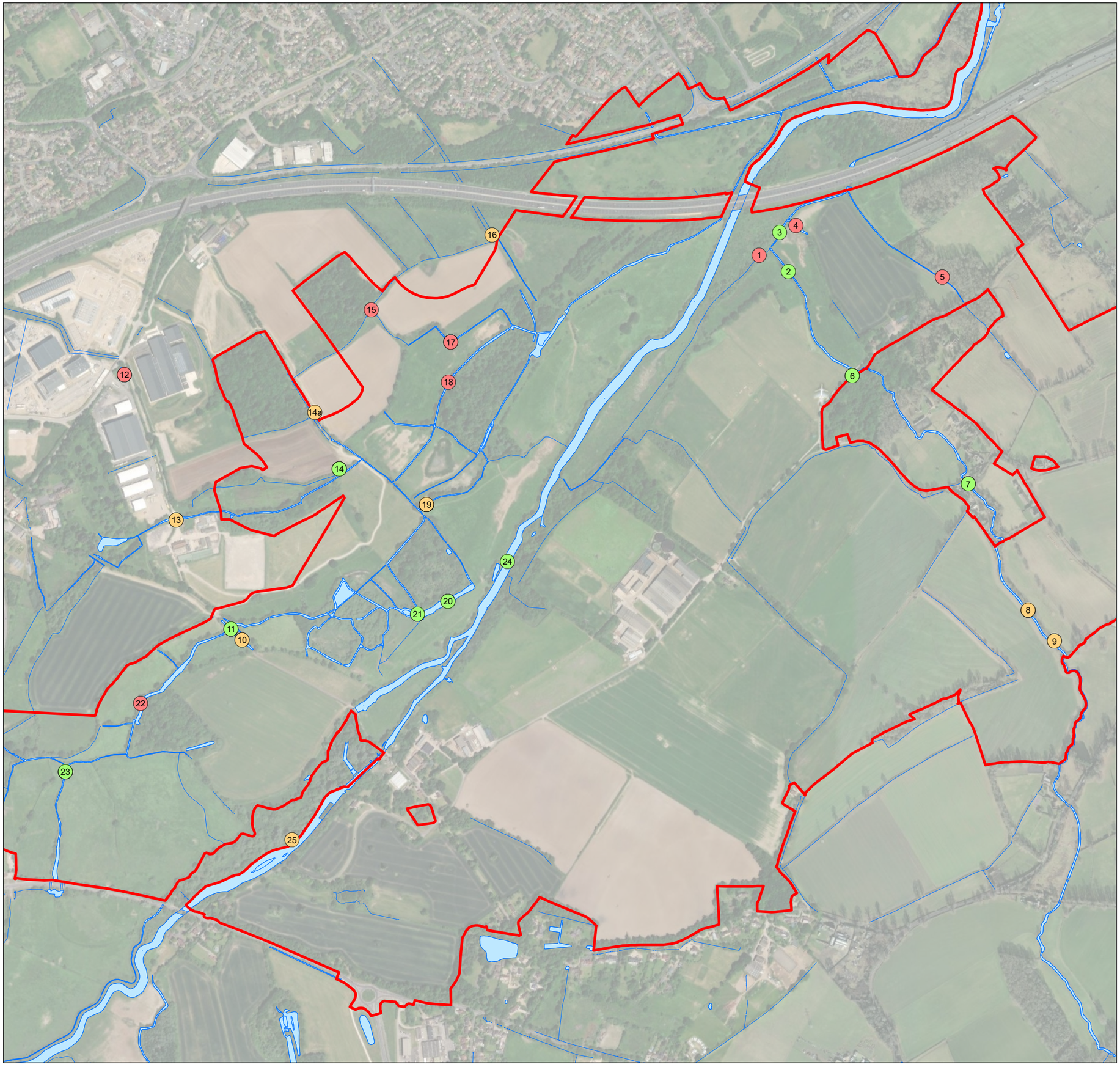

MAP 11.14.1 Water Vole Habitat Assessment Results (Water Vole Conservation Handbook Method)

