Construction Environmental Management Plan (Phase 1)

August 2025

Land off Watmore Lane, Winnersh

Prepared by
CSA Environmental

On behalf of
Taylor Wimpey West London

Report No: CSA/7168/07

CSA environmental

masterplanning | ecology | landscape | heritage

This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

Report Reference	Date	Revision	Prepared by	Approved by	Comments
CSA/7168/07	11/04/25	-	TR	KC	
	15/05/25	A	TR	KC	
	12/08/25	B	TR	KC	

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1.0 INTRODUCTION

Background

1.1 This Construction Environmental Management Plan (CEMP) has been prepared by CSA Environmental on behalf of Taylor Wimpey West London. It provides details of the biodiversity protection and mitigation measures to be implemented during the construction phase of development at Land off Watmore Lane, Winnersh (Phase 1) (hereafter referred to as 'the Site').

1.2 Taylor Wimpey West London have submitted an application for a non-material amendment under Section 96A of the Town and Country Planning Act 1990, to alter the wording of planning conditions attached to the approved application 230208 to introduce phasing into the outline planning permission. This application was approved on 7 April 2025 (reference: 250640). This report has been produced to accompany a reserved matters application for Phase 1 of the proposals which cover the northern part of the Site.

1.3 The outline planning application (230208) was supported by ecological survey work and assessments undertaken by CSA Environmental between 2017 and 2022, which included an Ecological Impact Assessment (EcIA) (report reference: CSA/1668/11, Appendix A) and targeted survey work for habitats and protected species.

1.4 To inform this CEMP the Site has been re-visited by CSA Environmental between June and August 2024 to update ecological surveys for relevant habitats and species in order to inform appropriate protection and mitigation measures for important ecological features, the findings of which are presented herein.

1.5 Sections 3 and 4 of this report provide the biodiversity protection and mitigation measures relevant to the Site and should be adhered to by the Site Manager and operatives during the construction phase of development.

Purpose of Document

1.6 This report has been produced to address Condition 6 of the outline planning permission, which reads as follows:

No development shall take place within a phase, until a Construction Method Statement, including a CEMP (Construction Environmental Management Plan), for that phase has been submitted to, and approved in writing by, the local planning authority. The approved Statement (including CEMP) shall be adhered to throughout the construction period for that phase. The Statement (including CEMP) shall provide for but not be limited to the following:

a) construction of suitable works access
b) the parking of vehicles of site operatives and visitors;
c) loading and unloading of plant and materials;
d) storage of plant and materials used in constructing the development;
e) the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;
f) wheel washing facilities;
g) measures to control the emission of dust and dirt during construction;
h) a scheme for recycling/ disposing of waste resulting from demolition and construction works;
i) hours of construction;
j) hours of delivery;
k) mitigation and avoidance measures for ecology and biodiversity; and
l) the use of any mineral material extracted during construction.

1.7 This report addresses the Construction Environmental Management Plan part of this condition and should be appended to the wider Construction Method Statement.

Roles and Responsibilities

1.8 The Developer, Taylor Wimpey West London, will appoint CSA Environmental or other appropriately qualified ecologists to act as the Ecological Clerk of Works (ECoW). Responsibilities of the ECoW will include, though are not limited to:

- Advising on the locations of ecological constraints, such as protected or notable species.
- Supervising key works activities to ensure the correct implementation of ecological impact avoidance and mitigation measures as set out here-in.
- Monitoring site works to ensure adherence to the procedures set out here-in, as well as general environmental best practice.
- Liaising as required with site personnel, Taylor Wimpey West London and the Local Authority on ecological issues.

1.9 The responsibilities of Taylor Wimpey West London will include, though are not limited to:

- Adhering to the procedures set out here-in, including by any appointed third-party contractor.
- Liaising as necessary with the ECoW regarding any uncertainties in the procedures set out here-in, or where there is any concern of impacts to ecological features.

1.10 A copy of this document will be retained on-site for reference for the duration of construction.

1.11 The CEMP is intended to cover only the construction phase and makes no prescription for operational phase management procedures.

2.0 BASELINE ECOLOGICAL CONDITIONS

Baseline Survey Work

2.1 The development scheme and prescriptions within this CEMP have been informed by several years of targeted survey work at the Site. This includes habitat and species survey work completed by CSA Environmental between 2017 and 2022, with updated survey work for the following ecological features undertaken in 2024 to inform the reserved matters application:

- UK Habitat Classification survey (June 2024)
- Ground Level Tree Assessment (GLTA) for roosting bats (June 2024)
- Badger survey (June 2024)
- Reptile survey (June to August 2024)

2.2 Updated baseline ecological conditions relating to protected and notable habitats and species are provided below. These findings should be read in conjunction with the EcIA report (CSA/1668/11) produced for the outline application.

Habitats and Flora

2.3 An update habitat survey was undertaken on 17 June 2024 by Tom Richards MCIEEM, FISC level 4. With reference to the previous EcIA report, the habitats on-site were re-assessed to identify any changes that had occurred since the previous reports were written. Consideration was also made in relation to evidence of, or potential for, protected and notable species to be present which are discussed later in this section. Results of the updated habitat survey are presented on the Habitats Plan in Appendix B. Appendix C provides recent photographs of the habitats at the Site.

2.4 Phase 1 of the Site consists of the northern part of a large, modified grassland field separated into two sections under different management at the time of survey. The northern section of the field (F1) exhibited tall species-poor grassland vegetation dominated by fast-growing grasses and tall ruderal species with limited broadleaved herbs. This part of the field is subject to lower intensity management, allowing a taller sward height to develop alongside undesirable species. Within the western part of this section of the field, six individual pedunculate oak *Quercus robur* trees are present within the field area.

2.5 The remainder to the Site to the south (F2) exhibited modified grassland of a consistently shorter, more intensively managed sward length. The species composition here is less diverse than the northern section of the field with fewer tall ruderal species, although occasional stands of common nettle *Urtica diocia* are present.

2.6 The field is bounded by native and ornamental hedgerows and a line of trees to the west and a further line of trees to the north. The eastern edge of the Site consists of ancient woodland, blackthorn scrub and a section of the Emm Brook. Two trees in the north-east corner of the Site have been classified as pre-veteran trees (Veteran Tree Management Plan, Keen Consultants, 1894-KC-XX-YTREE-VeteranTreeManagementPlanRevA). No field boundary is present to the south, where Field F2 continues further south into Phase 2.

2.7 The update habitat survey undertaken in June 2024 found the site conditions to be consistent with those previously identified and reported within the EcIA report submitted with the outline application.

Fauna

Roosting Bats

2.8 Preliminary Roost Assessments (PRA) of all trees within the Site were initially undertaken in 2017, which were followed by dusk emergence/pre-dawn return to roost surveys of two trees (Trees T52 and T79) which were the only trees with potential for roosting bats due to be removed to facilitate the proposed development. No evidence of roosting bats was identified in association with these trees. The PRA survey was updated in 2020 which assessed the suitability of these two trees to be 'low' due to the features present and previous absence of roosting bats. Survey work undertaken in 2017 and 2020 was undertaken in accordance with prevailing guidelines at the time of the survey (Collins, 2016).

2.9 Ground Level Tree Assessments (GLTA) of trees on-site due to be removed or impacted, with reference to the Tree Protection Plan produced by Keen Consultants (reference 1894-KC-XX-YTREE-TreeProtectionPlan01RevA), were undertaken by Tom Richards MCIEEM (Natural England bat licence CL18, reference number 2017-31786-CLS-CLS) on 17 June 2024. Full methods and results of the GLTA surveys are provided in Appendix D.

2.10 Tree 52 will be removed as it has collapsed into the field area and Tree 79 is due to be coppiced to c. 1m above ground level to promote healthy regeneration. The GLTA survey assessed these trees as holding potential roosting features (PRF) of PRF-I suitability, in line with current guidelines (Collins, 2023). As a result, further survey work is not required, however precautionary working methods and ecological supervision will be needed, as set out later in this report. The remaining trees on-site are due to be retained or, if removed, hold negligible potential for roosting bats.

Badgers

2.11 Badger survey work undertaken for the outline application found no evidence of badger setts within the Site or immediately adjacent habitats that could be viewed. An update badger survey was undertaken by Tom Richards MCIEEM on 17 June 2024. No evidence of badger activity was noted on-site during this survey visit.

2.12 Although badger setts have not been confirmed on-site, there is potential for badgers within the wider area to utilise the Site occasionally for foraging or dispersal purposes. There is potential therefore for badgers to be present during the construction period. It is also possible for new badger setts to be created at any time. Precautionary measures to avoid impacts to badgers are provided herein.

Reptiles

2.13 Reptile presence/absence surveys have been undertaken at the Site in 2017 and 2021. These surveys identified a population of slow-worm *Anguis fragilis* on-site utilising the longer grassland section of the field to the north (F1), longer field margins across the remainder of the field and boundary scrub vegetation. Reptile survey work was undertaken for the outline application area as a whole (Phases 1 and 2 combined) and as such, reptile survey results are reported herein for this combined area. A peak adult count of seven adults was identified previously, which was considered to broadly equate to a 'low' population size class estimate.

2.14 An update reptile presence absence survey was undertaken between June and August 2024 for the combined site area, repeating the survey work undertaken in previous years to understand the current population estimate and distribution. A peak adult count of 21 adults was identified in 2024, an increase on the previous survey results. This number of individuals is still considered to equate to a 'low' population size class estimate, with slow-worm sightings distributed across the same parts of the Site and suitable habitat areas as previously found.

2.15 A separate Reptile Mitigation Strategy report for the Phase 1 area (CSA/7168/09) has been produced which sets out the full results of the 2024 survey work and provides the methodology for a reptile translocation exercise that will be undertaken prior to construction. Relevant construction-phase measures have been summarised within this report, however the Mitigation Strategy report should be referred to for full impact avoidance and mitigation protocols.

Nesting Birds

2.16 The boundary hedgerows, scrub, woodland and individual trees at the Site provide nesting and foraging habitats for a range of common and widespread bird species. Nesting birds may therefore be present on-site during the construction phase of the development.

2.17 All bird eggs and active nests are legally protected from damage and destruction under the Wildlife and Countryside Act 1981 and any removal works of potential nesting habitat, such as hedgerows and scrub vegetation, will need to be undertaken with regard to this legal protection.

3.0 ECOLOGICAL PROTECTION AND MITIGATION MEASURES

Pre-start Requirements

Toolbox Talk

3.1 All on-site workers will be briefed on the ecological issues relevant to the proposals during their site induction. This will include a discussion of:

- Ecological constraints and considerations at the Site
- Relevant legislation or legal requirements (e.g. licenses)
- Protection and avoidance measures to be followed, and the importance of doing so.

3.2 A copy of this CEMP will be available in the Site Office for the duration of construction works, as well as contact details for the ECoW who can be contacted for advice.

Update Baseline Surveys

3.3 Prior to the commencement of any construction or site preparation works, should this be delayed beyond six months of the date of this report, the ECoW will undertake a site walkover survey to confirm that the baseline ecological conditions have not changed significantly from those which were reported here-in.

3.4 In the event that any new ecological constraints to development are identified, or where the status of any important ecological feature has altered significantly, this will be reported to Taylor Wimpey West London and consideration will be given to whether additional or altered mitigation measures are required under this CEMP. Where such additions or alterations are made, a revised copy of the CEMP will be submitted to Wokingham Borough Council.

Trees, Hedgerows and Woodland

Protection Measures

3.5 The application is supported by a detailed Arboricultural Method Statement (AMS) (Keen Consultants, 1894-KC-PH1-YTREE-MethodStatementRev0) and Veteran Tree Management Plan (Keen Consultants, 1894-KC-PH1-YTREE-VeteranTreeManagementPlanRev0). Development proposals have sought to retain existing mature trees and hedgerows wherever possible. A small group of elm *Ulmus* sp., hawthorn *Crataegus monogyna* and field maple *Acer campestre* saplings and elder *Sambucus nigra* shrub will be removed at the gateway entrance with Maidensfield in the north-west alongside Tree 52. Trees 61 and 79 will be reduced to c. 1m in height to promote healthy growth. The ancient woodland habitat in the north-east corner of the Site will be retained and suitably buffered from the development edge.

3.6 **All retained trees, hedgerows and woodland will be protected from development through the application of appropriate tree protection barriers and buffers, as indicated within the AMS and Veteran Tree Management Plan**, until the completion of all construction operations. Barrier fencing should be installed in line with arboricultural best practice (BS5837:2012).

3.7 No construction-related activity of any description will occur at any time within these protected areas, including but not restricted to:

- Mixing of cement or any other materials.
- Storage or disposal of any soil, building materials, rubble, machinery, fuel, chemicals, liquids waste residues or materials/debris of any other description.
- Siting of any temporary structures of any description including site office/sales buildings, temporary car parking facilities, porta-loos, storage compounds or hard standing areas of any other description.
- Soil/turf stripping, raising/lowering of existing levels, excavation or alterations to the existing surfaces/ ground conditions of any other description.
- Installation/siting of any underground services, temporary or otherwise including; drainage, water, gas, electricity, telephone, television, external lighting or any associated ducting.
- Parking/use of tracked or wheeled machinery or vehicles of any description.

3.8 In addition to the protection measures specified above:

- No fires shall be lit within 20 metres of the trunks of any trees or the centre line of any hedgerow shown to be retained.
- No signs, cables, fixtures or fittings of any other description shall be attached to any part of any retained tree.

Outcome

3.9 Subject to the implementation, correct establishment and maintenance of all tree protection measures throughout construction, it is anticipated that no damage will occur to retained trees, hedgerows or woodland.

Bats

Protection Measures

3.10 Two trees that hold PRF-I suitability for roosting bats will be removed/subject to remedial actions (Trees 52 and 79). **Precautionary working methods will be required to ensure potential impacts on roost bats are reduced to a minimum**, in the unlikely event they are present. All other trees at the Site that will be impacted by the development hold negligible suitability for roosting bats.

3.11 Tree 52 will be removed in its entirety as it has collapsed into the field. Tree 79 will be pollarded to c. 1m in height. In both instances PRF-I features would be lost. Each tree will be subject to the following precautionary measures:

- Where PRFs are situated at a height where they can be feasibly inspected by ladder and endoscope prior to works occurring they will be inspected by the ECoW. Following confirmation of the absence of roosting bats the following methods will be followed.
- The **trees will be 'soft-felled'** whereby the main limbs and/or sections of the main stems, as appropriate will the severed and lowered carefully to the ground to reduce the impact of felling. Particular care and attention should be given to sections of the trees where PRFs are present. The ECoW should be present at this time to supervise the felling works.
- Any potential roosting features lowered to ground level will then be inspected by the ECoW with a torch and endoscope as appropriate.
- In the unlikely event of any bats being discovered at any stage during the works, activities will cease immediately at the tree concerned. No works likely to damage the roost will continue until advice is sought from Natural England to agree an appropriate approach to allow the works to continue in compliance with relevant legislation.

3.12 **In the event that the requirement for impacts to any additional trees with potential for roosting bats becomes apparent during the construction phase, the ECoW will be consulted to confirm if any pre-commencement survey work is required** in relation to the tree(s) to ensure appropriate impact avoidance and/or mitigation measures are implemented.

3.13 Excessive site lighting, if used during the construction phase of development, has the potential to impact foraging/dispersing bats that utilise the hedgerows and trees on-site. **Artificial lighting during the construction phase will be avoided as far as possible. Where required it will be positioned as far as possible from retained vegetation and orientated to avoid light spill on to boundary hedgerows and trees**.

Outcome

3.14 With the implementation of the above controls, tree removal/remediation works at the Site are anticipated to proceed lawfully, with no risk of the killing or injury of individual bats or disturbance of roosts.

Badgers

Protection Measures

3.15 No evidence of badger setts or general activity has been identified at the Site, however there is potential for badgers to still utilise the Site on occasion for dispersal and foraging purposes. As such, precautionary

protection measures are identified to ensure animals are not harmed during construction. These measures will also act to protect other terrestrial mammals that may be present on-site such as deer and fox.

- Chemicals and other hazardous materials or machinery should be securely stored and locked away at night to prevent harm to wildlife.
- The Site will be kept clear of litter and any hazardous materials, oil spills or other pollution will be remedied with immediate effect.
- **Where any pits/trenches are left open overnight, a ramp will be placed within these pits or trenches created at an angle of no more than 45 degrees** to provide a means of escape for any animals which may fall in.
- In the event that animals are found trapped or injured within the site, no attempt will be made to approach the animal and the RSPCA will be contacted immediately.

3.16 As badgers can create new setts at any time, the Site Manager and workers will remain vigilant to any digging activity identified during works. Exposed spoil heaps may be particularly attractive to burrowing animals, especially where these become vegetated and are undisturbed. An overview of badger field signs will be included within the pre-commencement Toolbox Talk and the ECoW will include a search for badger activity at the Site during their routine monitoring visits (see below). The ECoW will be contacted for advice as soon as any suspect badger setts are identified, and an exclusion zone of at least 20m will be established around the sett entrance whilst further investigations and procedures (e.g. Natural England licensing) are carried out.

Outcome

3.17 With the implementation of the above controls, there will be a minimal risk of direct harm to terrestrial mammals during construction.

Reptiles

3.18 Refer to the separate Reptile Mitigation Strategy (CSA/7168/02) for full protection measures relating to reptiles. A summary of the reptile translocation exercise is provided below.

Protection Measures

3.19 A reptile translocation exercise will be undertaken prior to construction occurring which will involve the following procedures:

- Preliminary scrub and grassland vegetation clearance along the route of proposed reptile exclusion fencing and marking out of proposed fence lines.
- Installation of perimeter and internal drift fencing.
- Setting out of artificial reptile refugia.

- Capture of reptile species for a minimum of 60 consecutive days and relocation of reptiles to the agreed receptor area in the south-east corner of the Site.
- Removal of internal drift fencing and destructive searches of remaining suitable habitats within the exclusion zone following completion of the translocation exercise.
- Maintenance of perimeter exclusion fencing throughout the construction phase, monitored by daily site operative checks and quarterly ecologist site checks.
- Removal of perimeter exclusion fencing at the end of the construction period.

3.20 The above procedures will be undertaken or supervised by the Ecological Clerk of Works. The key construction-phase considerations in relation to reptiles will be the maintenance of the perimeter exclusion fencing to ensure reptiles are excluded from the construction zone for the entire construction period.

3.21 Any works on the far side of exclusion fencing outside of the construction zone, including the receptor area (where reptiles may still be present), are not permitted. The ECoW should be contacted immediately should works be required within this area.

Outcome

3.22 Subject to implementation of the above measures, it is anticipated that construction will be undertaken without impacts to reptile species.

Nesting Birds

Protection Measures

3.23 In the absence of suitable avoidance and/or mitigation measures, the clearance of vegetation could potentially result in the damage or destruction of nests or eggs of breeding wild birds. Such impacts would constitute an offence under the Wildlife and Countryside Act 1981 (as amended).

3.24 To minimise the potential for impacts to nesting birds, the following measures will be followed:

- Vegetation clearance will be timed to occur, so far as possible, **outside the peak nesting bird period (March through August inclusive)**.
- If any vegetation must be removed during the bird nesting period, a **pre-commencement nesting bird check** will be undertaken by the ECoW to determine that no active nests will be impacted. Should any active nests be identified, these will be protected within a suitably sized and clearly marked construction exclusion zone, to be determined by the ECoW, until all young have fledged.

Outcome

3.25 Subject to implementation of the above controls, it is anticipated that site preparation will be completed without the damage or destruction of nests or eggs of wild birds.

Monitoring

3.26 The Site Manager and on-site workers will be responsible for day-to-day monitoring of the Site to ensure that protective measures are in place and functioning correctly.

3.27 The ECoW will schedule quarterly monitoring visits throughout the duration of works to ensure that protective measures are in place and in good working order, to provide advice and to review any ecological constraints. Additional visits are likely to be needed at the start of works to deliver the Toolbox Talk and oversee pre-commencement actions, as well as for the completion of reptile mitigation measures.

3.28 The ECoW should be contacted immediately in the event that any new or unforeseen ecological issues are identified.

Ecological Clerk of Works Contact Information:

CSA Environmental
T: 01386 751100
E: tewkesbury@csaenvironmental.co.uk

4.0 CONCLUSIONS

4.1 In the absence of ecological impact avoidance and mitigation measures, construction works at the Site have the potential to damage retained tree, hedgerow and woodland vegetation, and to kill or injure, and damage the habitats of protected species.

4.2 However, with the implementation of some straightforward measures, such as the establishment of demarcated protection zones and supervision of sensitive activities by the ECoW, construction will be achieved lawfully and with minimal risk to important ecological features.

4.3 Table 1 below provides a summary of the protective measures and management actions that the site manager and operatives will need to be aware of during construction, with further detail provided in the preceding sections of this report.

Table 1. Summary of ecological features and protective measures

Ecological Feature	Protective Measures
Hedgerows, trees and woodland	• Installation and maintenance of tree protection fencing to demarcate a construction exclusion zone, with particular reference to specific buffers required to ancient woodland and veteran trees. • Avoidance of potentially damaging activities within this protected area.
Bats	• Pre-commencement check and supervised 'soft-felling' of Trees 52 and 79 by the ECoW prior to any damaging works occurring. • Avoidance or limitation or artificial lighting at night during the construction phase. Avoid light spill on boundary trees, hedgerows and woodland habitats.
Badgers / mammals	• Provision of ramps within uncovered excavations overnight. • Appropriate storage of hazardous substances. • Routine monitoring for badger activity
Reptiles	• Preliminary vegetation clearance works and installation of reptile exclusion fencing. • Translocation exercise to relocate reptiles to the designated receptor area. • Maintenance of the perimeter exclusion fence throughout the construction period. • Daily checks by site operative and quarterly checks by the ECoW to ensure fence is maintained. • Removal of perimeter fence at the end of the construction period only.
Nesting Birds	• Avoidance of hedgerow and scrub clearance within the nesting bird season (March to August inclusive) OR if required within the nesting season, clearance must be preceded by a nesting bird check by the ECoW.

5.0 REFERENCES

British Standards Institution, 2012. *BS 5837:2012 Trees in relation to design, demolition and construction: Recommendations*. London: BSI.

Collins, J., ed., 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd ed. London: The Bat Conservation Trust.

Collins, J., ed., 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th ed. London: The Bat Conservation Trust.

Appendix A

Ecological Impact Assessment
(CSA/1668/11)

CSA environmental

Land off Watmore Lane,
Winnersh

Ecological Impact Assessment

Prepared by
CSA Environmental

on behalf of
Taylor Wimpey

Report No: CSA/1668/11

January 2023

urban design | ecology | landscape | heritage

This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

Report Reference	Revision	Date	Prepared by	Approved by	Comments
CSA/1668/11	-	10/11/2022	LM/TR	KC	Draft
	A	22/12/2022	TR	KC	
	B	12/01/2023	TR	KC	

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Certificate No:366562021
Landscape Institute Registered Practice
CIEEM REGISTERED PRACTICE 2022-2023

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EXECUTIVE SUMMARY

Residential development is proposed at Land off Watmore Lane, Winnersh, for which outline planning permission will be sought.

CSA Environmental was instructed by Taylor Wimpey to undertake an Ecological Impact Assessment (EcIA) of the Site to identify important ecological features that could potentially be affected by the proposed development. To inform this assessment, survey work has been undertaken in 2017 and updated in 2021-2022.

The Site presently comprises a single large field separated into one narrow semi-improved grassland section to the north and two larger sections of improved grassland to the south. The field is enclosed by native hedgerows, a small area of ancient woodland and the Emm Brook to the east. The scheme seeks to retain the existing boundary habitat features of greatest ecological value wherever practicable, including the Emm Brook, hedgerows, mature trees and ancient woodland.

Trees with bat roosting potential have been identified that are due to be removed to facilitate the development. Precautionary working methods will be required during felling works to minimise potential impacts to roosting bats. A range of predominantly common and widespread bat species have been found to utilise the habitats present on-site and existing habitat features of greatest suitability for these species will be retained and enhanced with new planting.

Reptiles are known to be present on-site, with surveys across two survey seasons identifying a low number of slow-worm using suitable habitats such as grassland and dense scrub. A Reptile Mitigation Strategy is recommended that will detail the methods and measures to be employed to re-locate reptiles within the construction zone to a protected and enhanced receptor area within public open space along the Site's eastern boundary.

Habitat creation is proposed to include hedgerow and tree planting, species-rich wildflower grasslands and thickets. A range of enhancement measures are proposed including bat and bird boxes, log piles and hedgehog gaps. Opportunities for ecological enhancement may be secured by planning condition. Calculations using the Biodiversity Metric 3.1 have identified that the proposed development will result in a net gain of over 10% in habitats, hedgerows and rivers.

Based on the successful implementation of the proposed avoidance, mitigation and enhancement measures, the development would not result in any significant residual negative effects on important ecological features.

1.0 INTRODUCTION

1.1 This report has been prepared by CSA Environmental on behalf of Taylor Wimpey. It sets out the findings of an Ecological Impact Assessment (EcIA) of proposed development at Land off Watmore Lane, Winnersh (hereafter 'the Site'). A residential development is proposed at the Site, for which outline planning permission will be sought.

1.2 The scope of this assessment has been determined with consideration of best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and the Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013).

1.3 The Site occupies an area of c. 11.3ha and is located around central grid reference SU 79019 70728, to the east of Winnersh, Berkshire. The Site consists of one large field that contains both semi-improved and improved grassland areas. The field is enclosed by hedgerows with standard trees and Emm Brook, which runs alongside the eastern boundary (see Habitats Plan in Appendix A).

1.4 Detailed ecological survey work was initially undertaken between 2010 and 2011 by CSA Environmental which encompassed the current application area and an additional area of land to the south. Further survey work was also undertaken in 2017 to update these surveys to inform a previous planning application. Survey work completed includes those for bats, breeding birds, reptiles and great crested newts and the results of these surveys are summarised in this report with consideration given in relation to further updated survey information obtained in 2021. The updated ecological surveys and assessments detailed within this report aim to update these previous surveys and identify the current baseline for protected species at the Site.

1.5 An updated extended Phase 1 Habitat survey was undertaken for the Site in July 2021 and an updated desk study in June 2022, the findings of which are presented herein. In addition, the following further survey work has been undertaken between July 2021 and May 2022 to inform this report:

- Preliminary bat roost assessments (July 2020)
- Badger survey (July 2021)
- Bat activity surveys (July – September 2021 and May 2022)
- Reptile presence/absence surveys (July - September 2021)
- Great crested newt Habitat Suitability Index Assessments and environmental DNA surveys (June 2021)

1.6 This EcIA aims to:

- Establish baseline ecological conditions at the Site.
- Determine the importance of ecological features which could be affected by the proposed scheme.
- Identify any likely significant impacts or effects of the proposed development on important ecological features, in the absence of mitigation, including cumulative impacts.
- Set out any measures necessary to effectively avoid or mitigate likely significant effects, and identify residual impacts.
- Identify any compensation measures required to offset residual impacts.
- Set out potential ecological enhancement measures that may be secured by the proposed scheme.
- Confirm how proposed mitigation, compensation and enhancement measures could be secured.
- Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation, and where appropriate, to allow conditions or obligations to be imposed by the relevant authority.

1.7 An EcIA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2018). It is intended that the evaluation of findings presented here-in will aid Wokingham Borough Council in their review of the planning application.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EcIA includes:

- The Conservation of Habitats and Species Regulations 2017 (as amended)
- The Wildlife and Countryside Act 1981 (as amended)
- The Natural Environment and Rural Communities (NERC) Act 2006
- The Protection of Badgers Act 1992
- The Environment Act 2021

2.2 This above legislation has been addressed, as appropriate, in the production of this report. Further information on the above legislation is provided in Appendix B.

National Planning Policy

2.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out the government planning policies for England and how they should be applied. Chapter 15: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.

2.4 Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services. Further guidance in respect of statutory obligations for biodiversity conservation within the planning system is provided by Government Circular 06/2005.

Local Planning Policy

2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table 1 of Appendix B. These policies have been addressed, as appropriate, in the production of this report.

Standing Advice

2.6 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed

guidance documents, in the scoping of ecological surveys and production of this report.

3.0 METHODS

Desk Study

3.1 An ecological desk study was undertaken in June 2022 comprising a review of online resources and biological records centre data as detailed below.

3.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed to identify the following ecological features (based on the Site's likely 'zone of influence' in respect of such features):

- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site (including possible/proposed sites)
- Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 3km of the Site
- Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site

3.3 Thames Valley Environmental Records Centre (TVERC) was contacted for details of any non-statutory nature conservation designations and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 2km of its central grid reference. This search area was selected to include the likely zone of influence of effects upon non-statutory designations and protected or notable habitats and species.

3.4 Further online resources were reviewed for information which may aid the identification of important ecological features. The Woodland Trust's online Ancient Tree Inventory was reviewed for known ancient or veteran trees within the Site and adjacent land. Interactive online mapping provided by the charity 'Buglife' was used to determine whether the Site falls within an Important Invertebrate Area.

3.5 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.

3.6 Where possible under the terms of the data provider, relevant desk study data are presented in Appendix C.

Field Surveys

3.7 An extended Phase 1 habitat survey was carried out in fine and dry weather conditions on 27 July 2021 by Tom Richards ACIEEM,

encompassing the Site and immediately adjacent habitats that could be viewed. Upon revisiting the Site between July 2021 and November 2022, any changes to the habitat types present were noted and reported herein.

3.8 Phase 1 Habitat survey is a method of classification and mapping wildlife habitats in Great Britain. It was originally intended to provide "…*relatively rapidly, a record of the semi-natural vegetation and wildlife habitat over large areas of countryside*." The Phase 1 Habitat Survey method has been widely 'extended' beyond its original purpose to allow the capture of information at an intermediate level between Phase 1 and Phase 2 Habitat surveys. Here, the standard survey method has been 'extended' in this report to include the following:

- More detailed floral species lists for each identified habitat
- Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition
- Mapping of additional habitat types (e.g. hardstanding)
- Identification of Priority Habitats under Section 41 of the NERC Act
- Identification of Habitats Directive Annex I habitat types
- Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
- Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
- Evidence of, or potential for, other notable species (including S41 Species of Principle Importance as well as notable, rare, protected or controlled plants and invertebrates)

3.9 Alongside the Phase 1 Habitat survey, additional field survey information was collected, comprising:

- Detailed floral species lists recorded for each identified habitat/parcel
- Further habitat condition information based upon current Biodiversity Metric (Natural England, version 3.1) condition assessment guidance
- Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
- Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
- Evidence of, or potential for, other notable species (including S41 Species of Principal Importance as well as notable, rare, protected or controlled plants and invertebrates)
- Any other survey information relevant to ecological matters

3.10 Results of the survey are presented on the Habitats Plan in Appendix A. Appendix D provides photographs of the habitats at the Site and Appendix E provides a list of floral species recorded in each habitat

parcel. Nomenclature for higher plants within this report is consistent with the fourth edition of The New Flora of the British Isles (Stace, 2019).

Further Survey Work

3.11 The following detailed field survey work was carried out between July 2020 and May 2022, with full methods and results provided in the relevant Appendices. Where previous survey information is available from the 2010/2011 and 2017 surveys, the results are referred to where relevant.

- Preliminary bat roost assessments and activity surveys (Appendix H)
- Badger survey (Section 5)
- Great crested newt Habitat Suitability Index Assessments and environmental DNA Surveys (Appendix I)
- Reptile presence/absence surveys (Appendix J)

Limitations

3.12 There were no specific limitations to the desk study or field survey visits, which was conducted at an optimum time of year and in good conditions.

3.13 During the 2021 and 2022 survey seasons, the central portion of the field area (Field F2) was utilised for maize crop production. Upon revisiting the Site in November 2021, this section was found to have been sown with a grassland mix, likely to be utilised for silage or hay production. As a result, all of the survey work reported herein for the 2021/2022 survey season was undertaken when the central arable crop area was present. For the purposes of the Biodiversity Net Gain assessment and the illustrative Habitats Plan, the improved grassland habitat within Field F2 has been included to present the most recent status of the habitat types present on-site.

Evaluation and Assessment

3.14 Ecological features are identified, evaluated and assessed in accordance with the CIEEM Guidelines for Ecological Impact Assessment (2018), with detailed methods provided in Appendix F.

3.15 It is an established principle (CIEEM, 2018) that EcIA is an iterative process. Specialist advice on the avoidance and mitigation of the potential negative effects of the proposed development has been input from an early design stage.

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

4.1 There are no statutory designations covering any part of the Site.

4.2 One international statutory designation was identified within 10km of the Site; Thames Basin Heaths SPA (c. 7.8km south-east of the Site). Given the legislative frameworks underpinning the designation of international designations, these are considered to be important at the International level.

4.3 One national statutory designation was identified within 3km of the Site; Lodge Wood & Sandford Mill SSSI (c. 2.7km north of the Site). As SSSIs are administered and designated under national legislation, these sites are considered to be important at the National level.

4.4 Two local statutory designations were identified within 3km of the Site; Holt Copse & Joel Park LNR (c. 1.6km south-east of the Site) and Lavells Lake LNR (c. 1.9km north of the Site). As LNRs are administered and designated by County and District Councils, these sites are considered to be important at the County level.

4.5 These statutory designations are described in Table 1 below.

Non-Statutory

4.6 No non-statutory designations fall within or adjacent to the Site boundary. Eight non-statutory sites are present within 2km of the Site which comprise six Local Wildlife Sites (LWS) and two Conservation Target Areas (CTA). These non-statutory designations are also described in Table 1 below. As LWS are designated according to criteria applied in a county context, these sites are considered to be ecologically important at the County level.

Table 1. Statutory and non-statutory designations within search radii

Site Name and Designation	Distance and Direction from Survey Area	Brief Description of Designated Site
European Designations within 10km		
Thames Basin Heaths SPA	c. 7.8km south-east	A mosaic of open heathland, scrub and woodland of international importance for breeding birds. The SPA supports populations of the Dartford warbler *Sylvia undata*, nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*.

National Designations within 3km		
Lodge Wood & Sandford Mill SSSI	c. 2.7km north	Two small wet woodlands that border the River Loddon, notable for supporting large colonies of Loddon Lily *Leucojum aestivum*, a rare plant species listed in the Red Data Book of vascular plants.
Local Designations within 3km		
Holt Copse & Joel Park LNR	c. 1.6km south-east	Lowland mixed deciduous woodland and ancient semi-natural woodland habitats known to contain a large noctule *Nyctalus noctula* bat roost.
Lavells Lake LNR	c. 1.9km north	The Lake is situated in the northernmost part of the Dinton Pastures Country Park, set in c. 46 acres of managed wetland habitat. The Lake supports a rich and varied assemblage of migratory and resident bird species.
Non-statutory Designations within 2km		
Furze Covert LWS	c. 770m north-east	Long established mixed woodland and pond. The rare wild service tree *Sorbus torminalis* has been recorded at the site.
Bearwood Estate – Woods and Lakes LWS	c. 830m south	An extensive area of woodland containing a range of ancient woodland indicator species and some characteristic of heathland habitats. A large lake is present which attracts a good variety of birds and invertebrates.
Dinton Pastures Country Park LWS	c. 1.1km north-west	A large county park set around several former gravel pits. The site includes woodland, grassland and wet meadow habitats.
Winnersh Woodland LWS	c. 1.4km west	A small hazel *Corylus avellana* coppice woodland.
Holt Copse LWS	c. 1.6km south-east	A small ancient and semi-natural woodland within the Holt Copse & Joel Park LNR designated area.
Loddon Valley Gravel Pits CTA	c. 1.7km north	Encompassing gravel pits and associated woodland and wetland habitats. The area is important for wildfowl and other birds and includes Lodge Wood SSSI and Alder Moors LNR.
River Lodden (part) LWS	c. 1.8km west	A 17km section of river with diverse aquatic and marginal habitats and features. The uncommon Loddon pondweed *Potamogeton nodosus* and water vole *Arvicola amphibius* have been recorded.
Loddon Valley (South) CTA	c. 1.8km west	Encompasses the River Loddon which is a Wildlife Heritage Site supporting woodland habitats and a range of uncommon aquatic species.

Ancient Woodland

4.7 A small section of ancient woodland habitat is present within the Site boundary, in the north-east corner of the Site. The woodland measures c. 0.16ha and borders Emm Brook. No further ancient woodland or trees listed on the Ancient Tree Inventory are present on or adjacent to the Site.

Habitats and Flora

Notable Flora Records

4.8 The TVERC provided 20 records of nine notable plant species from within the search area. Those of potential relevance to the Site include species typically found in woodland and arable habitats, including bluebell *Hyacinthoides non-scripta*, grey-leaved whitebeam *Sorbus porrigentiformis*, summer snowflake *Leucojum aestivum*, common cudweed *Filago vulgaris* and common knotgrass *Acronicta rumicis.* None of these notable species records were provided from within the Site or adjacent land and the species were not noted during the site surveys.

4.9 The initial Site walkover and subsequent survey visits found that on-site habitats were largely comprised of a range of common and widespread species and therefore notable flora is scoped out of further assessment.

4.10 The invasive species Himalayan balsam *Impatiens glandulifera* was identified at the Site, with significant stands noted throughout the eastern boundary of the Site, associated with Emm Brook. Himalayan balsam is listed on Schedule 9 of the Wildlife and Countryside Act 1981 and as a result, it is an offence to plant or otherwise cause this invasive species to grow. Avoidance and/or treatment measures will be necessary to ensure compliance with this legislation during development works.

Habitats

4.11 The following habitats were recorded on-site and classified in line with current Phase 1 habitat species guidance (JNCC, 1990), as illustrated in Appendix A. Detailed species lists for each habitat are provided in Appendix D.

Arable Land (2021 to mid-2022)

4.12 Field F2, which encompasses the majority of the Site area, was under arable cultivation with maize during the 2021 and early 2022 survey seasons. During the 2010/2011 and 2017 survey work, this area of the field was species-poor grassland vegetation, consistent with the remainder of the field to the south. The arable margins were c. 1–3m wide and made up of semi-improved grassland vegetation with occasional patches of tall ruderals and scrub. No notable arable weeds were recorded in association with this habitat.

Grassland

4.13 One species-poor semi-improved grassland field is located to the north of Field F2 (Field F1), which is comprised of semi-improved grassland with a dense cover of ruderal species, namely common nettle *Urtica diocia* and creeping thistle *Cirsium arvense*. Management of this field is likely to consist of infrequent cutting, which has allowed these undesirable species to dominate. This part of the field has supported grassland habitat throughout all survey years. Species diversity was found to be low due to the dominance of fast-growing, more undesirable species and included false oat-grass *Arrhenatherum elatius*, perennial rye-grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, cock's-foot *Dactylus glomerata*, timothy grass *Phleum pratense*, bent grass *Agrostis* sp., cut-leaved crane's-bill *Geranium dissectum*, creeping buttercup *Ranunculus repens*, goat's-beard *Tragopogon dubius*, cleavers *Galium aparine*, creeping cinquefoil *Potentilla reptans*, red clover *Trifolium pratense*, ragwort *Jacobaea* sp. and horsetail *Equisetum* sp

4.14 Semi-improved grassland field margins of c. 1-3m run alongside the perimeter of the Site, consisting of similar species to those noted above and additional burdock *Arctium* sp., ground ivy *Glechoma hederacea*, common knapweed *Centaurea nigra*, redshank *Persicaria maculosa*, yarrow *Achillea millefolium* and spear thistle *Cirsium vulgare*.

4.15 Field F3 contained arable crops during the 2017 survey season but supported improved grassland habitat from the 2021 season onwards. This part of the field is managed through cutting for hay. The grassland sward here is shorter than Field F1 and supported a similar but less diverse composition of grassland species. Undesirable ruderal species are less dominant, however stands of common nettle and dock *Rumex* sp. are present.

4.16 The central part of the field (Field F2) was found to support improved grassland when the Site was revisited in November 2021. The grassland sward here was almost entirely comprised of perennial rye-grass and white clover *Trifolium repens*, exhibiting a highly modified nature.

4.17 Species-poor semi-improved grassland and improved grassland habitats are common and widespread, both locally to the Site and within the wider landscape and the species recorded here represent typical assemblages associated with these agriculturally managed habitats. As a result, the semi-improved and improved grasslands at the Site are considered to be important as a less than Local level and are scoped out of further assessment.

Hedgerows and Trees

4.18 An intact native hedgerow with trees is present along the southern site boundary (Hedgerow H1). Hedgerows H2 and H3 follow the Emm Brook corridor to the east and H2 contains a number of mature standard trees.

The northern boundary of the Site is formed by a distinct line of mature and veteran trees. The western boundary of the Site is variable as it backs on to residential gardens in places. Hedgerows H4 and H6 are ornamental hedgerows. Hedgerows H5 and H7 are native hedgerows along this boundary. Descriptions and species compositions of each boundary feature are provided in Table 2 below.

Table 2. Boundary descriptions and species compositions

Reference	Description
H1	An intact native hedgerow of hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* with standard oak *Quercus* sp. trees. Additional species noted include field maple *Acer campestre*, ash *Fraxinus excelsior* and rose *Rosa* sp. Several small gaps are present, in-filled with bramble *Rubus fruticosa* agg. over post and wire fence.
H2	An outgrown hedgerow of hawthorn with some blackthorn and occasional oak and hazel *Corylus avellana*. A number of standard oak trees are present including mature and veteran specimens.
H3	A outgrown hedgerow of hawthorn with some blackthorn and occasional oak, hazel and crack willow *Salix fragilis*.
TL1	The boundary borders with the adjacent caravan park and industrial estate to the north and is comprised of veteran, mature and semi-mature oak, ash and willow *Salix* sp. trees with a scattered scrub understory in parts.
TL2	A tree line of mature oak, ash and crack willow with groups of younger field maple and hawthorn.
H4	Leyland cypress *Cupressus x leylandii* garden hedgerow.
H5	An outgrown hedgerow of hawthorn with goat willow *Salix caprea* and ash.
H7	Cherry laurel *Prunus lauroceracus* garden hedgerow.
H7	A sparse hedgerow of hawthorn and elm *Ulmus* sp.

4.19 Across the Site boundaries there are a number of large standard trees which hold high ecological value; these are largely concentrated along the northern, eastern and southern boundaries and are noted on the Habitats Plan in Appendix A (CSA/1668/118).

4.20 Hedgerows are adopted as a Habitat of Principle Importance through Section 41 of the NERC Act and are, in this instance, additionally covered under the Wokingham Borough Council Biodiversity Action Plan (BAP) as a priority habitat for the local area (Wokingham Borough Council, 2014). Hedgerows are of intrinsic ecological value and provide opportunities for foraging and shelter for numerous species. As a result of these factors, hedgerows and trees at the Site are considered to be of importance at the Local level.

Ancient Woodland

4.21 A small linear section of woodland, designated as ancient and semi-natural woodland, is present at the north-east corner of the Site adjacent to the Emm Brook corridor. The outer edge of the woodland to the west consists largely of dense blackthorn encroaching into the Site,

leading to mature ash, field maple and occasional oak with an understory of hawthorn and hazel. Dense scrub is present at ground level alongside significant stands of Himalayan balsam that was noted in the woodland and along the Emm Brook corridor down the eastern boundary of the Site.

4.22 Ancient woodland is defined as any wooded area that has been wooded continuously since at least 1600 AD and is classified as an irreplaceable habitat that holds significant biodiversity and landscape value. Consequently, impacts to ancient woodland cannot be readily mitigated for. While ancient woodland habitat has no statutory protection, it is explicitly mentioned in UK planning policy. Ancient woodland is considered to be ecologically important at the National level.

Running Water

4.23 One watercourse is associated with the Site, Emm Brook, which runs along the eastern boundary. The Brook itself is largely outside of the red line boundary for the Site, however a short section bends westwards into the Site area towards the centre of the boundary. The Brook channel measures c. 4m across with high banks of c. 1.5-2m high. The watercourse is heavily shaded by marginal trees and woodland and is relatively slow flowing.

4.24 The Brook itself is not afforded any statutory or non-statutory designated status and no records or protected/notable species were provided by TVERC along the Brook or linked watercourses. The Brook is however likely to offer dispersal and foraging opportunities for a range of species associated with aquatic habitats, thereby increasing habitat variability and availability at the Site and as a result it is considered to be of ecological importance at the Local level.

Scrub and Tall Ruderal

4.25 Scrub habitat is present across the Site with dense blackthorn scrub concentrated in the north-east, bordering the woodland and Brook corridor, with further patches in the north-west and south-east corners of the Site. Bramble scrub occurs along the western margin and scattered across other field margins, particularly where it has in-filled gaps between hedgerows and mature trees.

4.26 Scattered patches of tall ruderal vegetation are present throughout the improved grassland habitats (F2 and F3), and more densely within Field F1 consisting predominantly of common nettle and creeping thistle. Further areas of tall ruderal are present on occasion along the field boundaries.

4.27 Scrub and tall ruderal are common and widespread habitats, generally limited in extent at the Site. These habitats are considered to be

important at the less than Local level and are scoped out of further assessment.

Fauna

Bats

4.28 The TVERC provided 376 bat records from within the search area, including the following confirmed species: brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus,* soprano pipistrelle *P. pygmaeus,* noctule *Nyctalus noctula,* Leisler's bat *N. leisleri,* serotine *Eptesicus serotinus,* Daubenton's bat *Myotis daubentonii,* and Natterer's bat *M. nattereri*. The recordings comprised of field sightings, droppings, identified roosts and auditory records. The closest record to the Site is of a common pipistrelle roost in a residential area located c. 110m west of the Site where two bats were observed emerging in 2016. Additional roost records for brown long-eared, soprano pipistrelle, Natterer's and serotine bats were also provided from within the search radius.

4.29 The main semi-improved grassland and arable/improved grassland habitats present at the Site provide limited suitability for bats. The hedgerows, mature trees, woodland and Emm Brook corridor are likely to provide the greatest opportunities for foraging and commuting bats and form dark flight lines with connectivity to habitats in the wider landscape.

4.30 A number of mature trees are present across the Site boundaries that may offer potential roosting features for bats. Preliminary Roost Assessments of these trees were carried out in 2017 and then updated in 2020 (see Appendix H for full survey methods and results). In 2017, two trees with 'moderate' bat roosting potential (Trees T52 and T79) were subject to further dusk emergence/pre-dawn return to roost surveys to investigate whether they were used by bats, as impacts to these trees were anticipated to facilitate the development proposals. No bats were recorded roosting within the trees, and therefore their potential for roosting bats was lowered to 'low', during the update Preliminary Roost Assessment carried out in 2020.

Bat Activity Surveys

4.31 Dusk walked transect surveys were undertaken in July and August 2021 and May 2022. Across these surveys four bat species were recorded using the Site including common pipistrelle, soprano pipistrelle, noctule and *Myotis* species. Full survey methods and results are provided in Appendix H. The transect surveys were largely dominated by common pipistrelle passes and foraging activity (c. 85% of total bat passes), mostly recorded along the southern boundary and south-east corner of the Site where intact, native hedgerows and standard trees are present. Bat activity was also recorded frequently along the eastern boundary along the Emm Brook corridor. However, limited activity was observed to the

north, west and within the central field area and no distinct commuting flight lines were identified across the Site.

4.32 Remote monitoring was also conducted in July and August 2021 and May 2022 alongside the walked transect surveys. At least eight bat species were recorded during these five-night monitoring periods, including common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle *P. nathusii*, noctule, *Myotis* species, brown long-eared, serotine, *Nyctalus* species and barbastelle *Barbastella barbastellus*. In line with the transect survey results, bat activity was again dominated by common pipistrelle bats (c. 84% of total passes), with lower activity of soprano pipistrelle bats (c. 10%) and brown long-eared bats (c. 3%). The remaining species were recorded at very low levels, each with less than 20 contacts per recording period.

4.33 Greatest bat activity levels were recorded along the southern boundary, compared to the western boundary. This is largely consistent with the finding of the transect surveys. A similar level of species diversity was recorded at each monitoring point (between three and five species) with common pipistrelles making up the vast majority of recordings.

Table 3. Importance of bat species using the Site, adapted from Wray *et al.* (2010)

Common Name	Use of Site	Comment	Valuation in Geographical Frame of Reference
Common pipistrelle	Roosting	Five roost records within 2km of the Site	Not applicable
	Commuting/ foraging	Most frequent bat recorded at the Site on both transect and static monitoring surveys, exhibiting some foraging behaviour	Local
Soprano pipistrelle	Roosting	Three roost records within 2km of the Site	Not applicable
	Commuting/ foraging	Occasional passes and foraging observed on transects and low-moderate activity levels during static monitoring	Local
Nathusius' pipistrelle	Roosting	None identified	Not applicable
	Commuting / foraging	None recorded on transect surveys, one contact recorded during static monitoring	Local
Noctule	Roosting	None identified	Not applicable
	Commuting/ foraging	Two contacts recorded during transect surveys, low activity levels during static monitoring	Local
Myotis species	Roosting	None identified	Not applicable
	Commuting/ foraging	One contact recorded during transect surveys, 24 contacts during static monitoring	Local
Brown long-eared	Roosting	Three confirmed roost records within 2km of the Site	Not applicable

	Commuting/ foraging	None recorded on transect surveys, 43 contacts during static monitoring	Local
Barbastelle	Roosting	None identified	Not applicable
	Commuting/ foraging	None recorded on transect surveys, 34 contacts during static monitoring	County

4.34 Determination of importance of bat species recorded at the Site is based upon survey work undertaken as detailed above, with reference to guidance by Wray *et al.* (2010). For the sake of identification, bats from the *Myotis* genus have been grouped together as their calls cannot be reliably identified to species level. Brown long-eared bats may also be under represented in analysis due to the quiet nature of their calls which may not have been picked up by recording equipment.