KEY

- Site boundary
- Optimal
- Sub-optimal
- Unsuitable

SCALE: 1:9,500 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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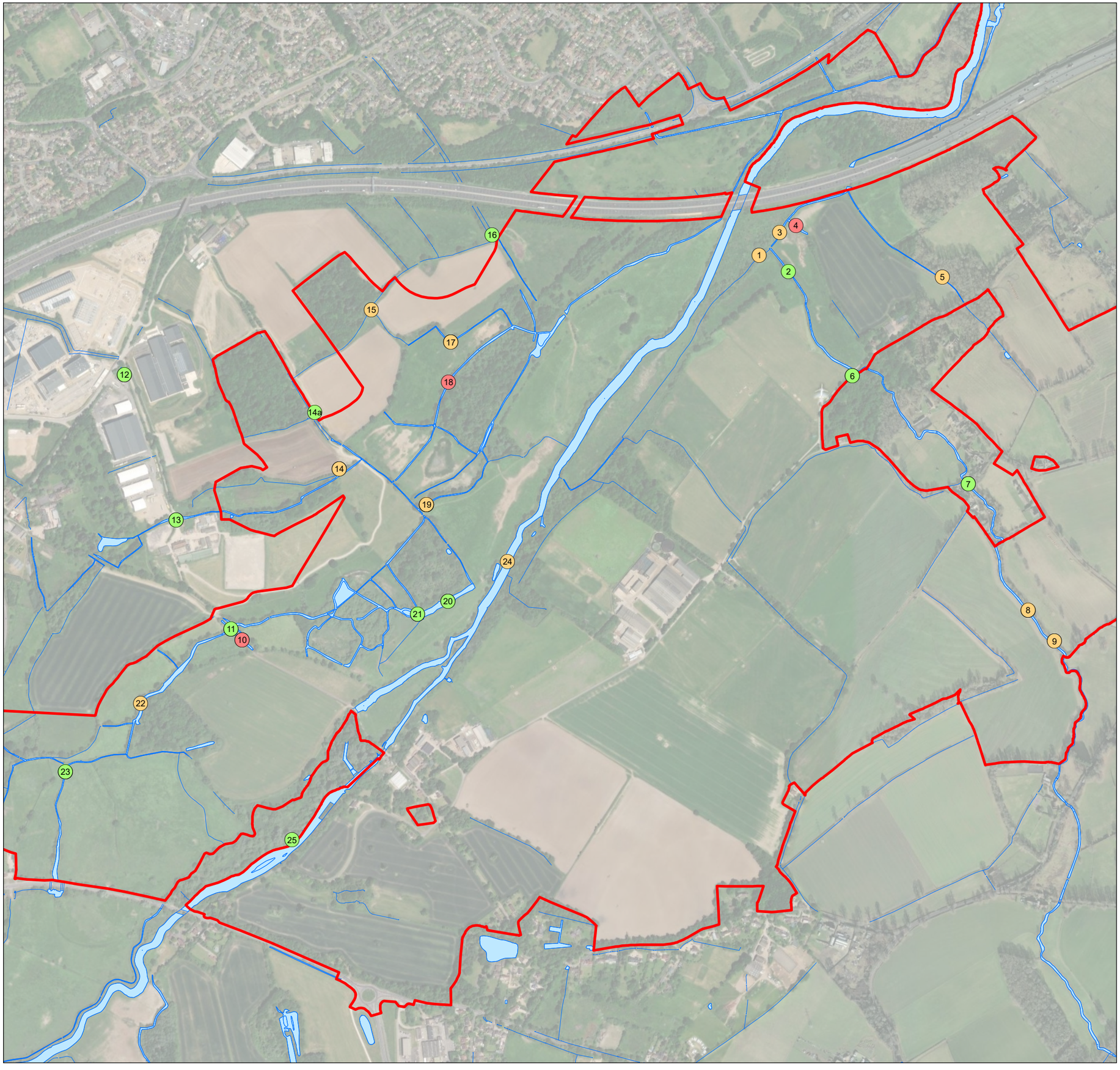
Aerial Image: Maxar, Microsoft



MAP 11.14.2 Water Vole Habitat Assessment Results (Water Vole Habitat Suitability)