4.35 Barbastelle bats are one of the rarest bat species in England (population under 10,000). Consequently, their presence at the Site is afforded greater importance, although only a small number of contacts were recorded during remote monitoring and none during transect surveys. Barbastelle bats at the Site are considered to be important at the County level, following guidance set out in Wray *et al.* (2010) as shown in Table 3.

4.36 The remaining bat activity at the Site consists of common and widespread species (common pipistrelle, soprano pipistrelle and brown long-eared) and low to very low activity of rarer species (*Myotis* species, noctule and Nathusius' pipistrelle). Given the predominantly low suitability of on-site habitats, very low activity levels and the absence of roost records for rarer bat species, the remaining bat species at the Site are collectively considered to be important at the Local level.

Badgers

4.37 The TVERC returned 28 records of badger *Meles meles* from within the search area. These records include eight badger sett record, all of which are over 1.7km from the Site on the far side of Winnersh or opposite side of the M4 Motorway. The remaining records relate to sightings of badger road casualties, the closest of which is situated c. 130m north of the Site, dating from 2020.

4.38 Habitats at the Site offer some potential sett-building and foraging opportunities for badgers, particularly within hedgerow and woodland habitats. A detailed badger survey of the Site was undertaken alongside the update Phase 1 Habitat survey in July 2021 by Tom Richards ACIEEM. No badger setts were identified on-site during the survey, however several incidental records of badger evidence were made during subsequent site visits between July 2021 and May 2022. Two badger scats were noted adjacent to the central section of the northern boundary and one badger latrine in the centre of the eastern boundary. Feeding damage to several maize cobs was also noted, which may be attributed to badger.

4.39 Badgers are a common and widespread species, with their legal protection intended to prevent cruelty rather than as a reflection of any conservation concern. Habitats within the Site are typical of the local landscape and would be unlikely to represent a key habitat resource for badgers within the local area. Considering the absence of badger setts within the Site and limited field signs noted, there is no legal protection constraint anticipated and badgers are scoped out scoped out of further assessment.

Dormouse

4.40 The TVERC returned no records from within the search area of dormouse *Muscardinus avellanarius*.

4.41 There is limited availability of suitable habitats on-site for dormice, which require extensive networks of species-rich native hedgerows and woodland to persist. Hedgerows at the Site are generally poorly connected and sparse in parts, with limited connectivity to suitable off-site habitats, such as large parcels of woodland. It is therefore considered unlikely that this Site would be able to support this species. Dormice are considered likely absent from the Site and are scoped out of further assessment.

Harvest Mouse

4.42 The TVERC returned no records for harvest mouse *Micromys minutus* within 2km of the Site.

4.43 Favourable habitats for harvest mice include long grasslands and well-vegetated hedgerow bases which provide shelter and opportunities for nest building. The field margins at the Site may therefore offer some suitable habitat for this species.

4.44 However, while habitats at the Site are of some suitability for this species, the lack of records and disturbance of habitats at the Site through periodic rotation of arable cultivation and grassland cutting suggest that harvest mice are unlikely to be present in significant numbers. Harvest mice at the Site are therefore scoped out of further assessment.

Riparian Mammals

4.45 The TVERC provided seven records of water vole *Arvicola amphibius* from within the search area. Five of these records are associated with a watercourse running in parallel with Dunt Avenue, situated between c. 1.1km and 1.6km north-east of the Site, all of which were recorded in 2003. A single water vole record was provided from Lines Road, c. 1.7km north of the Site in 2003. The final record was made in 1998 along the River Loddon, c. 2.1km north of the Site at its closest point. No records of otter *Lutra lutra* were provided from within the search area.

4.46 Emm Brook runs along the eastern boundary of the Site, which superficially may offer opportunities for water vole. However, there exists no connectivity between Emm Brook and the aforementioned watercourse along Dunt Avenue where this species has been most recently recorded, albeit in 2003. Connectivity exists downstream with the River Loddon, however the single, historic record along this watercourse is unlikely to represent the current status of this species, given that no more recent records have been provided. In addition, a survey undertaken by the Berks, Bucks and Oxon Water Vole Recovery Project (Lofthouse, 2013) of Emm Brook and the River Loddon in 2013 found no evidence of water vole activity. Given the low likelihood of presence and the significant offset between the development proposals and the Brook itself, impacts to this species would not be anticipated and water vole are scoped out of further assessment.

4.47 While otters are known to occupy wide home ranges that encompass major watercourses and their associated tributaries and marginal habitats, the section of Emm Brook adjacent to the Site is considered to offer limited opportunities for this species. The Brook is a considerable distance from the nearest major watercourse and offers a limited resource of suitable marginal habitats, reducing the likelihood of its use by otters. This section of the Brook is not considered to represent key habitat for this species and otters are scoped out of further assessment.

Birds

4.48 The TVERC returned 5391 records of 103 bird species from within the search area. Of these records, more than half are located within Dinton Pastures Country Park LWS, c. 1.4km north-west of the Site. Records of potential relevance to the Site include species listed on the Birds of Conservation Concern (BoCC) Red List (Eaton *et al*., 2015), yellowhammer *Emberiza citrinella*, mistle thrush *T. Viscivorus* and starling *Sturnus vulgaris* and the BoCC Amber List, song thrush *Turdus philomelos*, bullfinch *Pyrrhula pyrrhula*, dunnock *Prunella modularis* and meadow pipit *Anthus pratensis*.

4.49 Breeding bird surveys were undertaken by CSA Environmental in 2011 for an area encompassing the application Site and several additional fields to the south. A range of breeding birds were noted at densities typical of the species identified. The greatest activity was noted along the Brook corridor and hedgerow lengths. Three BoCC Red List species were recorded breeding within the survey area including song thrush, starling and house sparrow *Passer domesticus*. Other than the rotation in arable cropland and agricultural grassland areas within the fields on-site, the suitability of the Site area is not considered to have significantly changed during the interim time period.

4.50 Habitats within the current Site area including the Emm Brook corridor, hedgerows, mature trees and woodland are likely to provide nesting

and foraging habitats for a number of common and widespread bird species. The main field areas are intensively managed agricultural habitats which are of limited value of notable bird species. Given the low number of notable species recorded previously and continued agricultural use of the Site, the bird assemblage is considered to be important at less than Local level and is scoped out of further assessment.

4.51 All bird eggs and active nests are legally protected from damage and destruction under the Wildlife and Countryside Act 1981 (as amended), and any removal works of potential nesting habitat should be undertaken with regard to this legal protection.

Reptiles

4.52 The TVERC provided 14 reptile records which included grass snake *Natrix natrix* (syn. *N. helvetica*) and slow-worm *Anguis fragilis*. The closest records are of slow-worms in 2007 and 2009, from c. 420m south of the Site in the Winnersh allotments. The closest grass snake sightings were returned from Dinton Pastures Country Park, c. 1.4km north-west of the Site.

4.53 A reptile presence/absence survey was initially undertaken at the Site between July and September 2017 by CSA Environmental. This survey was updated between August to September 2021. Adult, sub-adult and newborn slow-worms were recorded during the survey visits, indicating that this species is breeding within the Site. Most recently, a peak adult count of seven slow-worms was recorded in 2021. Full survey methods and results are provided in Appendix J.

4.54 Slow-worm observations were most frequent on the eastern, western and northern site boundaries. Only individual observations were made of slow-worms along the southern boundary and where the arable crop of Field F2 met the grassland in F3.

4.55 The peak adult slow-worm count of seven adults is considered to broadly equate to a 'low' population size-class estimate (see Appendix J). Slow-worms are a common and widespread reptile species in Britain, afforded legal protection under the Wildlife and Countryside Act 1981 (as amended). The low population of slow-worm is considered to be ecologically valuable at the Local level.

Amphibians

4.56 TVERC provided 341 records of five amphibian species including great crested newt *Triturus cristatus*, smooth newt *Lissotriton vulgaris*, palmate newt *L. helveticus*, common frog *Rana temporaria* and common toad *Bufo Bufo* from within the search area. The closest record to the Site is of great crested newt adults and eggs c. 285m south of the Site from Berkshire Arboretum Woodland in 2010/2012. Records were also

provided for further populations of smooth, palmate and great crested newts on the north and west edges of Winnersh.

4.57 No standing waterbodies occur on-site that offer breeding opportunities for amphibians, however, the Site may provide suitable terrestrial habitat for these species. Hedgerows and woodland in particular may offer sheltering and foraging habitats and form corridors for dispersal.

4.58 In accordance with English Nature (2001) guidelines, a search was undertaken for waterbodies present within 500m of the Site boundary to consider the potential for great crested newts to be present within the area. Three ponds were found within this search radius, as illustrated on the Pond Plan (CSA/1668/120) provided in Appendix I. Pond P3 was identified c. 280m south of the Site and was scoped out of further assessment due to the presence of the M4 motorway between the pond and Site forming a significant barrier to dispersal. Ponds P1 and P2 are situated c. 350m north-west and 495m north of the Site respectively, with no significant barriers to dispersal present. As a result, both ponds were subject to further investigation to establish the presence/absence of great crested newts. Full survey methods and results are provided in Appendix I.

4.59 In June 2017 Habitat Suitability Index (HSI) assessments were undertaken of Pond P1 and P2 to determine their suitability for breeding great crested newts, which found that they hold 'below average' and 'poor' suitability respectively. In 2021 access permission was only granted to re-survey Pond P1, where the HSI assessment was updated.

4.60 While these ponds did not score highly on the HSI assessments, due to the presence of local records for the species, surveys were undertaken to determine the presence/absence of great crested newts within each pond. Environmental DNA (eDNA) surveys were undertaken in June 2017. Samples from both ponds returned a negative result for great crested newt DNA, confirming that the species was absent in both cases. An update eDNA survey of Pond P1 was completed in June 2021 which also returned a negative result. Although P2 could not be accessed for the 2021 HSI or eDNA assessment, its negative result in 2017 combined with the neighbouring pond's more recent negative result suggests that great crested newts are likely to continue to be absent. Great crested newts are therefore considered to be likely absent from the Site and scoped out of further assessment.

<u>Invertebrates</u>

4.61 The TVERC returned 593 records of 69 invertebrate species from within the search area. Of these records, 174 relate to stag beetle *Lucanus cervus* dating from between 1998 and 2020. Remaining species of relevance to the Site include 45 moth species, recorded at a residential

property along Deerhurst Avenue, Winnersh, c. 0.6km west of the Site between 2013 and 2019.

4.62 A typical range of opportunities for invertebrates are available within common and widespread habitats on-site, including semi-improved grassland and hedgerows. Emm Brook is likely to offer additional habitat opportunities, however there is no indication that a notable assemblage may be present at the Site. Invertebrates at the Site are therefore considered to be of ecological value at less than Local level and are scoped out of further assessment.

Future Baseline

4.63 The Site is presently under active arable management, including the periodic cultivation and cutting of field areas/margins and hedgerows. Notwithstanding the potential rotation of crop-type, these management interventions maintain the on-site conditions in a relatively stable state. There is no known intention to cease this management, other than to accommodate the proposed development should planning permission be granted. As such, the future baseline status of important ecological features is not anticipated to vary significantly from that at present.

Summary of Ecological Features

4.64 Table 4 below summarises all important or legally protected ecological features identified within their respective zones of influence, along with their geographic context of importance and/or protection status:

Table 4. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Thames Basin Heaths SPA	International
Lodge Wood & Sandford Mill SSSI	National
Holt Copse & Joel Park LNR and Lavells Lake LNR	County
Non-Statutory wildlife sites	County
Himalayan balsam	Controlled (invasive species)
Hedgerows and trees	Local
Ancient woodland	National
Emm Brook	Local
Barbastelle bats	County
Bats (other)	Local
Nesting birds	Legal protection (Wildlife and Countryside Act 1981)
Reptiles	Local

5.0 ASSESSMENT OF EFFECTS

5.1 Outline planning permission, with all matters reserved except for access, for the proposed residential development of up to 234 dwellings, is sought for the Site. The following impact assessment is based on the Illustrative Site Layout (7135 PL-05 B) prepared by ECE Architecture and Landscape Strategy (CSA/1668/132) prepared by CSA Environmental on behalf of Taylor Wimpey.

5.2 The construction phase of the proposed development will comprise the following:

- Cessation of arable cultivation
- Removal of a c. 10m section of Hedgerow H1 for vehicular access to the south.
- Construction of up to 234 residential dwellings
- Construction of associated gardens, parking, access infrastructure, play provision and pump station
- The establishment of Public Open Space (POS) including new tree, thicket and wildflower planting
- Construction of a new Sustainable Urban Drainage System (SUDS) network
- Strengthening of existing boundary vegetation with new tree, thicket and wildflower meadow planting

5.3 The operational phase of the proposed development will comprise the following:

- Occupation of new residential dwellings
- Increase in human activity, including use of vehicles and presence of domestic pets
- Increased artificial lighting and anthropogenic noise
- Management of habitats within POS

<u>Assumptions</u>

5.4 The following assumptions have been made during the assessment of potential effects of the proposed development on important ecological features. Although 'assumed' and therefore taken as part of the pre-mitigation scenario, these measures are referenced in the proceeding sections where integral to the mitigation strategy.

5.5 In accordance with BS42020:2013, it is assumed that a Construction Environmental Management Plan (CEMP) will be secured by planning condition and prepared at the detailed design stage for each phase of development. In addition to the construction phase impact avoidance and mitigation measures identified in the following sections, the CEMP will detail standard environmental control measures, including though not limited to the following:

- Implementation of strict protection measures for the root protection areas of retained trees and hedgerows, in accordance with BS5837:2012
- Standard best practice construction phase pollution prevention and control measures
- Sensitive working methods and timing to avoid direct impacts to nesting birds (generally vegetation removal outside nesting season of March through August)
- Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition in order that revised impact avoidance and mitigation measures can be adopted as required

5.6 In accordance with BS42020:2013, it is assumed that a Landscape and Ecology Management Plan (LEMP) will be secured by planning condition and prepared at the detailed design stage for each phase of development. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity.

Potential Impacts and Ecological Effects

Thames Basin Heaths SPA

5.7 Thames Basin Heaths SPA is an internationally important designated site that supports important breeding populations of three notable bird species, namely Dartford warbler, woodlark and nightjar. The SPA extends over several local authorities including Wokingham Borough Council. The protected bird species present nest on or near the ground and as a result they are particularly susceptible to disturbance from increased recreational use at the site.

5.8 Potential impacts to the SPA are well documented and it is recognised that development-related impacts may occur within a 7km radius of the SPA (Thames Basin Heaths Joint Strategic Partnership Board, 2009). As the application Site lies c. 7.8km north-west of the SPA it is situated outside of this mitigation zone and no negative effects are anticipated from the proposed development.

Lodge Wood & Sandford Mill SSSI

5.9 The SSSI consists of two small wet woodlands, Lodge Wood and Sandford Mill that border the River Loddon. The site is notable for the large populations of the rare plant Loddon Lily present and is located c. 2.7km north of the Site on the far side of the A329 motorway, separated by the Winnersh urban area and Dinton Pastures Country Park. The SSSI's Impact Risk Zone has been considered and the application site falls within a zone whereby no potential adverse impacts are anticipated from residential development. In light of the distance of the designation from the Site and nature of the SSSI designation, no negative effects are predicted to arise from the proposed development.

Holt Copse & Joel Park LNR

5.10 Holt Copse & Joel Park is a Local Nature Reserve located c. 1.6km south-east of the Site. It consists of Holt Copse, an area of ancient semi-natural woodland, largely isolated from the surrounding landscape by residential development and the A329 Reading Road. The LNR is of amenity value to nearby residents with designated recreational routes present for public access. The woodland is known to support a large noctule bat roost. It is currently managed by the Holt Copse Conservation Volunteer group and it is considered that due to this ongoing management, the distance of the LNR from the Site and the significant open space areas to be created within the proposed development, the LNR will not be subject to adverse effects from increased visitor pressure. In addition, noctule bats were recorded at very low levels at the Site during targeted survey work and the Site is therefore not considered to constitute key habitat for this species and no adverse impacts are anticipated to bats from the LNR roost.

Lavells Lake LNR

5.11 Lavells Lake LNR is situated c. 1.9km north of the Site within Dinton Pastures Country Park. The Lake is formed at the site of an old gravel pit and attracts a number of notable resident and migratory bird species. Access to the LNR is restricted to two public bird hides and a designated footpath and as such no adverse effects as a result of any increase in visitor pressure are anticipated. The application Site holds no standing water habitats suitable for the bird species present at the LNR and therefore no adverse effects are anticipated to the LNR or its bird population from the proposed development.

Non-Statutory Designated Wildlife Sites

5.12 Dinton Pastures Country Park LWS covers an area of c. 24ha and is located c. 1.1km north-west of the Site. The Country Park is managed by Wokingham Council for both recreation and nature conservation, with specific zones designated to provide quieter, less disturbed conservation areas. As the LWS is managed to deal with high visitor levels and recreational impacts, it is considered that any small increase in visitors caused by the proposed development will have no adverse effects on the LWS in isolation.

5.13 The River Loddon (part) LWS consists of a 17km section of the River that extends between Swallowfield and the River's confluence with the River Thames near Wargrave. The LWS is c. 1.8km from the Site at its nearest point and it is unlikely that any increase in visitor pressure will occur from the proposed development due to the distance of the LWS from the Site. Emm Brook to the east of the Site flows north and joins the River Loddon (part) LWS. The Brook corridor will be significantly buffered from the proposed residential development and no impacts are anticipated to

the aquatic or marginal vegetation. As a result, no negative effects are anticipated to this LWS from the proposed development.

5.14 Seven additional Local Wildlife Site designations are present within a 2km radius of the Site, including Furze Covert LWS, Bearwood Estate – Woods and Lakes LWS, Winnersh Woodland LWS, Holt Copse LWS, Loddon Valley Gravel Pits CTA, and Loddon Valley (South) CTA. Many of these sites are small in size and located a considerable distance from the application Site. There is likely to be a small increase in the number of visitors to those with public access, however ongoing management and the availability of significant public open space within the proposed development will act to reduce any increased recreation pressure. No significant negative effects are anticipated to these Local Wildlife Sites.

Himalayan Balsam

5.15 Extensive stands of the invasive plant Himalayan balsam were identified along the route of the Emm Brook, at the eastern boundary of the Site. Under Schedule 9 of the Wildlife and Countryside Act 1981 it is an offence to plant or otherwise cause this invasive species to grow. In the absence of consideration for this invasive species during development and suitable monitoring, avoidance and/or treatment measures, an offence may be made under this legislation.

Hedgerows and Trees

5.16 The development proposals allow for the retention of the vast majority of hedgerows and trees at the Site. The access road for the development will enter the Site through Maidensfield in the north-west. The vegetation at this point consists of a small group of elm and field maple saplings (Trees T63) at the side of the existing access gate, which have recently been cleared. Vegetation along this boundary is generally sparse and interspersed with fences from adjacent properties. A short c. 10m section of Hedgerow H1 will be removed to facilitate vehicular access through to the development site to the south. Given the quantum of hedgerows and mature trees to be retained across the Site boundaries, the removal of these individual saplings and short hedgerow section is not considered to have a significant effect on the existing habitat quality or associated wildlife opportunities within the Site. Development proposals include significant new hedgerow and tree planting within the development areas and open space to the east, that will result in a net gain in the number of trees on-site, once established.

5.17 In the absence of mitigation, construction works could result in the damage or destruction of retained hedgerow and trees at the Site and there is potential for the long-term deterioration of hedgerow quality as a result of increased shading, improper management, soil compaction and development edge effects (e.g. littering). In combination, these potential effects could be significant at the Local level.

Ancient Woodland

5.18 Ancient woodland is defined as an area that has been continuously wooded since at least 1600 AD and as such represents an irreplaceable and scarce habitat resource. Ancient woodland forms an integral part of England's historic landscapes and is of high ecological importance, supporting a high diversity of wildlife. While development is not proposed within the ancient woodland habitat, in the absence of mitigation, there is the potential for construction works to cause accidental direct impacts on the woodland and long-term deterioration.

Emm Brook

5.19 Emm Brook runs along the eastern margin of the Site and is considered to be a habitat feature of Local importance. The Brook provides aquatic habitat which is absent from the remainder of the Site and movement opportunities for a range of local wildlife. The majority of the Brook borders the Site, with very little of the watercourse within the Site area itself. Nonetheless, in the absence of mitigation, there exists the potential for development activities to encroach on and impact the Brook corridor and have an adverse effect on the important habitat feature and wildlife present.

5.20 In addition to direct impacts, there is the potential for impacts to occur to the Brook if construction-related pollution events are not appropriately controlled or mitigated for, as this may lead to habitat degradation on-site and further downstream. It is assumed at this stage that appropriate pollution prevention control measures will be specified in a CEMP at the detailed design stage. Subject to the implementation of these measures, no residual effects would be anticipated.

Bats

5.21 The dominant land-use on-site will change from semi-improved grassland and arable land/improved grassland to residential development. This will alter the prey composition and availability for bats within the Site area. The Landscape Strategy includes considerable new planting, open spaces and new aquatic habitats that will promote invertebrate prey abundance and diversity, particularly along the Site boundaries and within the eastern POS area.

5.22 Vegetation removal at the Site will be limited to a small group of saplings along the western boundary and a c.10m section of Hedgerow H1 to the south where vehicular access is proposed. The western boundary of the Site currently consists of a mixture of garden fences, native and ornamental hedgerows. Limited bat activity was recorded along the length of this boundary during bat activity surveys at the Site, consisting of very low numbers of common and widespread bat species. This boundary is not considered to be a significant flight line/commuting route for bats and offers lower opportunities for foraging compared to the remaining boundaries on-site. The southern site boundary was

utilised by bat species, however only a small section of this hedgerow will be removed. Together, these losses of two small sections of vegetation along these boundaries is not considered to have a negative effect on bats at the Site.

5.23 The Illustrative Site Layout (7135 PL-05 B) and Tree Survey and Impact Assessment (1894-KC-XX-YTREE) show that two trees are recommended to be removed at the Site (due to their Category U statuses) that hold Low potential suitability for roosting bats, namely Trees T52 and T79. Previous roost survey work in 2018 found roosting bats to be likely absent and following update Preliminary Roost Assessments in 2020, these trees were categorised as holding Low potential for roosting bats. In the absence of appropriate precautionary mitigation measures, it is possible that removal of these trees may impact roosting bats, resulting in a legislative offence, in the unlikely event they are present during felling.

5.24 Overall bat activity at the Site was found to be relatively low and ecologically important at the Local level (with the exception of barbastelle bats). The greatest bat activity levels were identified along the southern and eastern boundaries, with concentrated foraging activity noted along the Brook corridor to the east. This corridor provides mature vegetation and dark conditions well suited to bat activity. To maintain suitable conditions at the Site for bats, hedgerows and mature trees are to be retained and enhanced to avoid adverse effects to the species recorded utilising the Site.

5.25 Barbastelle bats are designated as one of the rarest in the UK (population under 10,000) and as such are considered to be ecologically important at the County level. Low number of contacts from this species were recorded, and the Site is not considered to constitute a key foraging or commuting habitat for barbastelle bats, however consideration has been made to retain and enhance habitat features at the Site to avoid impacts to this important species.

5.26 The proposed development will result in an increase in artificial lighting, which may disturb bats using the currently unlit boundaries for foraging purposes. Existing lighting is present along the nearby motorway and within the neighbouring residential streets. The Emm Brook corridor and southern site boundary in particular offer dark flight lines across the Site that are likely to be most affected by an increase in artificial light. In the absence of mitigation, the effect of artificial lighting on bats has potential to be significant at the Local level.

Nesting Birds

5.27 In the absence of mitigation, habitat clearance works, including tree removal, may result in the damage or destruction of the nests and eggs of breeding birds. This would constitute an offence under the Wildlife and Countryside Act 1981 (as amended).

Reptiles

5.28 Reptile survey work has broadly estimated that a low population of slow-worm is present at the Site. In the absence of mitigation, the proposed development would result in the loss of suitable habitat used by this species, including semi-improved grassland and scrub. Construction activities such as vegetation clearance and ground works could kill and injure reptiles, an offence under the Wildlife and Countryside Act 1981 (as amended). The proposals are therefore predicted to have a negative effect, significant at the Local level.

Mitigation by Design

5.29 It is an established principle (CIEEM, 2018) that, wherever possible, potential negative effects should be avoided through 'Mitigation by Design', as this gives greater certainty over deliverability, demonstrates a well-designed scheme and ensures the correct application of the 'Mitigation Hierarchy' (as advocated by BS42020:2013, Defra 2019 and CIEEM, CIRIA & IEMA 2016).

Himalayan Balsam

5.30 Development proposals include a wide buffer along the eastern boundary of the Site, which should act to reduce potential damage/disturbance to Himalayan balsam, which could otherwise result in proliferation of this species. It is recommended that any potential disturbance activities are identified prior to the construction phase of development with impact avoidance measures put in place. If disturbance cannot be avoided, then specialist treatment/removal works should be undertaken. The invasive species should be continually monitored throughout the development process, with identified impacts and mitigation measures detailed within the CEMP to be prepared at the detailed design stage.

Emm Brook

5.31 The Brook corridor is to be protected from potential impacts of the new development by the provision of an appropriate POS buffer zone. The Landscape Strategy details significant habitat creation and enhancement measures within the eastern POS area, which runs along the length of the eastern boundary. The POS area includes significant new tree, thicket and wildflower planting that will buffer the Brook from development and ensure that this habitat feature is retained.

Bats

5.32 The Landscape Strategy identifies the extent of POS at the Site which will consist of new tree, thicket and wildflower planting, particularly along the eastern boundary where a wide landscape buffer is proposed. Site boundaries will be strengthened through infill planting, promoting wider corridors for bat dispersal, including along the western boundary where

very limited opportunities for bats are currently present. Within more formal areas, a range of native species will be planted, ensuring that varieties of known ecological benefit are included. New SUDS features will also be created to the east and planted with suitable aquatic and wetland species to introduce habitat diversity and promote invertebrate prey abundance. Once established, these habitat creation and enhancement proposals are considered to offset potential negative effects of the small-scale vegetation removal works and result in a net gain in available habitats for bats at the Site. Appropriate management of new and retained planting will be detailed within a LEMP, to be prepared at the detailed design stage.

Additional Mitigation

Hedgerows and Trees

5.33 Existing mature vegetation will be enhanced with new landscaping that will strengthen the Site boundaries by infilling gaps in hedgerows and supplementing existing planting with new native tree species and wildflower meadows. New planting is to include a significant proportion of native species and cultivars of known wildlife benefit and the condition of new and existing vegetation is to be favourable managed to promote species diversity and strengthen wildlife corridors. This management will be detailed within a LEMP to be prepared at the details design stage.

5.34 To prevent accidental damage to retained vegetation during construction, works will be undertaken in-line with BS 5837:2012 "Trees in relation to design, demolition and construction. Recommendations". The Root Protection Areas (RPAs) of retained trees and hedgerows will be respected during the preparation of detailed designs and protected during subsequent construction works.

Ancient Woodland

5.35 A key factor in protecting ancient woodlands from developmental impacts is to establish an appropriate buffer zone around the woodland edge where development cannot occur. Natural England guidance (2022) recommends that an appropriate buffer zone of semi-natural habitat is left between the development and ancient woodland, specifically at least 15m to avoid root damage.

5.36 The Landscape Strategy includes a wide area of POS along the eastern boundary which results in the closest construction activities (nearby SUDS basin) being located c. 32m away from the designated ancient woodland habitat. The development edge is situated c. 53m from the ancient woodland edge at its closest point. Within this buffer zone, a wide edge of dense blackthorn scrub is already present that will act to avoid encroachment towards the woodland. Semi-natural habitat will be allowed to develop in the buffer zone, supplemented by new tree

and thicket planting to protect the woodland and discourage public access. No ground works will take place within 15m of the woodland to avoid root damage. The remainder of the POS will include large SUDS features and significant additional tree, thicket and wildflower meadow planting which will provide a wide enough buffer to avoid impacts to the woodland from increased pollution levels. It is considered that the development proposals meet the requirements set out by Natural England with regard to protecting ancient woodland from development.

5.37 To prevent accidental damage to the ancient woodland during construction, works will be undertaken in-line with BS 5837:2012 "Trees in relation to design, demolition and construction. Recommendations". The Root Protection Areas (RPAs) of trees and the designated buffer zone will be respected during preparation of detailed designs and protected during subsequent construction works.

Bats

5.38 In accordance with prevailing guidelines, precautionary impact avoidance measures will be adopted with respect to the removal of trees exhibiting low bat roost potential (Trees T52 and T79). This should involve the implementation of 'soft-felling' techniques whereby the main limbs of trees are lowered carefully to the ground to reduce the impact of felling, under supervision by a suitably qualified ecologist. These measures will be detailed within a CEMP at the detailed design stage.

5.39 To mitigate for the potential adverse effects of new lighting at the Site, a sensitive lighting strategy will be designed that minimises light spill onto retained and ecologically valuable habitats. This will maintain existing dark corridors for bats and other nocturnal wildlife.

Nesting Birds

5.40 Construction phase activities requiring the removal of habitat features suitable for nesting birds will be undertaken sensitively, avoiding the nesting season of March through August, unless preceded by a nesting bird check by an appropriately qualified ecologist to confirm absence. These and other construction phase impact avoidance/mitigation prescriptions will be detailed in a CEMP at the detailed design stage.

Reptiles

5.41 To avoid impacts to reptiles and any legal infringement, a Reptile Mitigation Strategy will be produced. This strategy will involve the installation of temporary reptile exclusion fencing and the translocation of reptiles out of the proposed construction area, into a designated receptor area. It is considered that off-site habitats to the east and south offer suitable habitat opportunities for translocated reptiles. It is therefore anticipated that the buffer zone of semi-natural habitat to be retained

and enhanced along the eastern boundary will provide a suitable on-site receptor area for slow-worm moved out of the development area. Translocated reptiles moved into this receptor site will have free movement away from the Site to the east and south along the Brook corridor, allowing the population to disperse.

5.42 Following completion of the proposed development, the exclusion fencing will be removed, allowing reptiles to move into the newly enhanced landscape buffer along the eastern boundary. The new thicket and wildflower planting in this area will provide suitable, diverse habitat opportunities for the slow-worm population, thereby mitigating for the area of low suitability habitat lost to reptiles within the developed area. It is also anticipated that additional enhancements for reptiles will also be included within the Mitigation Strategy, including the provision of log piles within the receptor site and eastern POS.

Residual Effects

5.43 Table 5 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 5. Summary of effects

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Off-site statutory and non-statutory designated wildlife sites	No significant effect	None proposed	N/A	No significant effect
Himalayan balsam	Potential for legal offence through proliferation of invasive species during construction activities	Disturbance avoidance measures and/or specialist treatment and removal	CEMP secured through Planning Condition	No significant effect/legal implication
Hedgerows and trees	Removal of trees for site access and potential for accidental damage of retained vegetation during construction	Strengthening of boundary vegetation through infill planting. Adherence to BS 5837:2012.	LEMP and CEMP secured through Planning Condition	No significant effect
Ancient woodland	Potential for damage and deterioration of habitat during construction	Implementation and protection of a suitable buffer zone. Adherence to BS 5837:2012.	LEMP and CEMP secured through Planning Condition	No significant effect

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Emm Brook	Potential for damage and deterioration of habitat during construction	Implementation of a suitable buffer zone	LEMP secured through Planning Condition	No significant effect
Bats	Removal of trees with Low bat roosting potential Reduction in habitat availability and prey abundance. Potential development edge effects from artificial lighting causing disturbance to foraging bats.	Precautionary working methods during felling of Low potential trees New diverse habitat creation and management of POS for biodiversity gain. Production of a sensitive lighting strategy.	CEMP, LEMP and Lighting Strategy secured through Planning Condition	No significant effect
Nesting Birds	Potential damage or destruction of nests and eggs	Sensitive timing of works/nest checks by ecologist	CEMP secured through Planning Condition	No significant effect
Reptiles	Potential to kill and injure reptiles during construction	Translocation exercise and habitat enhancements	Reptile Mitigation Strategy secured through Planning Condition	No significant effect

Cumulative Effects

5.44 An outline planning application for residential development on land to the south of the application site, between the Site and the M4 motorway, has been submitted by Wokingham Borough Council. The application seeks permission for the construction of up to 87 dwellings. The Ecological Impact Assessment for this application (70072114-EcIA, WSP 2021) has been reviewed with regard to potential cumulative effects. Important ecological features shared by the Site and off-site land include hedgerows, bats (foraging and commuting) and reptiles. Short-term, temporary residual negative effects significant at the Site level are anticipated as a result of these off-site proposals, predominantly due to temporary habitat loss. An appropriate amount of new landscape planting is being provided to result in permanent positive effects for hedgerows, bats and reptiles post-development. No residual negative effects are anticipated to result from development at the Site, and impacts are to be appropriately avoided and mitigated for such that no cumulative impacts would be anticipated for these important ecological features.

Compensation

5.45 No significant residual negative effects on important ecological features are anticipated to result from the proposed development, following the inclusion of impact avoidance and mitigation measures described above. As such, no compensatory measures are proposed.

5.46 As detailed above in 'Mitigation by Design' the proposed development, provides an opportunity to secure the following elements of habitat creation. Although designs are at this stage illustrative, the Landscape Strategy Plan (CSA/1668/132) demonstrates that alongside development the Site can accommodate:

- Species-rich wildflower grassland
- Mixed-species thicket and broadleaved woodland planting
- Drainage basins seeded with a wet-tolerant wildflower meadow mix and one wet core to be created and managed as a pond with associated marginal planting.
- Enhancement of the Emm Brook corridor with bank top habitat improvements and the creation of a naturalised side-channel.
- New native species-rich hedgerow planting

5.47 An assessment of the change in biodiversity that will occur as a result of the proposed development has been undertaken using the Biodiversity Metric 3.1. The Biodiversity Net Gain Plan in Appendix G provides full assessment methods and results. An overall net gain of 2.63 habitat units (+10.06%), 7.47 hedgerow units (+83.98%) and 0.37 river units (+11.05%) has been identified.

5.48 Full details on the establishment and long-term management of these habitats will be set out in the LEMP at the detailed design stage. Such details will include a description of the proposed habitats, their target condition, timescales over which condition will be achieved, management prescriptions, implementation responsibilities and funding mechanisms.

Enhancement

5.49 The Landscape Strategy includes new landscape planting and enhancements to existing habitats that will make positive contributions to on-site biodiversity. New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, including bats, reptiles and nesting birds. In addition to these enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below. Further details will be set out in a LEMP at the detailed design stage, however as an indicative guide:

- Provision of new bat roosting opportunities: At least 15 bat boxes should be erected on new builds or mature trees. These will be a purpose-built, durable and long-lasting variety such as those available from Schwegler or Habibat that will provide roosting opportunities for a range of bat species. Where possible, these will be incorporated into the fabric of new builds.
- Provision of new bird nesting opportunities: Bird nesting boxes will be provided in new/retained planting or on new builds. These should include a range of box types to provide diverse nesting opportunities for many species, including those listed on the BoCC Red List, identified during the 2011 breeding bird surveys at the Site. It is recommended that five sparrow terraces, five starling nest boxes (45mm round hole) and five generalist bird boxes (32mm round hole) are provided within the development.
- Creation of log piles: Timber generated from tree clearance works at the Site will be used to make log piles for wildlife benefit. These will be sited within boundary vegetation where they will be least disturbed, in particular along the eastern boundary, adjacent to the Emm Brook to benefit translocated reptiles. New material can be added as required following any future management works.
- Provision of hedgehog gaps: Hedgehogs have been scoped out of detailed assessment and no specific mitigation is proposed, however it is important that opportunities for hedgehogs to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, will be used to maintain permeability for hedgehogs across the development and associated gardens. The number and location of hedgehog gaps will be determined at the detailed design stage and set out within the LEMP.

Monitoring

5.50 Ongoing monitoring of newly established and enhanced habitats as part of POS will be undertaken. This commitment will be made, and further detail provided, within the LEMP to be prepared at the detailed design stage.

5.51 As part of the mitigation strategy to be developed with regard to reptiles at the Site, monitoring surveys will be undertaken to inform the status of the slow-worm population post-translocation. This commitment will be detailed within the Reptile Mitigation Strategy to be prepared at the detailed design stage.

6.0 CONCLUSIONS

6.1 Subject to the implementation of some straightforward mitigation and precautionary measures as proposed here, the development is not anticipated to result in any significant residual negative effects on important ecological features. In the absence of any mitigation measures, the proposed development would have the potential to result in negative effects significant at up to the Local level.

6.2 The Landscape Strategy demonstrates the potential to deliver net benefits for wildlife in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing. An assessment of the proposed development has identified that a Biodiversity Net Gain of over 10% will occur for habitats, hedgerows and rivers.

6.3 The measures set out herein can be secured through appropriate conditions attached to any planning consent, and the development may therefore be delivered without harm to nature conservation interests. Specifically, it is anticipated that planning conditions would be used to secure:

- Construction Environmental Management Plan (CEMP): In addition to wider environmental controls and best practice construction management, the CEMP will set out construction-phase impact avoidance measures with respect to nesting birds, bats, badgers and reptiles.
- Landscape and Ecology Management Plan (LEMP): The LEMP will detail the establishment and long-term management of retained and newly created habitats to maximise benefits for wildlife. It will include a graphical Ecological Enhancement Plan, setting out the number, type and position of enhancement features.
- Lighting Strategy: A sensitive lighting strategy will accompany the detailed layout, ensuring that dark corridors are maintained, and minimising light spill to retained and newly created habitats to benefit bats and other nocturnal wildlife.
- Reptile Mitigation Strategy: To detail the measures to be implemented to re-locate on-site reptiles to an on-site receptor area prior to construction.

6.4 Based on the successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of Wokingham Borough Council planning policy.

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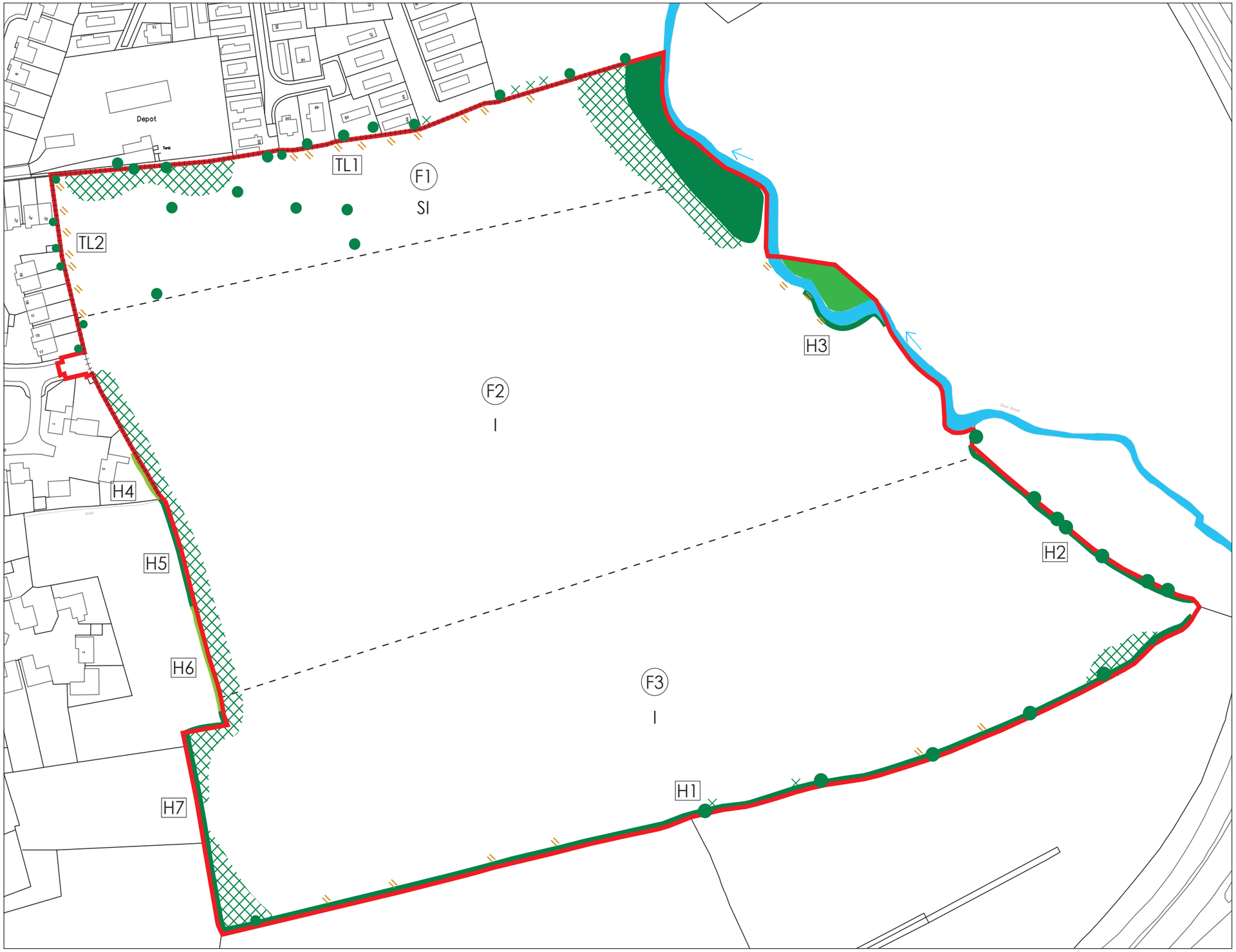
Appendix A

Habitats Plan



N

- Site boundary
- Fn — Field reference
- TL/Hn — Tree line / hedgerow reference
- SI — Semi-improved grassland
- I — Improved grassland
- Ancient woodland
- Plantation woodland
- Individual tree
- Dense scrub
- Scattered scrub
- Scattered tall ruderal
- Native hedgerow
- Ornamental hedgerow
- Running water
- Fence

0 50 100m

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Project	Land off Watmore Lane, Winnersh	Date Jan 2023	Drawing No. CSA/1668/118
Drawing Title	Habitats Plan	Scale See scale bar	Rev E
Client	Taylor Wimpey	Drawn LM	Checked TR

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Appendix B

Legislation and Planning Policy

1.1. The **Conservation of Habitats and Species Regulations 2017** (as amended) make prescriptions for the designation and protection of Sites of Community Importance ('European sites', i.e. Special Areas of Conservation and Special Protection Areas) and European Protected Species (EPS). The latter include all native bats, great crested newts, dormice, otters and certain reptiles, listed under Annex II of the Regulations. Following the UK's departure from the European Union, the provisions of the Regulations have been retained through enactment of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which came into force on 31 December 2020.

1.2. The **Wildlife and Countryside Act 1981** (as amended, principally by the Countryside and Rights of Way Act 2000) forms the basis for protection of statutory designated sites of national importance (e.g. Sites of Special Scientific Interest; SSSIs) and native species that are rare and vulnerable in a national context. Additionally, badgers are protected under the **Protection of Badgers Act 1992**.

1.3. The **Environment Act 2021** received Royal Assent in November 2021. Through an amendment to the Town and Country Planning Act 1990 the Environment Act will introduce a mandatory requirement for all planning permissions to be conditional upon the submission of a Biodiversity Gain Plan for approval by the Local Planning Authority. The Plan will need to demonstrate a net gain of at least 10% in the biodiversity value of the development site. These provisions are not yet in force, pending their enactment through secondary legislation (expected November 2023).

1.4. Section 40(1) of the **Natural Environment and Rural Communities (NERC) Act 2006** states that each public authority, "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity." This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 (S41) lists of 56 habitats and 943 species of principal importance. The UK Biodiversity Action Plan (BAP) has been superseded by the Biodiversity 2020 Strategy, however Local BAPs continue to influence biodiversity management and conservation effort, including through the spatial planning system, at the local scale.

1.5. The **National Planning Policy Framework (2021)** (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15: Conserving and Enhancing the Natural Environment, paragraph 174, states that the planning system and planning policies should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

1.6. Paragraph 180 sets out the principles that local planning authorities should apply when determining planning applications:

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

1.7. Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). That relating to the protection and enhancement of the Natural Environment was most recently updated in August 2021. The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.

1.8. The Government Circular 06/2005, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.

1.9. Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table 1 below.

Table 1. Summary of regional and local planning policy relating to ecology

Policy	Summary
Wokingham Borough Council Draft Local Plan	
Policy NE1: Biodiversity and Nature Conservation	1.Sites designated as of importance for nature conservation at an international or national level, as identified on the Policies Map, in addition to Local Wildlife Sites and Local Geological Sites, will be maintained, conserved and enhanced and inappropriate development will be resisted. The degree of protection given will be proportionate to the status of the site in terms of its international or national importance. 2. Development proposals which may harm habitats, or species of principle importance for nature conservation in England, ancient or veteran trees or features of the landscape that are of major importance for wild flora and fauna, will only be permitted if it has been clearly demonstrated that the wholly exceptional need for the proposal outweighs the need to safeguard the nature conservation or geological importance of the site, and no alternative site is available that would result in less or no harm. Where this test is met, every effort must be made to reduce the harm to the site through avoidance and mitigation measures. 3. Development proposals across sites of all sizes should achieve a minimum 10% net gain for biodiversity, either within the site boundary or as part of on-site compensation, or where necessary, off-site compensation towards a larger strategic habitat restoration network. 4. Development will only be permitted where it can be demonstrated that proposals: a) Incorporate new biodiversity features and enhance existing features of value through design, layout and landscaping. b) Provide or retain appropriate buffer zones between development proposals and designated sites, as well as habitats and species of principal importance for nature conservation; c) Provide coherent ecological permeability that is integrated and linked to the wider green infrastructure and any nature recovery network identified as relevant to the location; d) Are compatible with any Biodiversity Action Plan or strategic conservation management plans for a species or habitat that has been formally adopted by the local authority. 5. Development located within, or neighbouring, a Biodiversity Opportunity Area (BOA), Living Landscape, Nature Recovery Network or similar opportunity should support the objectives of each initiative.
Policy NE2: Thames Basin Heaths Special Protection Area	1.Development, which following a Habitat Regulations Assessment, either alone or in combination with other plans or projects, is considered to have likely significant effects on the ecological integrity of the Thames Basin Heaths Special Protection Area will be required to demonstrate that adequate measures to avoid and mitigate any potential adverse effects are delivered. <u>Residential development</u> 2. Proposals for a net increase in residential development1: a. Within the 400 metres exclusion zone of the Thames Basin Heaths SPA will be resisted because the impacts of such development on the SPA cannot be fully mitigated.