KEY

- Site boundary
- Optimal
- Sub-optimal
- Unsuitable

SCALE: 1:9,500 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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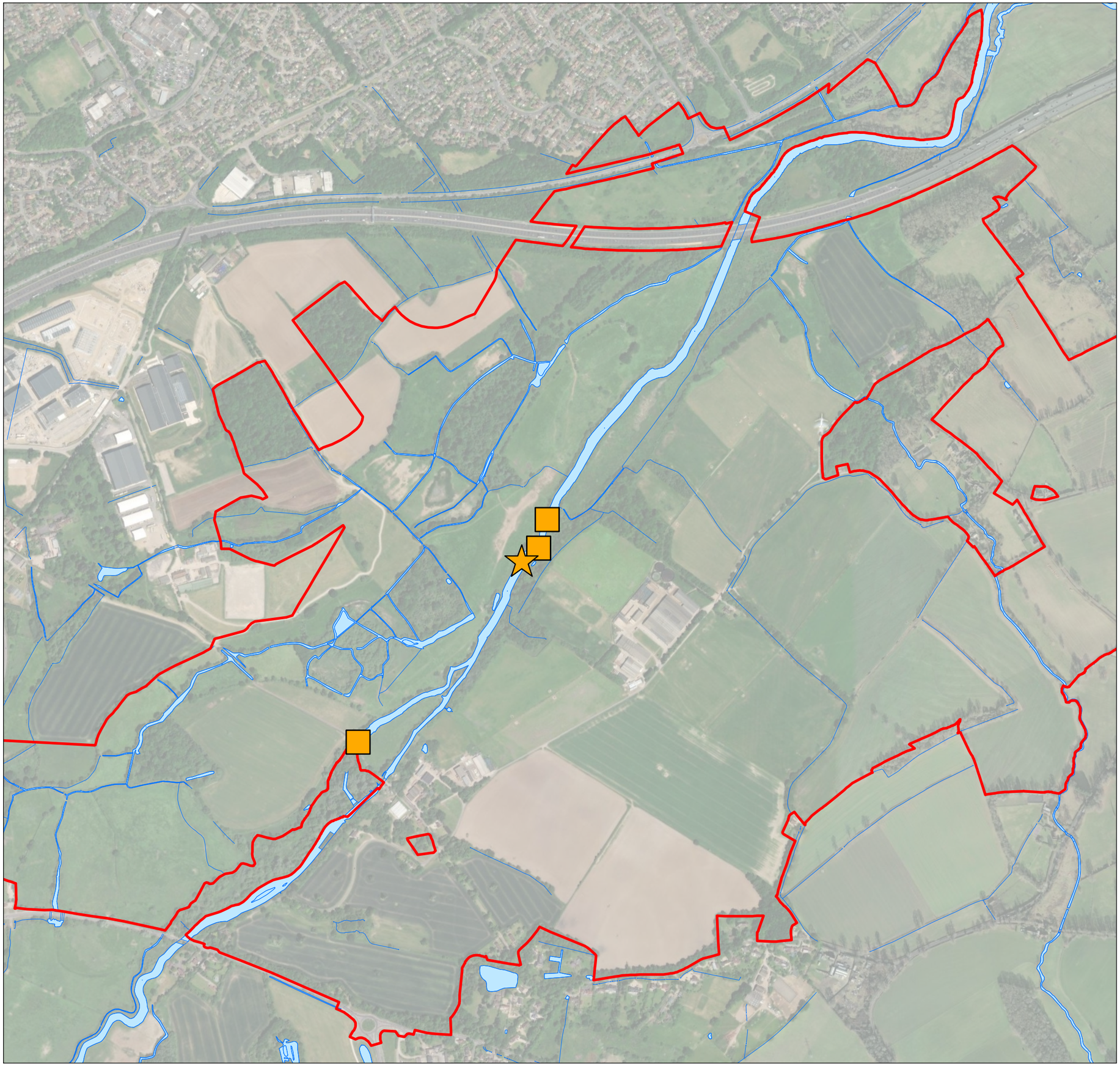