Policy	Summary
	b. Between the 400 metres threshold but within five kilometres linear distance of the SPA boundary (the SPA zone of influence) will be required to deliver avoidance and mitigation measures prior to occupation of new dwellings and in perpetuity. Measures must be in accordance with the Thames Basin Heaths Special Protection Area Avoidance and Mitigation Strategy or any successor document. c. Between five and seven kilometres from the SPA boundary (the SPA zone of influence) proposals for a net increase of more than 50 dwellings may be required to provide mitigation measures based on a combination of SAMM and the provision of SANG to a lower standard than within the 400m to five kilometre zone. This will be assessed on a case-by-case basis in consultation with Natural England and, where appropriate, a Habitats Regulations Assessment may be required to ascertain whether the proposal could have an adverse effect on the SPA. <u>SANG Provision</u> 3. Within the five kilometre zone, a minimum of eight hectares of SANG land (after discounting to account for current access and capacity) should be provided per 1,000 new occupants. SANG must be secured or provided, in addition to being maintained in perpetuity, in accordance with the quality and quantity standards advocated by Natural England. SANG capacity should be based on an average occupancy of 2.4 persons per dwelling. The quantity and capacity of SANG to be provided for development proposals outside the five kilometre zone will be assessed individually on a case-by-case basis in consultation with Natural England. 4. The council has identified sufficient SANG provision as part of the avoidance and mitigation measures required for the Development Plan. 5. There is a presumption against the development of SANG sites for uses other than SANG, unless the applicant can demonstrate that sufficient alternative avoidance measures for all relevant submitted and/or approved plans and projects within the borough taking account of Natural England's advice on SANGs. Development proposals must fall within the catchment of a specified SANG, except developments of less than a net increase of 10 residential dwellings. 6. Applications for non-residential development will be assessed on a case by case basis. 7. Proposals will be required to make financial contributions towards avoidance and mitigate measures, including SANG and SAMM.
Policy NE3: Trees, woodland and hedgerows	1. Trees, woodland and hedgerows are important visual and ecological assets in towns, villages and the countryside. To retain and provide local character and distinctiveness in the landscape, trees (including ancient or veteran trees), woodland, ancient woodland and hedgerows are of particular significance. Development proposals should: a) Ensure existing trees, hedgerows and other landscape features are protected, and where possible enhanced, as an integral part of the development, b) Retain the existing pattern of fields, hedgerows, woodlands, trees, watercourses, water bodies, underlying topography and other landscape features,

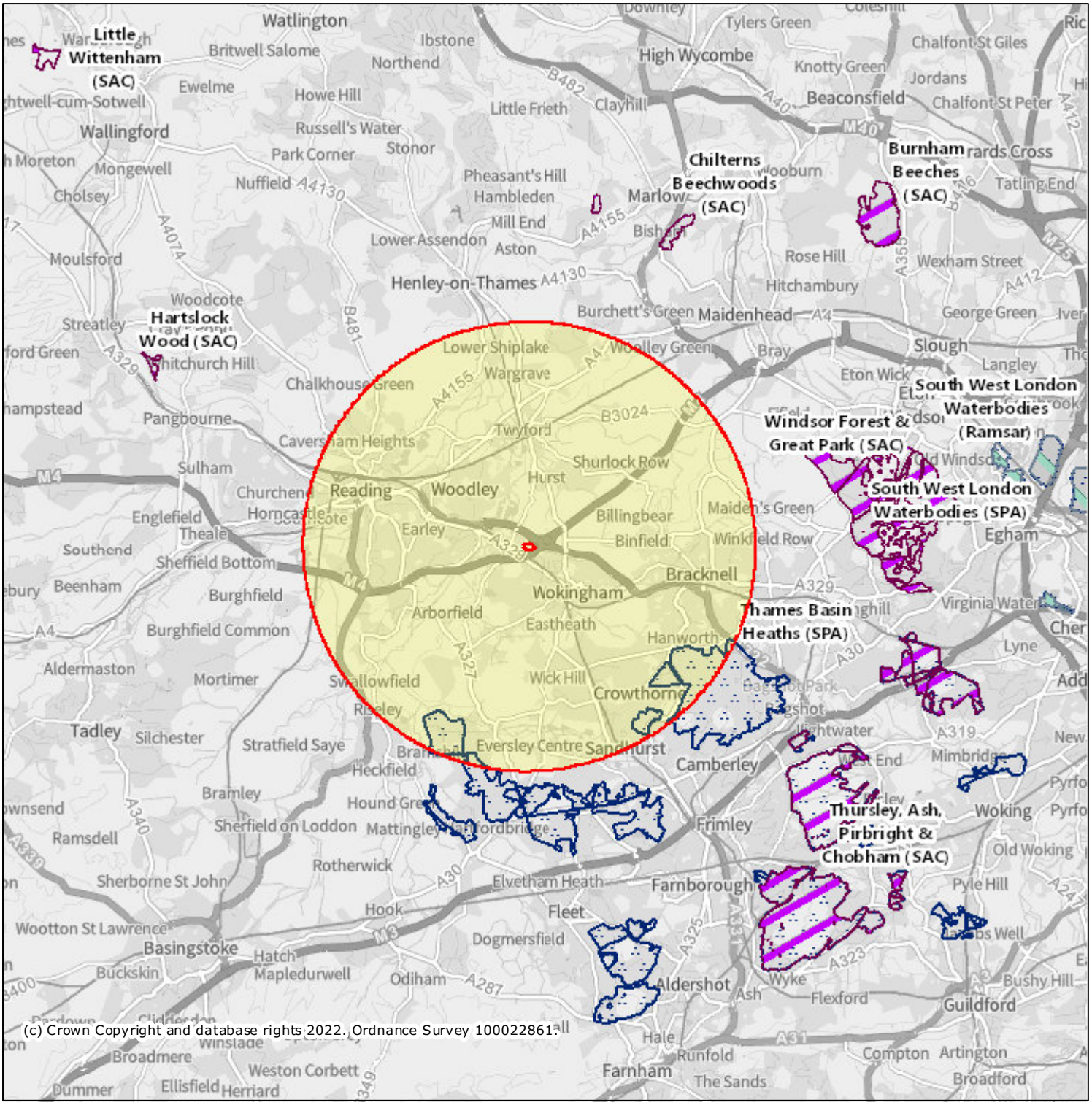
Policy	Summary
	c) Provide appropriate buffer zones around woodlands, including semi-natural ancient woodlands, planted ancient woodland sites, orchards, hedgerows and individual trees. 2. The loss, threat or damage to any tree, woodland or hedgerow of visual, heritage or nature conservation value will only be acceptable where: a) Development proposals have sought to avoid, reduce or minimise impact, b) Mitigation measures, such as structural tree planting are incorporated as part of the development proposals providing equivalent scale, canopy cover, habitat connectivity and character. 3. Development proposals that would result in the loss or deterioration of woodland, ancient woodland and ancient or veteran trees will only be permitted if there are wholly exceptional reasons and a suitable compensation strategy exists.
Policy NE4: Development and existing trees, woodland and hedgerows	1. Development proposals that may affect a tree, woodland or hedgerow should: a) Assess the health of all trees, woodland and hedgerows affected, including describing and assessing their value and the potential impact of the development on them as part of an Arboricultural Impact Assessment b) Incorporate existing woodland, trees and hedgerows and ensure integration into the public realm within a suitable landscape setting, c) Ensure the layout of new developments provide sufficient space to enable trees to grow and thrive, including maintaining adequate root protection areas and limiting excessive shading to residential properties. d) Ensure appropriate tree protection measures are in place prior to development commencing on site as part of an Arboricultural Method Statement, including a Tree Constraints Plan and Tree Protection Plan and actively monitor tree protection throughout the construction process.
Policy NE10: River corridors	1. Development proposals that include or are adjacent to a watercourse must protect or enhance its function, setting and biodiversity and historical significance. Development should provide mitigation for any unavoidable impacts. 2. Development encompassing a watercourse, wherever practicable and appropriate, should provide or retain a minimum undeveloped 10 metre buffer zone to create a corridor favourable to the enhancement of biodiversity. This should be provided on both sides of a main river measured from the top of each watercourse bank at the point at which the bank meets the level of the surrounding land. 3. Where appropriate, development proposals adjacent to watercourses will be required to: a. meet the principles of high quality design set out in this plan, having special regard to riverside setting and water frontage character, and consider views of the proposals from all public vantage points, including from the river b. maintain, and where possible enhance, public access for riverside walking and river corridor cycling (including Greenways, and Green Routes), and tourism and leisure activities, such as fishing and boating

Policy	Summary
	c. maintain tree cover, conserve and enhance natural watercourse banks and their associated bankside and marginal vegetation and the ecological value of the area including its role as a wildlife network. There may be opportunities for the restoration and enhancement of natural elements of the river environment that should be incorporated within the design of new developments. d. demonstrate how the development proposal will support the achievement of Water Framework Directive (WFD) objectives, and guidance set out in the Thames River Basin Management Plan or any local catchment management plans 4. Appropriate proposals for sport, leisure and river-related employment, infrastructure and renewable energy generation will be supported where they meet the above criteria and where they do not obstruct access along or to the river for any users, or harm its ecological value. 5. The culverting of any watercourses should be avoided. **River Thames** 6. The ecological value of the River Thames will be maintained and in appropriate circumstances restored and enhanced together with natural elements of the riparian environment. Proposals should seek to promote the healthy growth in the use of the River Thames for communities, wildlife, leisure, business and tourism in ways that are compatible with its character, setting and ecology, and in line with the objectives of the River Thames Waterways Plan and the Environment Agency's Thames River Basin Management Plan. 7. Particular care will be taken to ensure developments within the setting of the River Thames complement the distinctive character of the water frontage and important views. Existing riverside access will be maintained and opportunities to improve or extend access to the River Thames and adjoining sites will be supported.

Appendix C

Desk Study Information

1668 10km Site Search



Legend

- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

0 7.5 15
km

Projection = OSGB36
xmin = 416500
ymin = 141700
xmax = 543200
ymax = 199200

Map produced by MAGIC on 13 May, 2022.

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Site Check Report Report generated on Fri May 13 2022
You selected the location: Centroid Grid Ref: SU79077069
The following features have been found in your search area:

Special Protection Areas (England)

Name	THAMES BASIN HEATHS
Reference	UK9012141
Hectares	8309.5

Ramsar Sites (England)
No Features found

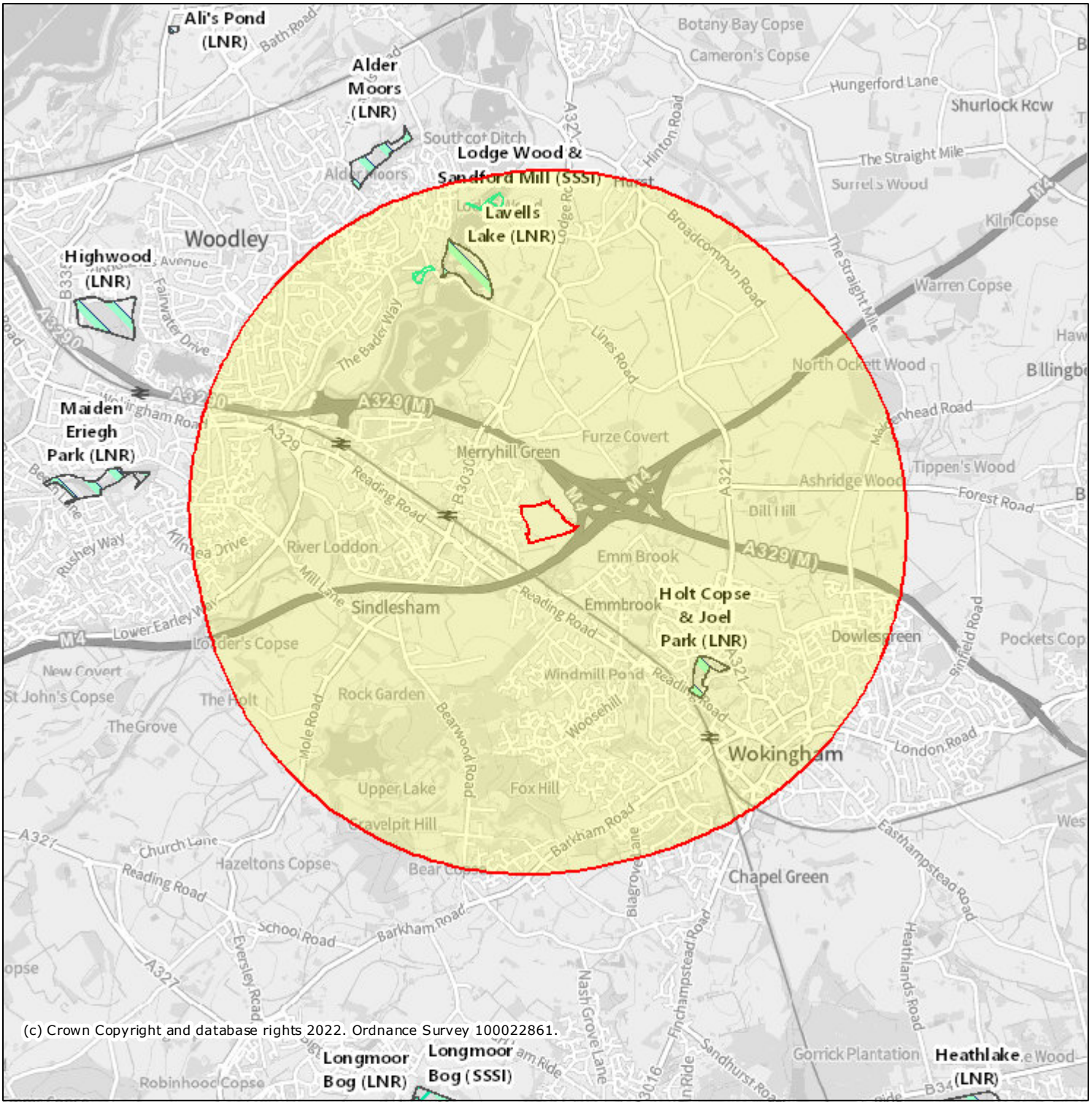
Proposed Ramsar Sites (England)
No Features found

Special Areas of Conservation (England)
No Features found

Possible Special Areas of Conservation (England)
No Features found

Potential Special Protection Areas (England)
No Features found

1668 3km Site Search



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Sites of Special Scientific Interest (England)

0 1.5 3
km

Projection = OSGB36
xmin = 466600
ymin = 164400
xmax = 491500
ymax = 176500

Map produced by MAGIC on 13 May, 2022.

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Site Check Report Report generated on Fri May 13 2022
You selected the location: Centroid Grid Ref: SU79057069
The following features have been found in your search area:

Local Nature Reserves (England)

Reference	1009010
Name	LAVELLS LAKE
Hectares	12.45
Hyperlink	https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009010

Reference	1009921
Name	HOLT COPSE & JOEL PARK
Hectares	5.28
Hyperlink	https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009921

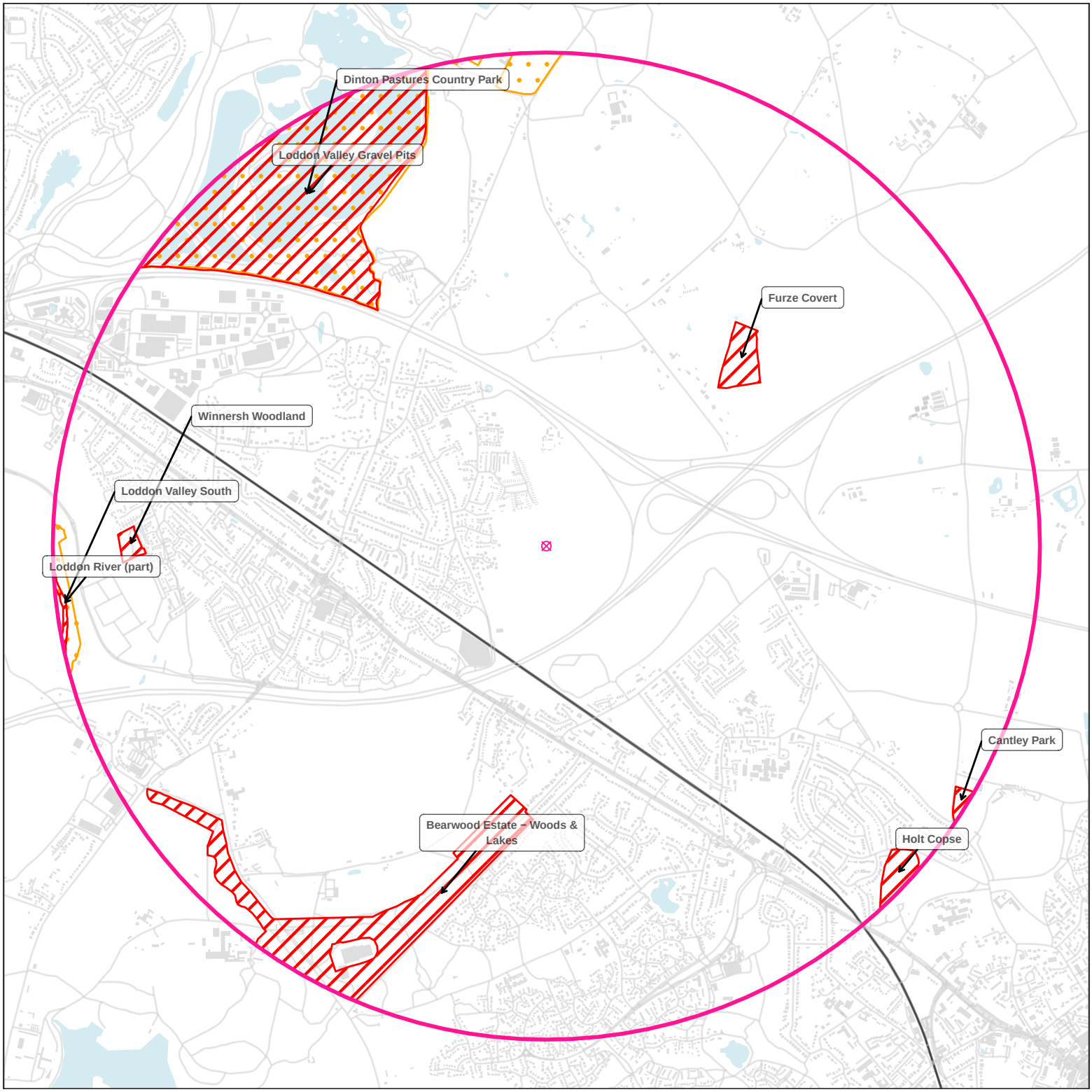
Sites of Special Scientific Interest (England)

Name	Lodge Wood & Sandford Mill SSSI
Reference	1000495
Natural England Contact	Conservation Delivery Team
Natural England Phone Number	0845 600 3078
Hectares	2.33
Citation	1003870
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1003870

National Nature Reserves (England)
No Features found

Land at Winnersh

Designated Sites Map



Berkshire Local Wildlife Site Biodiversity Opportunity Area

Map produced by Thames Valley Environmental Records Centre in 2022

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Appendix D

Photographs

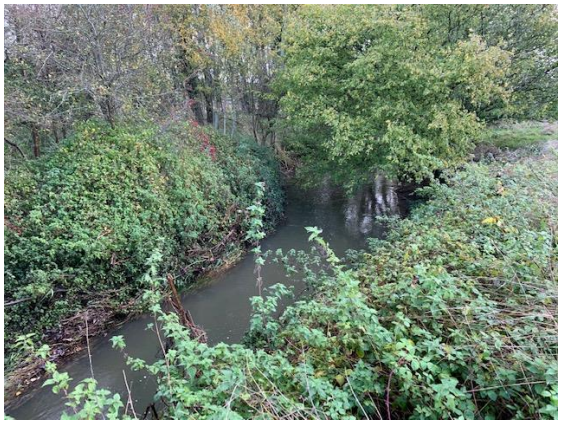
Photograph 1. Species-poor semi-improved grassland (F1), view west (November 2022).

Photograph 2. Arable land (F2) present during 2021 survey season, view south along the western boundary (August 2021)

Photograph 3. Improved grassland (F2) present late 2022, view south-west (November 2022)

Photograph 4. Improved grassland (F3), view north-west (November 2022).

Photograph 5. View of dense blackthorn scrub and ancient woodland, view east (August 2021).



Photograph 6. Emm Brook, on-site section (November 2022)

Appendix E

Habitats and Flora Species List

Table 1. Habitats and flora species list

Latin name	Common Name	HABITATS						
		F1	F2	F3	Southern Boundary	Eastern Boundary	Northern Boundary	Western Boundary
		Species-poor semi-improved grassland	Improved grassland	Improved grassland	Native hedgerow and mature trees	Native hedgerows, trees and woodland	Mature trees and scrub	Scattered trees and scrub
Herb species								
Achillea millefolium	Yarrow					X		
Anagallis arvensis	Scarlet pimpernel		X					
Arctium sp.	Burdock sp.	X		X		X		
Centaurea nigra	Common knapweed					X		
Cirsium arvense	Creeping thistle			X		X		
Cirsium vulgare	Spear thistle	X						
Equisetum sp.	Horsetail sp.	X						
Galium aparine	Cleavers	X			X			
Galium verum	Lady's bedstraw					X		
Geranium dissectum	Cut leaved crane's-bill	X		X				
Glechoma hederacea	Ground ivy					X		
Hypericum sp.	St John's-wort	X						
Impatiens glandulifera	Himalayan balsam					X		
Lotus corniculatus	Common bird's-foot-trefoil					X		
Persicaria maculosa	Redshank					X		
Potentilla reptans	Creeping cinquefoil	X						
Ranunculus repens	Creeping buttercup	X	X	X		X		
Reseda luteola	Weld	X						
Rumex sp.	Dock sp.			X		X		
Senecio jacobaea	Common ragwort	X	X	X				
Stellaria graminea	Lesser stitchwort					X		
Symphytum spp.	Comfrey					X		
Tragopogon pratensis agg.	Goat's-beard	X						
Trifolium pratense	Red clover	X						
Trifolium repens	White clover		X	X				
Urtica dioica	Common nettle	X	X	X		X		
Grasses								
Agrostis spp.	Bent grasses	X						
Arrhenatherum elatius	False oat-grass	X		X		X		
Bromus hordeaceus	Soft-brome					X		
Dactylis glomerata	Cock's-foot	X	X	X				
Holcus lanatus	Yorkshire fog	X		X		X		
Lolium perenne	Perennial rye grass	X	X	X		X		
Poa pratense	Timothy	X						
Poa spp.	Meadow grass spp.	X						
Broadleaved								
Acer campestre	Field maple				X			
Corylus avellana	Hazel					X		
Crataegus monogyna	Hawthorn				X	X		X
Fraxinus excelsior	Ash				X	X	X	X
Hedera spp.	Ivy					X		
Prunus spinosa	Blackthorn				X	X	X	X
Quercus robur	Pedunculate oak	X			X	X	X	X
Rosa sp.	Rose sp.				X			
Rubus fruticosus agg.	Bramble				X	X	X	X
Salix spp.	Willow sp.					X	X	X
Sambucus nigra	Elder							X
Ulmus spp.	Elm sp.					X		X

Appendix F

Evaluation & Assessment Methods

1.1. Ecological features are evaluated and assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (EcIA). For clarity, the evaluation and assessment process adopted within this EcIA is set out below.

Establishing Potentially Important Ecological Features

1.2. Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table 1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table 1. Potentially important ecological features (adapted from CIEEM 2018)

Potentially Important Ecological Features	Typical examples
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
Statutory designated sites under national legislation	Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR, Local Nature Reserves (LNR)
Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINCs)
National biodiversity lists	Habitats or Species of Principal Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006), Ancient Woodland Inventory
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2017
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

1.3. It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outwith the scope of this assessment.

Establishing Likely Zone of Influence

1.4. The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and

sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

1.5. These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

1.6. For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

1.7. The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Geographic Context and Significance Criteria

1.8. The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional
- County
- Local

1.9. The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale. Where the importance of a feature is considered to fall below the Local scale, they are scoped out of detailed assessment.

1.10. Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the above geographic context. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

Characterising Ecological Impacts and their Effects

1.11. Where likely significant ecological impacts and effects are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the scale of significance):

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

Appendix G

Biodiversity Net Gain Plan

CSA environmental

Land off Watmore Lane,
Winnersh

Biodiversity Net Gain Plan

Prepared by
CSA Environmental

on behalf of
Taylor Wimpey

Report No: CSA/1668/13

January 2023

urban design | ecology | landscape | heritage

This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

Report Reference	Date	Revision	Prepared by	Approved by	Comments
CSA/1668/13	22/12/2022	-	TR	KC	
	12/01/2023	A	TR	KC	

smas WORKSAFE
QMS ISO 9001 : 2015 REGISTERED
Certificate No:366562021
Landscape Institute Registered Practice
CIEEM REGISTERED PRACTICE 2022-2023

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Appendices

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Appendix B – Proposed Habitats Plan (CSA/1668/134)

Appendix C – Biodiversity Metric 3.1 (Headline Results)

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Appendix E – Rivers Condition Assessment Results

1.0 INTRODUCTION

1.1 This report has been prepared by CSA Environmental on behalf of Taylor Wimpey in relation to Land off Watmore Lane, Winnersh (hereafter 'the Site'). It provides a Biodiversity Net Gain Plan (BNGP), which outlines the assessment methods and results of a Biodiversity Net Gain (BNG) assessment of the proposed residential development of up to 234 dwellings, for which outline planning permission is sought.

1.2 The Site occupies an area of c. 11.4ha and is located around central grid reference SU 79019 70728, to the east of Winnersh, Berkshire. The Site consists of a single modified grassland field enclosed by hedgerows with standard trees and the Emm Brook, which runs alongside the Site's eastern boundary (see Baseline Habitats Plan, Appendix A).

1.3 This Assessment has been informed by an initial Preliminary Ecological Appraisal (PEA), followed by detailed condition assessments, in addition to a desk-top study for relevant habitat and strategic nature conservation designations.

1.4 Calculation of biodiversity net gain units has been undertaken using the Natural England Biodiversity Metric 3.1; and follows guidance set out within 'Biodiversity net gain. Good practice principles for development' (Baker *et al.*, 2019).

1.5 This BNG Assessment aims to:

- Baseline data: classify the type, distinctiveness, condition, connectivity and strategic significance of habitats present prior to and post- development.
- Ensure that baseline habitat conditions are classified in a robust and consistent manner, and that classification is based on the best data available data at the time of assessment.
- Clearly identify data collection methods and any limitations.
- Calculate baseline pre- and post-development habitat units and hedgerows units for the Site based on development proposals for The Long Shoot.
- Propose a Biodiversity Net Gain design with the aim of maximising biodiversity net gain through habitat creation, enhancement and succession.
- Aim to achieve BNG on-site wherever possible; with off-site measures being considered as an alternative option where required.

1.6 This report and the accompanying Biodiversity Metric have been completed by Tom Richards ACIEEM (Field Identification Skills Certificate (FISC) Level 3). Tom is an experienced Principal Ecologist and competent person for production of such documents, being able to confidently identify the positive and negative indicator species for the habitats likely to occur on-site. A Rivers Condition Assessment (RCA) has also been undertaken by Tom Richards who is a trained and accredited River Condition Assessment surveyor.

2.0 PLANNING POLICY AND LEGISLATION

2.1 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out requirements for the delivery of biodiversity net gain, and this is supported within Planning Practice Guidance (PPG). The Natural Environment PPG (2019) addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular the PPG promotes the delivery of **measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.**

2.2 The Government confirmed its intention to mandate Biodiversity Net Gain at a minimum of 10%. This has now been enacted into English law further to the passing of the Environment Act 2021. The BNG provisions in the Act are anticipated to come into force two years after the passing of the Act, although many Local Planning Authorities have started to include biodiversity net gain requirements into Local Plan policy.

2.3 The Wokingham Borough Council Draft Local Plan Public Consultation (Feb 2020 – Mar 2020) contains new policies that were consulted on in preparation for the new Local Plan Update. Policy NE1: Biodiversity and Nature Conservation states that "Development proposals across sites of all sizes should achieve a minimum 10% net gain for biodiversity, either within the site boundary or as part of on-site compensation, or where necessary, off-site compensation towards a larger strategic habitat restoration network." Following recent elections the timetable for the new Local Plan Update is being reconsidered and further consultations in summer 2022 were postponed. Notwithstanding future potential changes to the Local Plan Update policies prior to adoption, the minimum 10% net gain for biodiversity has been targeted for the Site to accord with the provision of the Environment Act 2021.

3.0 BIODIVERSITY NET GAIN: GOOD PRACTICE PRINCIPLES

Biodiversity Net Gain

3.1 Biodiversity net gain has been defined as 'development that leaves biodiversity in a better state than before, and an approach where developers work with local governments, wildlife groups, landowners and other stakeholders in order to support their priorities for nature conservation' (Baker, 2016).

Good Practice Principles

3.2 Good practice principles for biodiversity net gain are set out within Table 1.1 of 'Biodiversity net gain. Good practice principles for development' (CIEEM et al., 2019). Key principles include:

- Apply the 'Mitigation Hierarchy' (in line with CIEEM Guidelines for Ecological Impact Assessment (EcIA) (CIEEM, 2018) and be 'additional' by achieving outcomes that exceed existing obligations.
- Avoid losing biodiversity which cannot be off-set elsewhere (e.g. irreplaceable habitats).
- Address risk (e.g. difficulty of achieving habitat creation / enhancement for net gain).
- Make a 'measurable' net gain contribution (e.g. calculated using an appropriate metric) and ensure that calculations are consistent and transparent (i.e. limitations and assumptions are clearly identified).
- Ensure that net gain design achieves the best outcome for biodiversity (this may require both quantitative and qualitative assessment) and create a net gain legacy for long-term benefits.

4.0 METHODS

Desk Study

4.1 In order to inform an assessment of the habitat types, condition and strategic significance a desk study was undertaken. This comprised a review of the following:

- Multi-Agency Geographic Information for the Countryside (MAGIC) online database (accessed November 2022) - to identify statutory nature conservation designations.
- Data search response from Thames Valley Environmental Records Centre (TVERC) (obtained June 2022) - to identify non-statutory nature conservation designations.

4.2 Relevant desk study data are presented in the Ecological Impact Assessment (CSA/1668/11).

Field Survey Results

4.3 A Phase 1 Habitat survey was initially undertaken on 27 July 2021 by Tom Richards ACIEEM. Upon revisiting the Site between July 2021 and November 2022, any changes to the habitat types present and their conditions were noted and updated as necessary. Phase 1 habitat classifications were translated into UK Habitat Classification (UKHab) categories using tab 'G-9 Translation Phase 1' of the Biodiversity Metric 3.1 and personal experience and knowledge of UKHab classification methodology. Baseline habitats are mapped on the Habitats Plan in Appendix A. Botanical species lists for each habitat identified are provided within the Ecological Impact Assessment (CSA/1668/11)

<u>Condition Assessments</u>

Habitats and Hedgerows

4.4 Habitat condition assessments were undertaken on 27 July 2021 by Tom Richards ACIEEM for both area and linear habitat types. The results of these assessments were checked/updated on 19 May 2022 by Rhiannon Taylor and Sophie Vines due to the passage of time since the original assessments. Upon revisiting the Site on 8 November 2022, changes to the area habitats on-site were noted and the associated habitat condition assessments were updated by Tom Richards ACIEEM where necessary.

4.5 November is a suboptimal period for botanical identification, however, in this instance, part of the central field area had changed from cultivated arable land to a recently sown agricultural grassland and an accurate habitat classification and condition assessment was possible due to the known management history of the Site and species found to

be present. The collective condition assessment information obtained in 2021 and 2022 accurately reflect that habitat types present on-site, and this limitation is not considered to affect the classifications made or the associated Biodiversity Metric calculations.

4.6 Habitat and hedgerow conditions were assigned following guidance from the 'Technical Supplement' document (Natural England, 2022) which accompanies the Biodiversity Metric 3.1. Assessment criteria were followed for each broad habitat type, to determine the condition of each habitat on-site.

Rivers and Streams

4.7 Condition assessments of rivers and streams are applicable where a watercourse is present on-site or within 10m of the Site boundary. The Emm Brook to the east of the Site is predominantly situated on-site or within 10m from the Site boundary except for a portion at its southern end that is outside of this zone.

4.8 A Rivers Condition Assessment of Emm Brook was undertaken by Tom Richards ACIEEM on 8 November 2022. The assessment was undertaken to determine the extent, diversity and structure of observed physical features in the river channel and riparian zone, and the extent and types of human modification and disturbance.

4.9 Prior to the survey an initial desktop scoping exercise was undertaken to determine the number of 'sub-reaches' to be sampled in line with published guidance. For the portion of Emm Brook adjacent to the Site this consisted of one 50m Modular River Physical (MoRPh5) 'sub-reach' of the watercourse to provide an appropriate length of survey (minimum 20% of the watercourse length). The 50m sub-reach consisted of five contiguous 10m survey sections.

4.10 The assessment covered four survey criteria: bank top, bank face, channel-water margin and channel bed. Individual scores were calculated for the MoRPh5 sub-reach for 32 River Condition Indicators (RCI), which include both positive and negative aspects of the watercourse. Data pertaining to the presence and abundance of features was collected on-site and then inputted into cartographer.io software to generate numerical values for the 32 RCI. The RCIs quantify the geo-morphic features of the bank top, bank face, channel-water margin and channel bed with positive RCIs scored between 0 and 4 and negative RCIs scored between -4 and 0. The sum of average positive indicators and average negative indicators provides a Preliminary Condition Score for the sub-reach.

4.11 Following the field survey, a MoRPh River Type desk study assessment was undertaken on a homogenous reach of River, incorporating river habitat within the Site. Online geospatial data was used to calculate the valley confinement, planform, elevation and length of the reach, and

data from the field component of the RCA was used to determine average and coarsest bed material sizes within the sub-reach. This data was also entered into the cartographer.io software and the reach was assigned one river type from a possible 13 river types likely to be encountered in England. The River Type and Preliminary Condition Score data are combined to calculate a Final Condition Score for the sub-reach.

4.12 Assessments of any post-intervention condition score changes were completed by re-running revised sub-reach data through the cartographer.io software based on any predicted impacts or enhancements to sections of the watercourse.

Measurements

4.13 Baseline and proposed habitat areas were measured as distinct habitat parcels. Baseline habitat parcels were measured using habitat mapping (Habitats Plan reference CSA/1668/118) in QGIS. Post-development habitats were calculated by measuring habitats within the Landscape Strategy (CSA/1668/132) in QGIS allowing areas of retained, created and enhanced habitat to be identified.

Trading Summary

4.14 'Trading' is a concept within application of Biodiversity Net Gain, whereby any area of habitats lost should be replaced with those of an equivalent or higher significance. The Trading Summary within the Metric calculates whether there has been an overall increase or decrease of 'Trading' for each distinctiveness category.

5.0 CALCULATION OF BIODIVERSITY UNITS

5.1 The Biodiversity Metric 3.1 was used to calculate the change in habitat, hedgerow and river biodiversity units and the overall percentage of gain/loss achieved. Metric calculations have been undertaken by Tom Richards ACIEEM who has experience completing Biodiversity Metrics for a range of projects across England and has completed CIEEM's Introduction to the Rivers and Streams Metric for the Biodiversity Metric 3 training course.

5.2 Biodiversity net gain calculations were undertaken based on the Landscape Strategy (CSA/1668/132). Habitat condition for enhanced and created habitats was assigned taking a precautionary approach and with consideration of biotic and operational phase conditions (i.e. which may limit the extent to which 'good' condition is likely to be reached).

5.3 A copy of the Biodiversity Metric 3.1 Headline Results tab is provided alongside this report in Appendix C. With a full version of the metric to be submitted separately with the planning application.

Assumptions & Limitations

5.4 It should be noted that the accuracy of habitat area measurement is limited by the form of baseline data collection and resolution of development proposal plans. In the absence of detailed planting plans, habitat areas have been measured from the Landscape Strategy with reasonable assumptions made with regards to the type/condition of habitats that could be created.

6.0 RESULTS

Strategic Significance

Habitats and Hedgerows

6.1 The strategic significance criteria within the Biodiversity Metric 3.1 were assessed by determining if existing and proposed habitats within the Site occur within any strategic locations for biodiversity, form part of a designated site for nature conservation or are identified within local plans such as Ecological Networks or steppingstone features.

6.2 Existing habitat at the Site include an area of ancient woodland in the north-east corner of the field. Ancient woodland is identified as a Priority Habitat in the National Habitat Network (Natural England, 2020), which considers this habitat type to be of top priority for nature conservation. Ancient woodland is also identified within the Wokingham Borough Council Draft Local Plan Public Consultation as a site of local importance for nature conservation and 'Policy NE3: Trees, woodland and hedgerows' details the importance of retaining this habitat. Hedgerows and trees are also included within this policy with regards to retention and protection. The ancient woodland, hedgerows and trees on-site have therefore been categorised as 'Formally identified in local strategy' for strategic significance.

6.3 The majority of the Site area is located within Network Enhancement Zone 2 of the National Habitat Network. This Zone is defined as "Land connecting existing patches of primary and associated habitats which is less likely to be suitable for creation of the primary habitat. Action in this zone that improves the biodiversity value through land management changes and/or green infrastructure provision can be targeted here". As a result, new semi-natural habitat creation and enhancement measures proposed within the scheme will help to achieve the objectives of the National Habitat Network and have been assigned the strategic significance category 'Formally identified in local strategy'.

Rivers and Streams

6.4 The Emm Brook is situated within the catchment of the River Loddon. The Loddon Catchment Partnership's Catchment Plan (2017) sets out the known issues and associated actions required within the catchment. Part of these actions is to identify and implement habitat enhancement measures. Consequently, the baseline and post-intervention enhancements proposed to the Emm Brook are assigned the strategic significance category 'Within Catchment Plans'.

Encroachment

6.5 Encroachment within the rivers and streams section of the metric is assigned to both the riparian zone (10m from the bank top) and in-watercourse (bank face and channel). At both baseline and post-intervention stages, there is no development within 10m of the bank top and no engineered bank revetment or encroachment into the channel. No encroachment exists at baseline or is proposed in the riparian zone or in-watercourse.

Baseline

6.6 Baseline habitat types, their conditions and extents are illustrated on the Baseline Habitats Plan in Appendix A. A copy of the Headline Results page of the Biodiversity Metric is provided in Appendix C.

Habitats and Hedgerows

6.7 Detailed habitat descriptions are provided in the separate Ecological Impact Assessment report (CSA/1668/11). Full condition assessment results for each habitat and hedgerow type, in line with Natural England guidance, are provided in Appendix D.

Rivers and Streams

6.8 The Emm Brook was determined to be River Type H (straight-sinuous morphology with gravel/cobble and sand bed material). The Brook runs for 0.24km adjacent to the Site, where it is situated either on-site or within 10m of the Site boundary. The MoRPh5 sub-reach surveyed was categorised as Moderate condition (score: 1.15). Full condition assessment results for individual RCI are provided in Appendix E.

6.9 The threshold for Moderate condition for River Type H is between 0.5 and 1.6. The Emm Brook's condition is quite central within this condition bracket, with many of the positive RCI achieving scores of 2 or 3. The negative indicators that contribute to the Brook not achieving a greater condition score include the presence of managed ground cover on the bank tops, the presence of the non-native invasive species Himalayan balsam *Impatiens gladulifera* on the bank faces and channel bed siltation.

Post-intervention

6.10 To provide achievable net gains on-site, discussions were undertaken with the design team at early stages of the design process to ensure that the layout maximises the potential to retain, enhance and create valuable habitats on-site. The mitigation hierarchy was applied to developing design proposals to avoid and reduce the biodiversity impacts from the scheme. Key habitats were retained and suitable buffer areas applied, including the Emm Brook corridor, ancient woodland, hedgerows, scrub and trees. Additional mitigation measures

were also designed in, in the form of new high-quality habitats in place of low value habitats.

6.11 Proposed habitat types, conditions and extents are illustrated on the Proposed Habitats Plan in Appendix B.

Habitats and Hedgerows

6.12 Post-intervention habitats that will be delivered alongside development, as illustrated on the Landscape Strategy (CSA/1668/132) include the following:

- Retention of existing field boundary hedgerows and trees, woodland and dense blackthorn scrub.
- Enhancement of a section of existing modified grassland which will form a temporary reptile receptor area. This habitat would be enhanced from modified grassland in poor condition to other neutral grassland in moderate condition.
- Planting of 0.84km of native species-rich hedgerow, at good condition.
- Creation of significant areas of species-rich wildflower grassland, other neutral grassland in moderate condition.
- Creation of a two large drainage basins with one wet core and connecting bioswales (both good condition). A wet-tolerant wildflower grassland mix will be sown within the basins where moderate condition is targeted.
- Thicket planting within open spaces. Good condition is targeted for larger thicket parcels. Moderate condition is targeted for the remaining, smaller areas.
- Planting of 215 trees across open space areas and within development parcels. Estimated to be small sized trees at Poor condition.
- Creation of short-mown modified grassland footpaths and recreation areas (poor condition).

Rivers and Streams

6.13 The Emm Brook will be retained and protected alongside development within a wide buffer zone from the development edge. The only interaction between the development and the Brook is the requirement for a drainage connection between the Brook and a large drainage basin in the north-east corner of the Site. This connection has been designed as an open side-channel, conveying water from the basin to the Brook without the need for any artificial hard-edging or headwalls to be introduced. As a result, this interaction provides an enhancement to

the Brook, introducing a side channel and new variability in bank face profiles and vegetation structure. Alone, this enhancement would not be sufficient to improve the condition score of this part of the watercourse and other enhancement measures have been prescribed to achieve this, as summarised below.

6.14 For the purposes of the post-intervention scenario, the Emm Brook has been divided into three Areas, as shown on the Proposed Habitats Plan in Appendix B. Area A to the north is a 0.07km section that is characterised by bank top ancient woodland habitat to the west. Area B is 0.05km long and encompasses a central section of the watercourse where the drainage side channel is proposed. Area C is the remining 0.12km stretch to the south. The following enhancement measures are proposed in these areas:

Area A

6.15 Due to the proximity to the ancient woodland habitat and objective to retain this part of the Site unchanged within the development, no significant interventions are proposed within this section of the watercourse. A strategy for the control of Himalayan balsam along the length of the Brook is proposed, which will enhance this Area. Alone, this enhancement improves the condition score of Area A from 1.15 to 1.38. While this section will be enhanced, the proposals will not improve the condition up to Fairly-good (Score of 1.60+), and as such, Area A is specified as retained within the metric.

Area B

6.16 A new side channel will be created, measuring c. 8.5m in length. This section of the existing bank face will be re-profiled and re-planted, allowing for an improvement in channel margin vegetation extent and richness. The bank top zone on the western bank will be removed from active agricultural management. Within the bank top zone, new habitat creation measures will improve the vegetation structure. The Himalayan balsam control strategy will also be implemented, reducing this negative indicator for the bank face. Together, these enhancement measures will improve the condition score of Area B from 1.15 to 1.61, achieving Fairly-good condition.

Area C

6.17 A similar range of enhancement measures will be implemented in Area C as Area B, except for the new side channel creation. Removing the bank top zone from active agricultural management and new habitat creation measures will enhance the condition. Within the area, habitat creation will include wetland thicket/woodland planting within the bank top zone. Together with the creation of large wood log piles, this will improve the bank top tree feature richness. The Himalayan balsam control strategy will also be implemented. These enhancement

measures will improve the condition score of Area C from 1.15 to 1.61, achieving Fairly-good condition.

Biodiversity Unit Calculations

6.18 Based on the Biodiversity Metric 3.1 calculations, the proposed development alone (inclusive of on-site intervention) would result in the following changes in biodiversity value:

- Habitats: +2.63 units (+10.06%)
- Hedgerows: +7.47 units (+83.98%)
- Rivers: + 0.37 units (+11.05%)

6.19 A summary of the changes in habitat, hedgerow and river units is provided in Table 1 below.

Table 1. Quantitative assessment of biodiversity impact

Factor	Habitats (ha/units)	Hedgerows (km/units)	Rivers (km/units)
Baseline area/length	11.38	1.22	0.24
Baseline units	26.18	8.89	3.31
Area/length retained	0.44	1.21	0.07
Units retained	3.66	8.80	0.97
Area/length enhanced	0.11	0.00	0.17
Units enhanced	0.22	0.00	2.35
Area/length lost	10.83	0.01	0.00
Units lost	22.30	0.09	0.00
Area/length created	11.70	0.84	0.00
Units created	24.37	7.56	0.00
Post-intervention* units	**28.81**	**16.36**	**3.68**
Total net unit change	**2.63**	**7.47**	**0.37**
Total project biodiversity % change	**10.06%**	**83.98%**	**11.05%**

**Post-intervention – including retention, creation and enhancement*

6.20 The Biodiversity Metric calculation demonstrates that this scheme alone would result in a gain in habitat, hedgerow and rivers units.

6.21 No habitats of 'high' or 'very high' distinctiveness will be lost under the proposed scheme.

Trading Summary

6.22 The 'Trading Summary' rules are satisfied for the proposed development.

7.0 DISCUSSION

7.1 Biodiversity Net Gain calculations, using the Biodiversity Metric 3.1 have been undertaken for the proposed development at Watmore Lane, Winnersh. Baseline habitat, hedgerow and river calculations have been informed by initial habitat survey work and subsequent condition assessments and a desktop studies. Post-development calculations have been made based on the Landscape Strategy (CSA/1668/132). Assumptions and limitations to the assessment have been highlighted where relevant and identified in the Metric calculator which should be reviewed in conjunction with this report.

7.2 A unit gain of 2.63 habitat units was identified following the completion of baseline and post-development calculations, due to creation of a significant swathe of open space along the eastern edge of the Site, in combination with the retention of ecologically valuable habitats.

7.3 A unit gain of 7.47 hedgerow units was identified, due to the retention of the vast majority of existing hedgerows and tree lines, and significant new native species-rich hedgerow planting around the development periphery.

7.4 A unit gain of 0.37 river units was identified. Enhancements to the Emm Brook river corridor adjacent to the Site have been proposed to achieve a net gain in this section of the metric.

7.5 The post-development scenario results in an increase of **10.06% in habitat units, 83.98% in hedgerow units** and **11.05% in river units**.

Development Phases

7.6 This Biodiversity Net Gain Plan outlines indicative net gains associated with the development at outline stage. An updated Metric should be carried out at reserved matters stage.

Management and Monitoring

7.7 Habitats will be managed to the condition specified within the Metric for a period of at least 30 years.

7.8 It is anticipated that the specific agreements relating to habitat creation and enhancement will be detailed within a Section 106 agreement, to be produced on receipt of planning.

7.9 It is anticipated that on-site enhancements and habitat provision will be delivered as soon as possible alongside the delivery of the development. Timings and delivery of enhancements will be subject to an agreed delivery schedule to be confirmed via legal agreement.

7.10 A Landscape and Ecology Management Plan (LEMP) will be produced at the detailed design stage, which will detail works to be undertaken, management measures for each habitat type and a work schedule for all on-site habitat works. Information will also be provided on parties responsible for the management of on-site habitats and the necessary competencies of any persons tasked with habitat works. The LEMP will include details of monitoring and reporting requirements.

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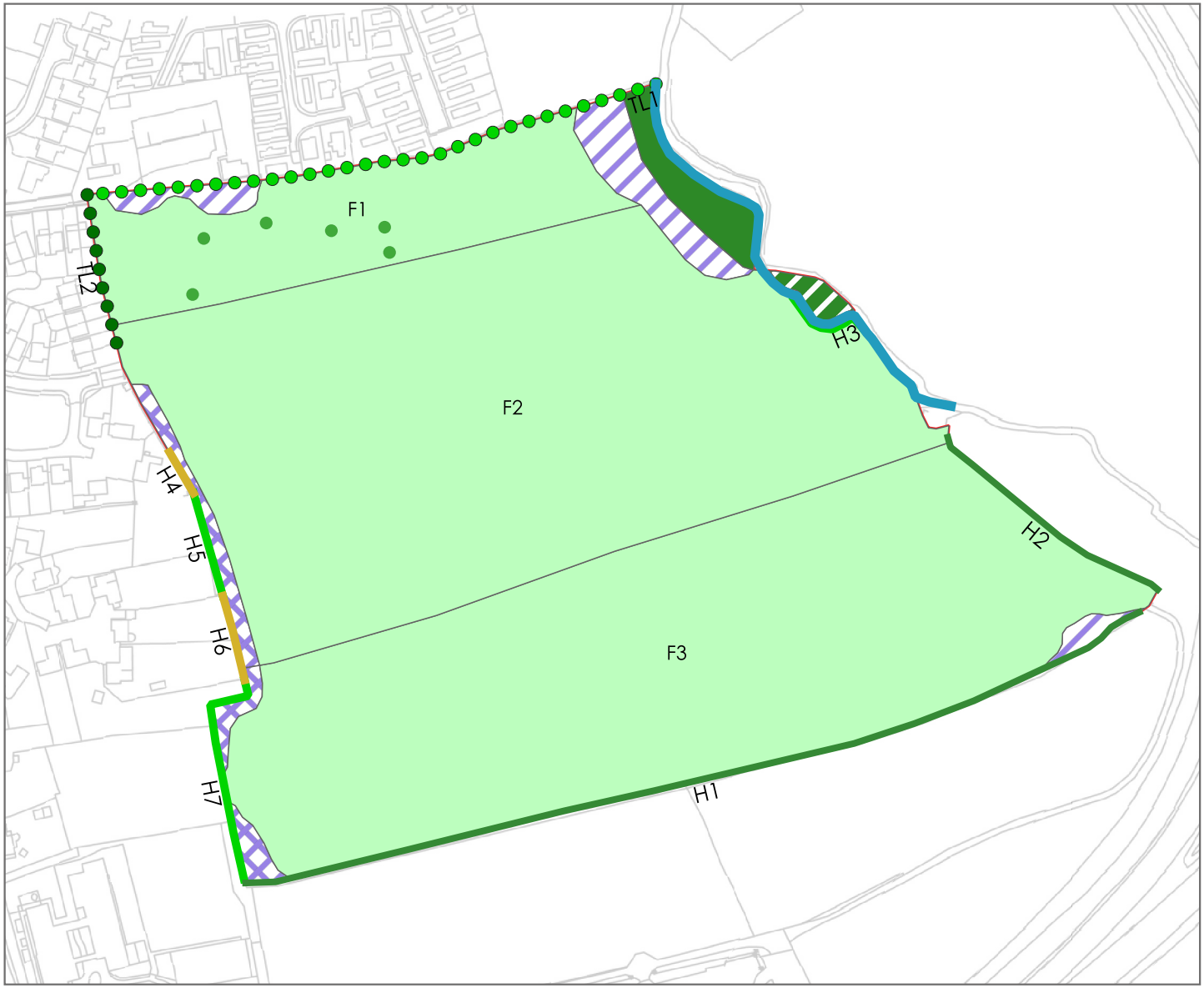
Appendix A

Baseline Habitats Plan
(CSA/1668/133)



N

- Site boundary
- Modified grassland (poor condition, 10.62ha)
- Blackthorn scrub (poor condition, 0.3ha)
- Bramble scrub (poor condition, 0.21ha)
- Broadleaved deciduous woodland (moderate condition, 0.17ha)
- Other woodland; broadleaved (poor condition, 0.04ha)
- Native hedgerows with trees (moderate condition, 0.45km; good condition, 0.13km)
- Native hedgerows (good condition: 0.22km)
- Ornamental hedgerows (poor condition, 0.06km)
- Line of trees (poor condition, 0.28km)
- Line of trees (ecologically valuable) (moderate condition, 0.08km)
- Emm Brook (moderate condition, 0.24km)
- Urban tree (moderate condition, 0.04ha)