FIGURE 11.14.3 Otter Survey Results 2022

KEY

Site boundary

Otter feeding remains

Otter spraint

SCALE: 1:9,500 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

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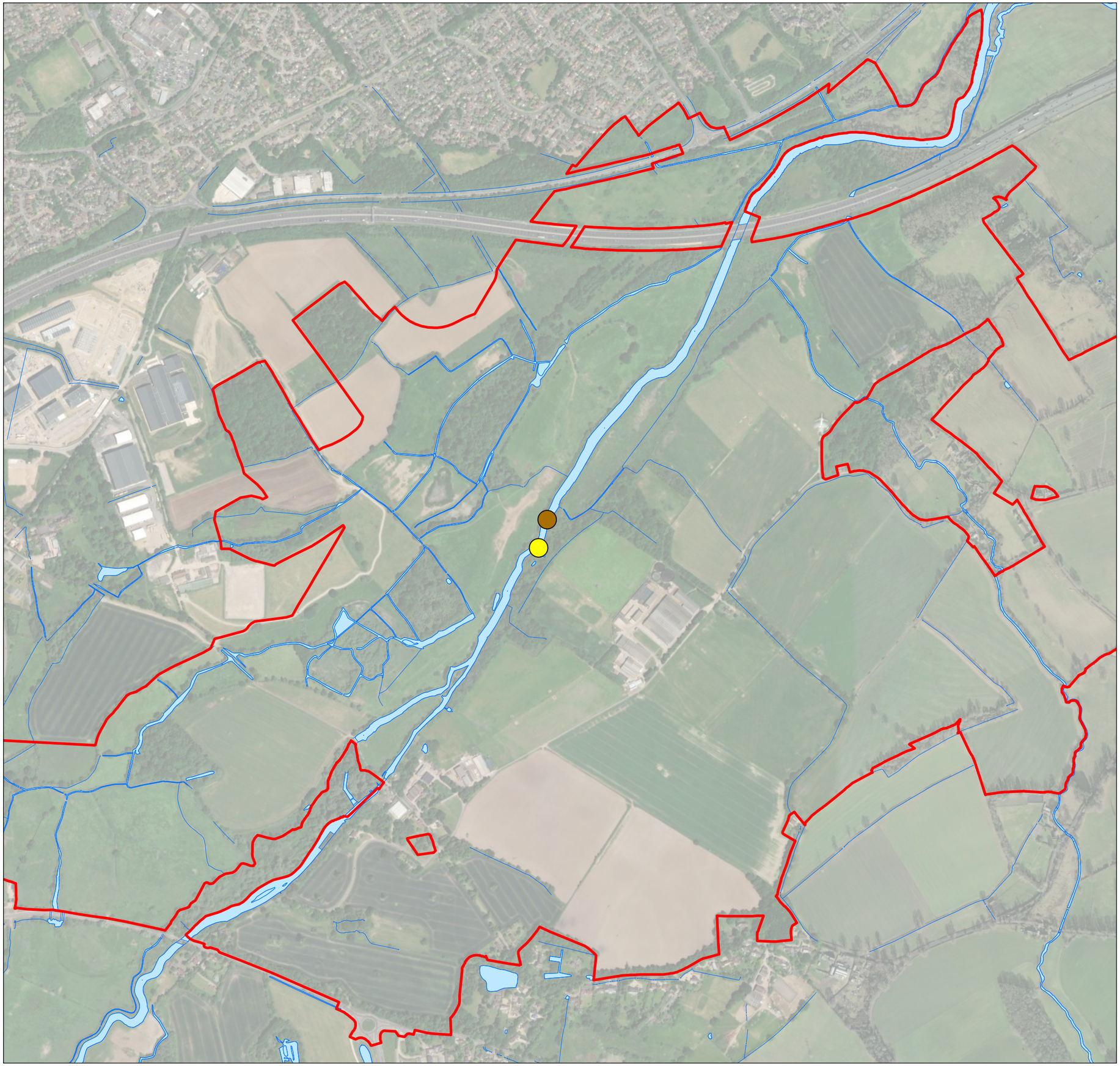

FIGURE 11.14.4 Otter Survey Results 2024

KEY

- Site boundary
- Old spraint and feeding remains
- Possible weathered spraint

SCALE: 1:9,500 at A3

0 100 200 300 400 500 Metres

N

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Aerial Image: Maxar, Microsoft