0 50 100 m

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Project	Land off Watmore Lane, Winnersh	Date	Jan 2023	Drawing No.	CSA/1668/133
Drawing Title	Baseline Habitats Plan	Scale	Refer to scale	Rev	A
Client	Taylor Wimpey	Drawn	TR	Checked	KC

Appendix B

Proposed Habitats Plan
(CSA/1668/134)

- Site boundary
- Bioswale (good condition, 0.13ha)
- Other neutral grassland; SUDS basins (moderate condition, 0.51ha)
- Existing grassland enhanced to other neutral grassland (moderate condition, 0.11ha)
- Other neutral grassland; wildflower meadow (moderate condition, 0.76ha)
- Modified grassland (poor condition, 1.49ha)
- Mixed scrub; thicket (moderate condition, 0.37ha)
- Retained blackthorn scrub (poor condition, 0.19ha)
- Mixed scrub (good condition, 0.16ha)
- Pond (non-priority); wet core (good condition, 0.02ha)
- Developed land. sealed surface (N/A condition, 1.29ha))
- Artificial unvegetated unsealed surface; play areas (N/A condition, 0.16ha)
- Retained deciduous woodland (moderate condition, 0.17ha)
- Other woodland; broadleaved (moderate condition, 0.08ha)
- Retained plantation woodland (poor condition, 0.04ha)
- Development parcels, split 70% developed land; sealed surface (N/A condition, 4.1ha) / 30% vegetated garden (poor condition, 1.76ha)
- Retained native hedgerow with trees (moderate condition, 0.44km; good condition, 0.13km)
- Retained native hedgerow (good condition, 0.22km)
- Retained ornamental hedgerow (poor condition, 0.06km)
- Native species-rich hedgerow planting (good condition , 0.84km)
- Retained line of trees (poor condition, 0.28km))
- Retained lines of trees (ecologically valuable) (moderate condition, 0.08km))
- Emm Brook (Areas B & C enhanced to fairly-good condition, 0.17ha; Area A retained at moderate condition, 0.07ha)
- Retained urban trees (moderate condition, 0.04ha)

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Project	Land off Watmore Lane, Winnersh	Date	Jan 2023	Drawing No.	CSA/1668/134
Drawing Title	Proposed Habitats Plan	Scale	Refer to scale	Rev	A
Client	Taylor Wimpey	Drawn	TR	Checked	KC

Appendix C

Biodiversity Metric 3.1 (Headline Results)

Land off Watmore Lane, Winnersh

Headline Results

Return to results menu

On-site baseline	*Habitat units*	26.18
	Hedgerow units	8.89
	River units	3.31
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	28.81
	Hedgerow units	16.36
	River units	3.68
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	10.06%
	Hedgerow units	83.98%
	River units	11.05%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	2.63
	Hedgerow units	7.47
	River units	0.37
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	10.06%
	Hedgerow units	83.98%
	River units	11.05%
Trading rules Satisfied?	Yes ✓	

Appendix D

Habitat and Hedgerow Condition Assessment Results

Woodland

Criteria Summary

	Indicator	Good	Moderate	Poor
1	Age distribution of trees	Three age classes present	Two age classes present	One age class present
2	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland
3	Invasive plant species	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover
4	Number of native tree species	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel
5	Cover of native tree and shrub species	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native
6	Open space within woodland	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21 - 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space
7	Woodland regeneration	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present
9	Vegetation and ground flora	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community
10	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots
11	Veteran trees	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland
12	Amount of deadwood	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps
13	Woodland disturbance	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground

Condition Assessment Result	Condition Assessment Score
Total score >32 (33 to 39)	Good
Total score 26 to 32	Moderate
Total score <26 (13 to 25)	Poor

Assessment Results

Assessment criteria	Broadleaved deciduous woodland	Other broadleaved woodland
1. Age distribution of trees	2	1
2. Wild, domestic and feral herbivore damage	2	3
3. Invasive plant species	2	3
4. Number of native tree species	3	1
5. Cover of native tree and shrub species	3	1
6. Open space within woodland	3	3
7. Woodland regeneration	2	1
8. Tree health	1	3
9. Vegetation and ground flora	1	1
10. Woodland vertical structure	2	1
11. Veteran trees	1	1
12. Amount of deadwood	1	1
13. Woodland disturbance	3	3
Woodland Condition Score	26	23
	Moderate	**Poor**

Grassland – Low Distinctiveness

Criteria Summary

Condition Assessment Criteria	
1	There must be 6-8 species per m2. If a grassland has 9 or more species per m2 it should be classified as a medium distinctiveness grassland habitat type. NB - this criterion is essential for achieving moderate condition.
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.
4	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.
5	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).
6	Cover of bracken less than 20%.
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).
Condition Assessment Result	**Condition Assessment Score**
Passes 6 or 7 of 7 criteria including essential criterion 1	Good
Passes 4 or 5 of 7 criteria including essential criterion 1	Moderate
Passes 0, 1, 2 or 3 of 7 criteria; OR 4, 5 or 6 of criteria but failing criterion 1	Poor

Assessment Results – On-site

Habitat	Criteria							Score
	1	2	3	4	5	6	7	
Field F1	N	N	Y	Y	N	Y	Y	**Poor**
Field F2	N	N	Y	Y	N	Y	Y	**Poor**
Field F3	N	N	Y	Y	N	Y	Y	**Poor**

Scrub

Criteria Summary

Condition Assessment Criteria	
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).
2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition make up less than 5% of ground cover.
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.
Condition Assessment Result	**Condition Assessment Score**
Passes 5 criteria	Good
Passes 3 or 4 criteria	Moderate
Passes 0, 1 or 2 criteria	Poor

Assessment Results

Habitat	Criteria					Score
	1	2	3	4	5	
Blackthorn scrub adjacent to ancient woodland	N	N	Y	Y	N	**Poor**
Blackthorn scrub in north-west corner of field	N	N	Y	Y	N	**Poor**
Blackthorn scrub in south-east corner of field	N	N	Y	N	N	**Poor**

Line of Trees

Criteria Summary

Condition Assessment Criteria	
1	More than 70% of trees are native species.
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.
3	Includes one or more mature or veteran tree.
4	There is an undisturbed naturally vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other anthropogenic operations.
5	At least 95% of the trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.
Condition Assessment Result	**Condition Assessment Score**
Passes 5 criteria	Good
Passes 3, 4 or 5 criteria	Moderate
Passes 0, 1, or 2 criteria	Poor

Assessment Results

Habitat	Criteria					Score
	1	2	3	4	5	
TL1	Y	N	Y	N	N	Poor
TL2	Y	Y	Y	N	N	Moderate

Hedgerows

Criteria Summary

Attribute	Criteria	Description
A1. Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).
A2. Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths are only included in the width estimate when they are >0.5m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years.
B1. Gap – hedge base	Gap between ground and base of canopy <0.5 m for	This is the vertical gappiness of the woody component of the hedgerow, and its

	90% of length (unless 'line of trees')	distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).
B2. Gap – hedge canopy continuity	· Gaps make up <10% of total length and · No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy. Access points and gates contribute to the overall gappiness, but are not subject to the >5m criterion.
C1. Undisturbed ground and perennial vegetation	>1m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · measured from outer edge of hedgerow, and · is present on one side of the hedge (at least)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least of 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat within the capacity to support a wide range of species. C
C2. Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (*Urtica* spp.), cleavers (*Galium aparine*) and docks (*Rumex* spp.).
D1. Invasive and neophyte species	90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.
D2. Current damage	90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).
Additional group - applicable to hedgerows with trees only		
E1. Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.
E2. Tree health	At least 95% of hedgerow trees are in healthy condition. There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.
Hedgerow Condition Assessment		
Condition categories for hedgerows without trees		
Good	No more than 2 failures in total;	

	AND no more than 1 in any functional group.
Moderate	No more than 4 failures in total AND does not fail both attributes in more than one functional group.
Poor	Fails a total of more than 4 attributes; OR fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).
Condition categories for hedgerows with trees	
Good	No more than 2 failures in total; AND no more than 1 failure in any functional group.
Moderate	No more than 5 failures in total AND does not fail both attributes in more than one functional group.
Poor	Fails a total of more than 5 attributes; OR fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).

Assessment Results

Assessment criteria	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**
A1. Height	Y	Y	Y	-	Y	-	Y
A2. Width	Y	Y	Y	-	Y	-	N
B1. Gap – hedge base	Y	Y	N	-	Y	-	Y
B2. Gap – hedge canopy continuity	Y	Y	Y	-	Y	-	N
C1. Undisturbed ground and perennial vegetation	Y	Y	Y	-	Y	-	Y
C2. Undesirable perennial vegetation	N	N	N	-	Y	-	Y
D1. Invasive and neophyte species	Y	Y	Y	-	Y	-	Y
D2. Current damage	Y	Y	Y	-	Y	-	Y
E1. Tree age	N	Y	-	-	-	-	-
E2. Tree health	N	Y	-	-	-	-	-
Hedgerow Condition Score	**Moderate**	**Good**	**Good**	**Poor**	**Good**	**Poor**	**Good**

Appendix E

Rivers Condition Assessment Results

Project Name:	Land off Watmore Lane, Winnersh				Watercourse Name:					Emm Brook
						Post Development				River Type: Type H
Location	Code	Name	Code	Positive or Negative	Baseline Condition Score	Area A (North) Score	Area B (Mid) Score	Area C (South) Score	Likely Maximum Score for this River Type (Type H)[◊]	Condition score thresholds for river type ■: Good = >2.4 Fairly good = >1.6 Moderate = >0.5 Fairly poor = >-0.9 Poor = <-0.9
Bank Top	B1	Bank top vegetation structure	B1	+	2	2	2	2	4	Count of five vegetation structural types (present or extensive only): 1. mosses/lichens, 2. short/creeping herbs/grasses, 3. tall herbs/grasses, 4. scrub/shrubs, 5. saplings/trees.
	B2	Bank top tree feature richness	B2	+	2	2	2	3	4	Count of five tree features (present or extensive only): 1. fallen trees, 2. leaning trees, 3. j-shaped trees, 4. tree/shrub branches trailing into channel, 5. large wood.
	B3	Bank top water-related features	B3	+	0	0	2	2	2	Presence of: 1. pond: disconnected, 2. pond: connected, 3. side channel, 4. wetland short non-woody vegetation (mosses, sedges), 5. wetland tall non-woody vegetation (reeds, rushes), 6. wetland shrubs and trees (alder/willow carr).
	B4	Bank top NNIPS cover	B4	-	0	0	0	0	-	Presence of non-native invasive species, taking into account the number of different species and their abundances.
	B5	Bank top managed ground cover	B5	-	-2	-2	-1	-1	-	Extent of dominant and sub-dominant artificial/managed ground cover types. Differ in severity. Vegetated agriculture, vegetated recreation and plantation woodland low severity. Transport, buildings, landfill higher severity. Remove managed ground cover types to improve score.
Bank Face	C1	Bank face riparian vegetation structure	C1	+	3	3	3	3	3	Count of five structural types (present or extensive only): 1. mosses/lichens, 2. short/creeping herbs/grasses, 3. tall herbs/grasses, 4. scrub/shrubs, 5. saplings/trees.
	C2	Bank face tree feature richness	C2	+	2	2	2	2	4	Count of seven tree features (present or extensive only): 1. fallen trees, 2. leaning trees, 3. j-shaped trees, 4. tree/shrub branches trailing into channel, 5. large wood, 6. exposed tree roots, 7. discrete organic accumulations.
	C3	Bank face natural bank profile extent	C3	+	3	3	3	3	4	A maximum of 2 natural bank profile extents are recorded on each bank. This is the sum of the abundance of natural profiles (present or extensive only) across both banks. I.e. the more extensive natural bank profiles are the better. Natural profiles: vertical, vertical with top overhang, undercut or vertical with undercut, vertical with toe, steep (>45°), gentle (<45°) or composite.
	C4	Bank face natural bank profile richness	C4	+	4	4	4	4	4	Count of the 7 different natural bank profile types (listed above) recorded as present or extensive along either bank, a single count is applied across both banks (i.e. maximum possible value of 7).
	C5	Bank face natural bank material richness	C5	+	1	1	1	1	2	Count of 10 different natural bank material types that are recorded as dominant in the upper or lower parts of any of the bank profiles within the subreach (each type can only be counted once). Material types: 1. bedrock, 2. boulder, 3. cobble, 4. gravel-pebble, 5. sand, 6. silt/fine non-sticky sediments, 7. clay, 8. organic, 9. peat, 10. earth.
	C6	Bank face bare sediment extent	C6	+	2	2	2	2	3	Total abundance of bare sediment on the bank face across both banks (non-linear clase due to intermediate abundances of bare sediment providing the most varied habitat, i.e. low or high abundance of bare sediment isn't a positive feature).
	C7	Bank face artificial bank profile extent	C7	-	0	0	0	0	-	A maximum of 2 artificial profile types are recorded on each bank. This is the total extent of artificial profiles recorded across both banks. Artificial profiles: 1. reshaped, 2. artificial two-stage, 3. embanked, 4. set-back embankment, 5. poached bank.
	C8	Bank face reinforcement extent	C8	-	0	0	0	0	-	Extents of bank face reinforcement across the top, bottom or whole of the bank face.
	C9	Bank face reinforcement material severity	C9	-	0	0	0	0	-	Severity level of the dominant reinforcement types observed. Most severe types include concrete, brick, stone and sheet piling. Low severity types include willow spiling, planted reeds and biotex/coir.
	C10	Bank face NNIPS cover	C10	-	-3	0	0	0	-	Presence of non-native invasive species, taking into account the number of different species and their abundances.
Channel - Water Margin	D1	Channel margin aquatic vegetation extent	D1	+	2	2	2	2	2	Extent of 4 aquatic morphotypes at the channel margin - water edge, 1. Liverworts/mosses/lichens, 3. emergent broad-leaved, 3. emergent linear-leaved, 4. amphibious.
	D2	Channel margin aquatic morphotype richness	D2	+	1	1	2	1	2	Count of the four aquatic morphotypes (above) recorded as present or extensive.
	D3	Channel margin physical feature extent	D3	+	1	1	1	1	3	Extent of 8 physical features recorded as present or extensive (1. unvegetated side bar, 2. vegetated side bar, 3. berm, 4. bench, 5. stable cliff, 6. eroding cliff, 7. toe, 8. marginal backwater) and 1 physical feature recorded as a count (1. tributary junction).
	D4	Channel margin physical feature richness	D4	+	2	2	2	2	3	Count of the number of 8 physical features recorded as present or extensive (above) and have a count of at least 1 (for tributary junction). Each feature can only be counted once within a subreach.
	D5	Channel margin artificial features	D5	-	0	0	0	0	-	Presence of artificial features, weighted according to severity and number. Features: 1. jetties, 2. deflectors, 3. pipes/outfalls.
Channel Bed	E1	Channel aquatic morphotype richness	E1	+	1	1	1	1	2	Count of aquatic plant morphotypes recorded on the channel bed (possible 9 types): 1. liverworts/mosses/lichens, 2. emergent broad-leaved, 3. emergent linear-leaved, 4. floating leaved (rooted), 5. free floating, 6. amphibious, 7. submerged broad-leaved, 8. submerged linear-leaved, 9. submerged fine-leaved.
	E2	Channel bed tree features richness	E2	+	2	2	2	2	3	Count of 4 tree features on the channel bed recorded as present or extensive (1. vegetation shading channel, 2. submerged tree roots, 3. large wood, 4. discrete accumulation of organic material), or two tree features with a count of ≥1 (1. large wood dam, 2. fallen tree). Each feature can only be counted once.
	E3	Channel bed hydraulic features richness	E3	+	2	2	2	2	3	Count of 8 possible water surface flow types observed as present or extensive. Each feature can only be counted once. 1. free fall, 2. chute, 3. broken standing waves, 4. unbroken standing waves, 5. upwelling, 6. rippled, 7. smooth, 8. no perceptible flow.
	E4	Channel bed natural features extent	E4	+	0	0	0	0	2	Presence of 11 channel bed natural physical features. Includes 7 recorded in terms of abundance (1. exposed bedrock, 2. exposed unvegetated boulders, 3. exposed vegetated boulders, 4. unvegetated mid channel bars, 5. vegetated mid channel bars, 6. islands, 7. cascades) and 4 recorded as counts (1. pools, 2. riffles, 3. steps, 4. waterfalls).
	E5	Channel bed natural features richness	E5	+	0	0	0	0	2	Count of the 11 physical features (above) that are observed as present or extensive or have a count of at least 1. Each features is only counted once.
	E6	Channel bed material richness	E6	+	2	2	2	2	3	Count of the 9 possible mineral and organic bed materials that are observed as present or extensive. Each type is only counted once. 1. peat, 2. organic, 3. clay, 4. silt, 5. sand, 6. gravel-pebble, 7. cobble, 8. boulder, 9. bedrock.
	E7	Channel bed siltation	E7	-	-2	-2	-2	-2	-	Abundance of any patchy silt layer and continuous overlying silt layer.
	E8	Channel bed reinforcement extent	E8	-	0	0	0	0	-	Extent of bed reinforcement in terms of abundance.
	E9	Channel bed reinforcement severity	E9	-	0	0	0	0	-	Severity level of the dominant reinforcement types observed. Most severe types include concrete, brick, stone and sheet piling. Low severity types include builders waste and washed out.
	E10	Channel bed artificial features severity	E10	-	0	0	0	0	-	Presence of artificial features, weighted according to severity and number. Features: 1. large trash, 2. bridge shadow, 3. weirs, 4. bridge pier in river bed, 5. culvert.
	E11	Channel bed NNIPS extent	E11	-	0	0	0	0	-	Presence of non-native invasive species, taking into account the number of different species and their abundances.
	E12	Channel bed filamentous algae extent	E12	-	0	0	0	0	-	Extent of filamentous algae on the channel bed.

Positive Index Average	1.68	1.68	1.84	1.84
Negative Index Average	-0.54	-0.31	-0.23	-0.23
Preliminary Condition Score	**1.15**	**1.38**	**1.61**	**1.61**
Condition	**Moderate**	**Moderate**	**Fairly-good**	**Fairly-good**

◊ Gurnell, A.M., Scott, S.J., England, J., Gurnell, D.J., Jeffries, R., Shuker, L., Wharton, G. (accepted 10.6.20) Assessing River Condition: A Multiscale Approach Designed for Operational Application in the Context of Biodiversity Net Gain. River Research & Applications.

■ Gurnell, A.M., England, J., Scott, S. J. & Shuker, L. J. (2020) A Guide to Assessing River Condition Part of the Rivers and Streams Component of the BioDiversity Net Gain Metric.

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Appendix H

Bat Survey Report

1.0 Introduction

1.1 This report has been prepared by CSA Environmental on behalf of Taylor Wimpey. It sets out the findings of bat survey work undertaken at Land off Watmore Lane, Winnersh (hereafter referred to as 'the Site') as part of proposals for residential development.

2.0 Legislation

2.1 All British bat species are legally protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). These Regulations make it an offence to:

- Deliberately capture, injure, or kill a bat
- Deliberately disturb bats, impairing their ability to survive, breed, reproduce or rear/nurture their young, or which significantly affects the local distribution or abundance of the species
- Damage or destroy a breeding site or resting place used by bats

2.2 All bats and their roosts in the UK were previously fully protected under the Wildlife & Countryside Act 1981 (as amended). Amendments to the Act have removed most provisions as they relate to bats, however it remains an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection

2.3 It is important to note that bat roosts are protected throughout the year, regardless of whether or not bats are present at the time. Under the Regulations, the offence of damaging or destroying a breeding site or resting place is subject to 'strict liability', i.e. an offence is commented irrespective of whether the causal act was deliberate or otherwise.

2.4 Where development is proposed that would result in an offence under the Regulations, a European Protected Species (EPS) statutory derogation licence (often termed 'EPS Mitigation Licence') will need to be secured from Natural England to permit an act that would otherwise be unlawful. Such a licence can only be granted following receipt of planning permission with all relevant conditions discharged, and where it has been demonstrated that specific statutory derogation tests have been met.

3.0 Methods

3.1 The following survey methods, design, data analysis and interpretation have been undertaken with due consideration of the Bat Conservation Trust (BCT) guidelines 3rd Edition (Collins, 2016).

Preliminary Roost Assessment (PRA)

Trees

3.2 All trees on-site were inspected from ground level using binoculars, high-powered torches, ladder and endoscope as appropriate. Particular attention was given to woodpecker holes, limb splits, lifting bark and mature ivy stems. The survey was originally completed on 17 July 2018 by Tom Richards ACIEEM (Class Survey Licence registration number: 2017-31786-CLS-CLS) and Alice Williams. An update survey was undertaken on 28 July 2020 also by Tom Richards ACIEEM.

3.3 The aim of this inspection was to record direct (i.e. actual roosting bats) or indirect evidence of roosting bats (e.g. droppings), as well as the nature and number of features with 'potential' to support roosting bats. This includes consideration of trees to support bats whilst in hibernation.

3.4 All trees were assigned to one of four categories in respect of their 'potential' to support roosting bats, or the confirmation of any bat roosts identified. Potential in this context is taken to be the broad suitability of features to support roosting bats, based upon the nature, condition or structure of such features, in the absence of confirmed evidence of roosting.

3.5 Assigning the following categories is intended to determine the effort of any further targeted survey or inspections which are necessary to prove presence or likely absence of roosting bats, rather than to assign importance to such features.

3.6 The following categories are assigned to trees herein, either:

- **High** – A 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.
- **Moderate** – A 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, assessments at this stage are made irrespective of species conservation status).
- **Low** – A tree of sufficient size and age to contain Potential Roosting Features (PRFs) but with none seen from the ground or features seen with only very limited roosting potential.
- **Negligible** – Negligible habitat features on site likely to be used by roosting bats.

Roost Presence/Absence Surveys

3.7 Two trees were identified that hold potential to support roosting bats and are recommended for removal in the Site's Tree Constraints Plan (Keen Consultants, 1894-KC-XX-YTREE-TCP01Rev0), Trees T52 and T79. Bat roost surveys have been undertaken on these trees to confirm the presence/likely absence of roosting bats in association with the potential roosting features identified. A dusk emergence survey was undertaken on 26 July 2018 and a dawn re-entry survey undertaken on 10 August 2018 by Katie Critchley MCIEEM (class survey licence registration number: 2015-12859-SCI-SCI) and Alice Williams on both occasions.

3.8 The dusk emergence survey commenced 15 minutes prior to sunset and continued for 90 minutes after sunset. The dawn re-entry survey commenced 90 minutes prior to sunrise and continued for 15 minutes after sunrise. Surveyors were positioned on the southern aspect of T52 and on the eastern aspect of T79, within the Site.

3.9 Surveyors were equipped with Echo Meter EM3 detectors. The PRFs of each tree were watched closely to identify any bats emerging/re-entering during the course of each survey. In addition, all bat passes were noted along with the time, species and any behavioural observations. Recorded bat calls were subsequently downloaded and analysed using the software AnalookW to confirm species identification, where possible. The weather conditions were suitable for bat activity, as summarised in Table 3 below.

Activity Surveys

Transect Surveys

3.10 Transect surveys were undertaken in July and September 2021 and May 2022. On each occasion a single transect route was walked to cover all accessible areas, features, and habitats at the Site. The transect route was repeated multiple times during each survey to minimise temporal bias.

3.11 Each transect was walked at a moderate and consistent speed with qualitative observations of bat behaviour made by the surveyor. Each survey commenced at sunset (British Summer Time), continuing for the following two hours.

3.12 Bat calls were recorded using Elekon Batlogger M detectors. This detector automatically records ultrasonic signals with a one second delay between recordings. Recordings of bat contacts were subsequently analysed using BatExplorer software, with sonograms reviewed to confirm bat identification to genera, or where possible, species level.

3.13 Each of the recorded files, which contain a variable number of call 'pulses', was designated a 'bat contact'. At the point of contact, each sound file is assigned a GPS location.

Remote Monitoring

3.14 Two Wildlife Acoustics Songmeter (SM4) static detectors were deployed during August and September 2021 and May 2022 to provide six datasets. The location of each Monitoring Location (ML) is shown on Figure 1 below.

Figure 1. The locations of each Monitoring Location (ML) surveyed during remote monitoring surveys in August and September 2021 and May 2022.

3.15 The detectors were setup to automatically record ultrasonic signals for the period from half an hour before sunset to half an hour after sunrise each night, with each monitoring period spanning at least five consecutive nights.

3.16 Weather conditions were obtained for each night surveyed using historic weather data from the World Weather Online website, with weather observations taken from the nearest weather station in Bracknell. The five nights showing the most optimal weather conditions (in terms of temperature, precipitation and wind speed) were taken forward for analysis.

3.17 Recordings were subsequently analysed using the specialist software AnalookW. Sonograms were reviewed to confirm bat identification to genera, or where possible, species level.

3.18 Each of the recorded files, which contain a variable number of call 'pulses', was designated a 'bat contact'. Quantitative analysis of bat activity was then undertaken by calculating the 'average' bat contacts per hour on each night monitored, for each species. Bat activity can show considerable inter-night variability and is dependent on a number of variables, including temperature, wind, and seasonality, amongst others. To account for inter-night variability the median values for the average hourly bat contacts per night are reported, rather than a mean value which would misrepresent the average activity.

Limitations

3.19 Batlogger M detectors automatically assign a GPS location to each bat contact, allowing distribution maps to be plotted (see Results section of this report). The accuracy of the GPS locations provided for each contact is variable according to signal strength and environmental conditions. This should be taken into account when viewing the distribution maps within this report.

3.20 The quantum of bat contacts recorded during a survey may not give a true reflection of the abundance of bats using the Site. For example, a single bat foraging close to static detector may trigger several hundred activations in the course of one night. However, this activity level does provide a proxy for the level of use by bats, and therefore its relative importance.

3.21 It should be noted that comparisons drawn on the number of detector activations by different species/genera can only give an indication of relative species abundance at the Site, as detectability varies between species.

4.0 Results

<u>Preliminary Roost Assessment (PRA)</u>

Trees

4.1 All on-site trees were included in the assessment, constituting 92 individual trees or groups of trees. Survey results for any providing bat roosting potential are provided in Table 1 below and illustrated on the Preliminary Roost Assessment Plan (CSA/1668/131) in Appendix H.1.

4.2 During the 2018 survey, Trees T52 and T79 were categorised as having Moderate suitability. However, after the completion of further roost presence/absence surveys of these trees, no bats were observed roosting. The update roost assessment in 2020 found no change in the potential roosting features previously identified. Therefore, the

categories of these two trees have been downgraded to 'low', with precautionary measures to be taken prior to their removal.

4.3 In total, one tree with 'High' potential, four trees with 'Moderate' potential and six trees with 'Low' potential suitability for roosting bats were identified.

Table 1. Summary of trees with bat roosting potential

Tree Reference	Species	Description	Bat roost potential
7	Oak	Torn limb at base with deep crevices from 1m to 3m and multiple hollows leading into a cavity	Moderate
15	Oak	Hollow at 15m on the west side. Dense ivy covering whole tree	Moderate
18	Oak	Hollow, slits and broken branch end at 7m on the west side.	High
20	Ash	Potential hollow at c. 10m on the west side, alongside a broken branch end. A ramshorn is present above this at c. 13m. Further hollows and linear split on branch facing south. Hollow within the crown, indicating the tree could be hollow throughout.	Moderate
21	Oak	Dense ivy throughout	Low
29	Oak	Minor hollows and splits	Low
31	Oak	Small rot hollow located on the southern aspect c. 7m up	Low
52	Oak	Oak in decline with lifted bark and splits on southern leading limb. Fallen branches causing possible cavities. Moderate potential but has been subject to dusk dawn surveys showing no roosting bats present	Low
57	Ash	Rot hollow at 5m on eastern aspect	Moderate
79	Ash	Rot hollow at 6m facing east, second rot hole on the same aspect at 10m. Moderate potential but has been subject to dusk dawn surveys showing no roosting bats present	Low
84	Oak	Splits present on the northern aspect at 8m	Low

<u>Roost Presence/Absence Surveys</u>

Dusk Emergence Survey (26 July 2018)

4.4 No bats were seen to emerge from Trees T52 or T79 during the dusk emergence survey. Common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *P. pygmaeus* bats were recorded in proximity to both trees during the survey, with foraging activity near to Tree T52 noted frequently. Bat activity around Tree T79 was low, with only five passes recorded.

Dawn Re-Entry Survey (10 August 2018)

4.5 No bats were seen to re-enter Trees T52 or T79 during the dawn re-entry survey. Bat activity was very low during the dawn survey with one pass and one foraging bout of common pipistrelle bats recorded near to Tree T52. No bat calls were recorded at Tree T79 during the survey.

Activity Surveys

Transect Surveys

4.6 The weather conditions experienced during each transect survey are provided in Table 2 below.

Table 2. Bat transect survey timings and weather conditions

Survey Date	Sunset Time	Start Time	End Time	Temp. (°C)		Cloud Cover (oktas)		Wind (Beaufort Scale)		Rain
				Start	End	Start	End	Start	End	
27/07/21	21:00	21:00	23:00	15	15	2	6	1	1	None
22/08/21	19:02	19:02	21:02	15	13	1	1	1	1	None
19/05/22	20:54	20:54	22:54	14	11	2	3	2	2	None

4.7 At least four species of bat were recorded at the site during the transect surveys, comprising common pipistrelle, soprano pipistrelle, noctule *Nyctalus noctula* and *Myotis* species.

4.8 The number of bat contacts recorded for each species are summarised in Table 3 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 2 and 3. Common pipistrelle bats make up the greatest proportion of bat activity at the Site, accounting for c. 85% of all recorded bat contacts. This is likely to be a reflection of both greater abundance and prolonged foraging activity. The remaining species were all recorded at very low levels in comparison.

Table 3. Summary of bat contacts recorded during transect surveys

Month and Year	Common pipistrelle	Soprano pipistrelle	Noctule	*Myotis* species
July 2021	49	5	0	1
September 2021	64	13	0	0
May 2022	41	6	2	0
Total	154	24	2	1
Percentage of Total (%)	85.08	13.26	1.10	0.55

Figure 2. Locations of bat contacts recorded across all transect surveys

4.9 The majority of bat contacts recorded during transect survey work were situated along the mature hedgerow at the southern boundary at the Site, with numerous contacts also recorded to the south of the eastern boundary which forms a strong linear corridor along the Emm Brook.

4.10 Figure 3 below provides an indicative illustration of 'hotspots' in bat activity recorded across all transect surveys undertaken at the Site. Concentrations of activity are located within the south-east and south-west corners of the Site, as well as running along the southern and eastern hedgerows. Only occasional bat contacts were recorded to the north and west, both of which border residential properties rather then open countryside and have the greatest potential for human disturbance.

Figure 3. Indicative 'Utilisation Distribution' (UD) of all bat species/genera at the Site estimated from all transect data combined. The UD illustrates the relative probability of a bat in flight being present at a given point at the Site, with higher/central contours having a greater probability, and lower/peripheral contours having less probability.

Remote Monitoring

4.11 The overnight weather conditions experienced during each of the five-night remote monitoring periods are provided in Table 4 below.

Table 4. Overnight weather conditions during remote monitoring

Survey Month	Dates Sampled	Temp. (°C)		Cloud Cover (%)		Wind (km/h)		Precipitation
		Min	Max	Min	Max	Min	Max	
July	27/07/21	10	18	21	88	14	24	Light rain at 21:00
	28/07/21	11	16	5	84	16	25	None
	29/07/21	11	14	37	100	10	13	None
	30/07/21	12	14	28	84	12	19	Very light rain at 21:00
	31/07/21	12	13	53	88	8	11	Very light rain at 21:00
Sept	17/09/21	19	19	0	0	21	23	None
	18/09/21	17	18	20	61	22	23	None
	19/09/21	13	16	78	100	13	13	Light rain all night
	20/09/21	16	18	71	100	40	44	Moderate rain all night
	21/09/21	10	10	6	12	17	19	None
May	19/05/22	10	12	13	68	7	10	None

	20/05/22	8	11	54	81	14	18	Very light rain at 21:00 until 00:00
	21/05/22	9	11	19	37	2	9	None
	22/05/22	12	13	48	100	2	7	Light rain at 21:00
	23/05/22	8	10	33	100	15	18	Light rain at 21:00

4.12 The total number of bat contacts recorded across all monitoring locations and monitoring periods for each bat species/genera are provided in Figure 4 below.

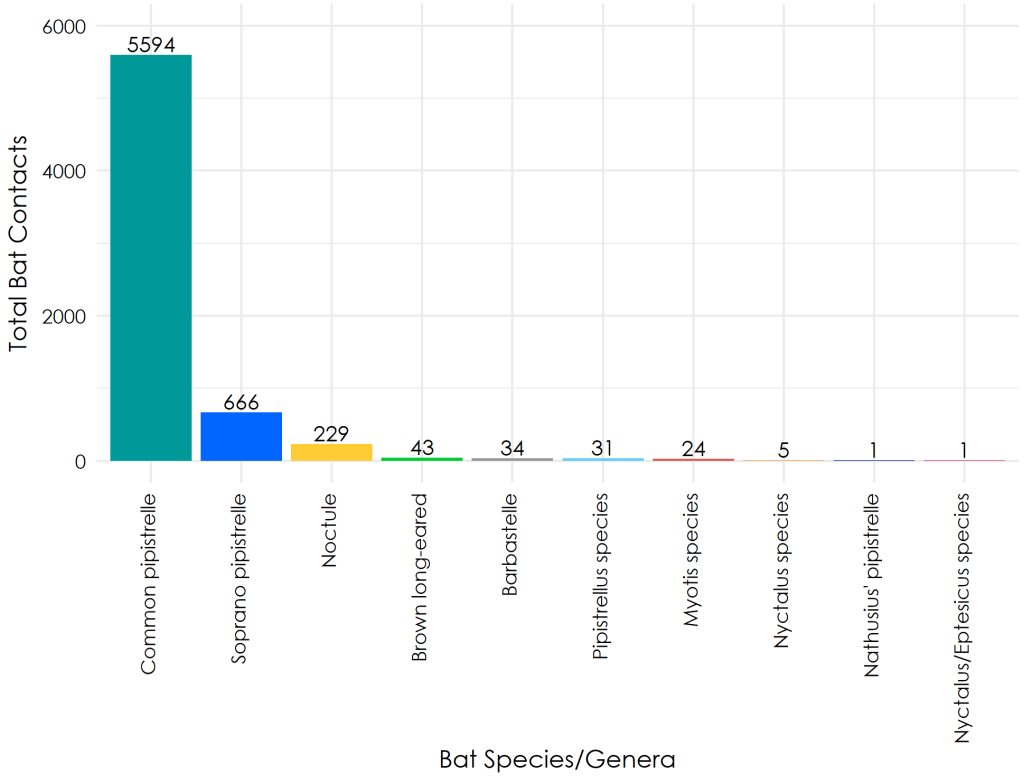


Figure 4. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations.

4.13 Markedly higher contacts of common pipistrelle bats were recorded than any other species of bat. Lower levels of soprano pipistrelle and noctule bat activity were also recorded alongside very low numbers of brown long-eared *Plecotus auritus*, barbastelle *Barbastella barbastellus,* Nathusius' pipistrelle *Pipistrellus nathusii* and unidentified *Nyctalus/Eptesicus* and *Pipistrellus* bats. Bat activity appears to be higher at Monitoring Location ML2 on the southern boundary of the Site, as shown in Table 5 below.

Table 5. Bat contacts recorded during each remote monitoring period

Month and Year	ML	Common pipistrelle	Soprano pipistrelle	Noctule	Brown long-eared	Barbastelle	*Pipistrellus* species	*Myotis* species	*Nyctalus* species	Nathusius' pipistrelle	*Nyctalus/Eptesicus* species
July 2021	ML1	261	70	42	4	6	2	2	0	0	0
	ML2	851	53	34	12	11	3	0	0	0	0
July Total		1112	123	76	16	17	5	2	0	0	0
September 2021	ML1	203	43	85	2	5	2	7	0	0	0
	ML2	2499	350	18	14	3	5	10	0	0	0
September Total		2702	393	103	16	8	7	17	0	0	0
May 2022	ML1	363	32	29	4	5	6	4	3	0	0
	ML2	1417	118	21	7	4	13	1	2	1	1
May Total		1780	150	50	11	9	19	5	5	1	1
Grand Total		5594	666	229	43	34	31	24	5	1	1
Percentage of Total (%)		84.40	10.05	3.46	0.65	0.51	0.47	0.36	0.08	0.02	0.02

4.14 Figures 5 and 6 below illustrate the variance in nightly activity levels for each of the bat species recorded on-site during remote monitoring surveys. More detailed data describing Figures 5 and 6 are provided in Table 6. The activity data in Figures 5 and 6 is presented as boxplots for each bat species, which show the inter-night variability in bat activity across the nights monitored. The median value (middle line of the boxplot) is taken as the typical level of activity for that species on-site at the point monitored. The length of each coloured boxplot is the interquartile range which shows the variance in nightly activity around the median value. The ends of each whisker line define the minimum and maximum nightly activity values recorded at the monitoring location. Outlying values are nightly activity levels that are highly different when compared to the distribution of the remaining nightly activity levels. Outliers are illustrated as black points away from the boxplot. While important to note, these outliers do not represent the typical levels of bat activity more commonly found at the Site for the species in question.

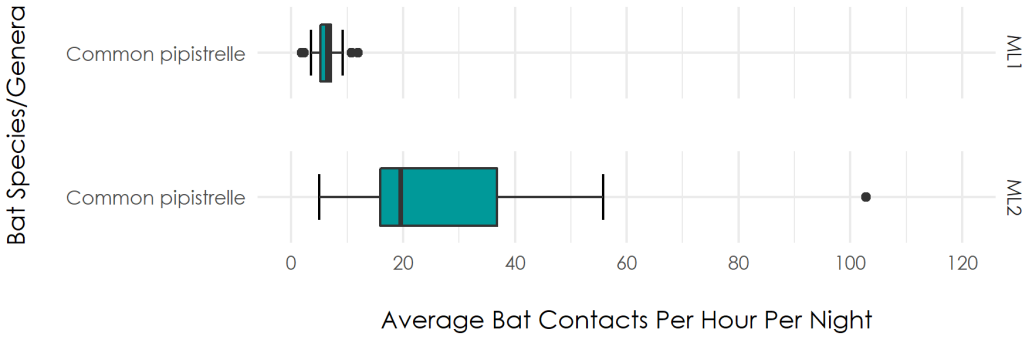


Figure 5. Average bat contacts per hour per night for common pipistrelle bats recorded across all remote monitoring periods.

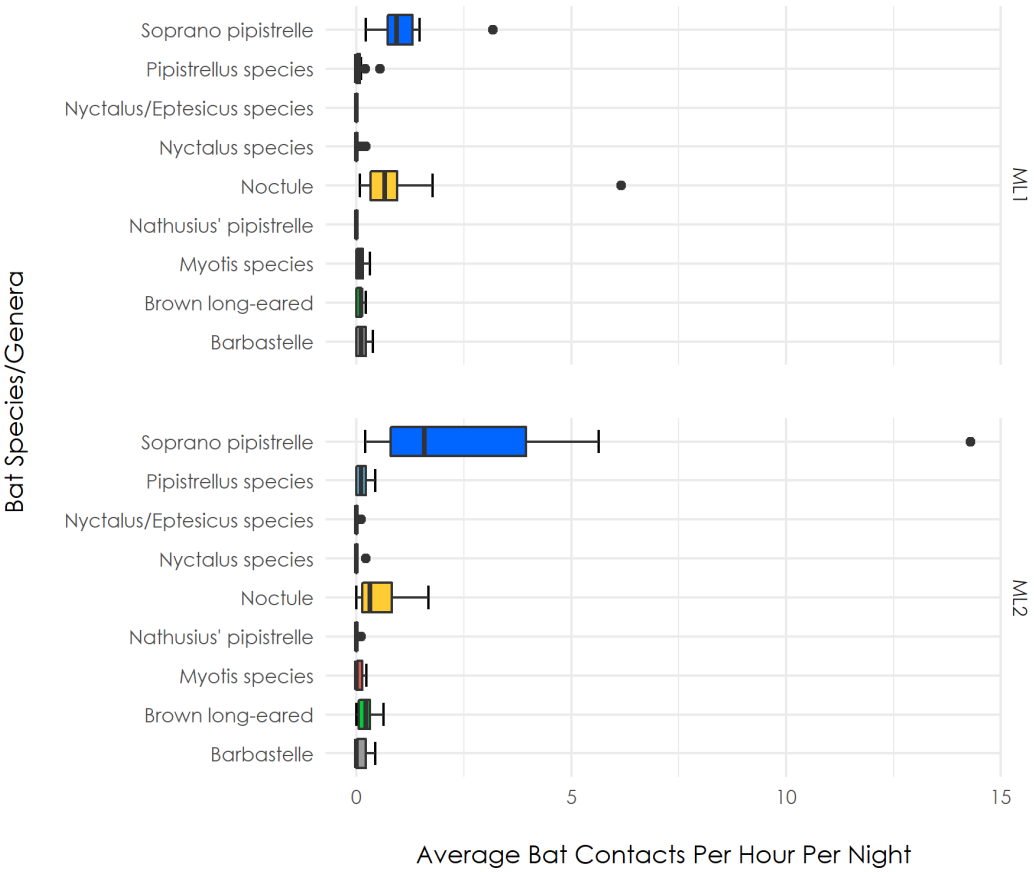


Figure 6. Average bat contacts per hour per night for all remaining bat species/genera recorded across all remote monitoring periods

4.15 The median average contacts for common pipistrelles at the Site are at just under 20 contacts per hour per night at ML2, compared to only approximately eight contacts per night at ML1, showing the difference in activity levels between the southern and western boundaries at the Site and demonstrating the strength and suitability of the corridor to the south.

4.16 The median average contacts for all other species are under 1.6 contacts per hour per night at the Site and for the majority of species this is far lower, with Nathusius' pipistrelle, *Nyctalus* species and *Nyctalus/Eptesicus* species having a median value of 0, indicating that these species were absent from the Site on the majority of the nights monitored.

4.17 Monitoring Location ML2 exhibited the highest median bat activity for many species, including common and soprano pipistrelle and brown long-eared bat. Nevertheless, other species have a higher median activity value along ML1, including Myotis species, barbastelle, lesser horseshoe and noctule. The median values for each of these species may be higher at ML1 but only small differences were found between the monitoring locations for these species. With the exception of common pipistrelle bats, bat activity across the board was very similar at the two locations monitored. Both locations consist of native hedgerows and given the suitability and connectivity of habitats in the surrounding area, it is appropriate to assume that all of the bat species recorded during monitoring survey work utilise both hedgerows.

Table 6. Average bat contacts per hour per night recorded during remote monitoring surveys

ML	Species	Average Bat Contacts Per Hour Per Night				Total Bat Contacts	Number of Nights Monitored
		Minimum	Maximum	Median	IQ range		
ML1	Barbastelle	0.000	0.390	0.104	0.221	16	13
	Brown long-eared	0.000	0.222	0.105	0.110	10	13
	Common pipistrelle	1.879	11.940	6.462	1.899	827	13
	Myotis species	0.000	0.308	0.078	0.156	13	13
	Nathusius' pipistrelle	0.000	0.000	0.000	0.000	0	13
	Noctule	0.078	6.168	0.654	0.619	156	13
	Nyctalus species	0.000	0.219	0.000	0.000	3	13
	Nyctalus/ Eptesicus species	0.000	0.000	0.000	0.000	0	13
	Pipistrellus species	0.000	0.552	0.000	0.078	10	13
	Soprano pipistrelle	0.219	3.181	0.939	0.576	145	13
ML2	Barbastelle	0.000	0.442	0.000	0.222	18	15
	Brown long-eared	0.000	0.633	0.213	0.258	33	15
	Common pipistrelle	4.984	102.829	19.570	20.942	4767	15
	Myotis species	0.000	0.230	0.000	0.131	11	15

	Nathusius' pipistrelle	0.000	0.110	0.000	0.000	1	15
	Noctule	0.000	1.679	0.312	0.689	73	15
	Nyctalus species	0.000	0.222	0.000	0.000	2	15
	Nyctalus/ Eptesicus species	0.000	0.110	0.000	0.000	1	15
	Pipistrellus species	0.000	0.441	0.111	0.215	21	15
	Soprano pipistrelle	0.210	14.297	1.582	3.143	521	15

5.0 Summary

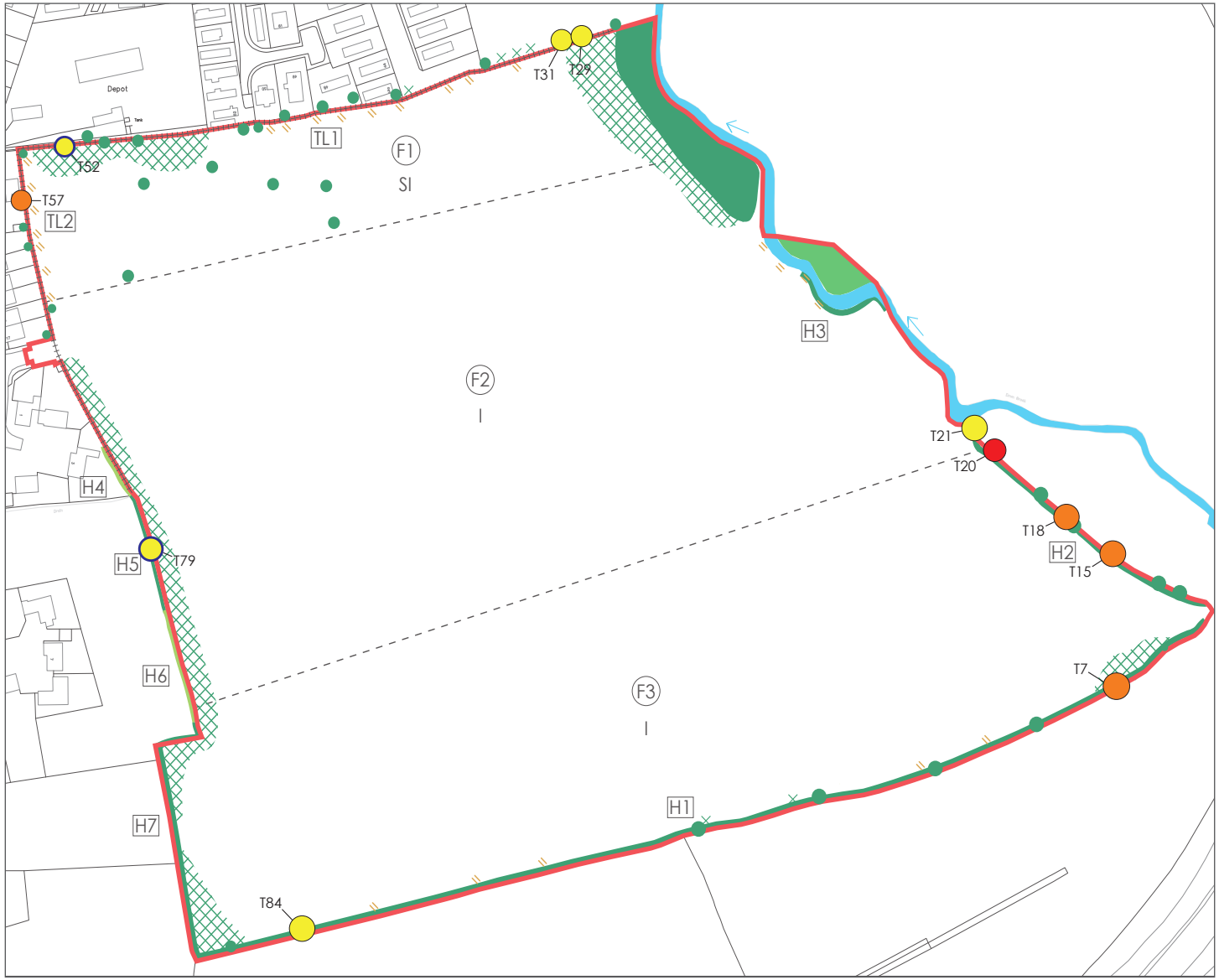
5.1 Bat activity transect and remote monitoring surveys has been undertaken at the Site in July 2021, September 2021 and May 2022. At least seven bat species have been recorded on-site, with activity dominated by common pipistrelle bats. A number of bats considered to be 'rarer' (*Myotis* species, noctule, Nathusis' pipistrelle and serotine) and 'rarest' (barbastelle) species in the UK (Wray *et al*., 2010) have been recorded on-site, in addition to more common and widespread species.

5.2 The remote monitoring surveys covered two locations on-, with detectors situated on the hedgerows that form the southern boundary and the western boundary of the Site. Although more species were recorded at ML1, ML2 accounted for the vast majority of bat activity, although greatly dominated by common pipistrelle bats. Median activity levels were generally low for all species across the board, with the exception of common pipistrelles at ML2 which show moderate activity levels.

5.3 Barbastelle bats were recorded at the Site in very low numbers at both monitoring locations and are therefore considered to use the hedgerows on-site on a very occasional basis. The Site is considered unlikely to constitute a key foraging or commuting habitat for this species.

Appendix H.1

Preliminary Roost Assessments Plan
(CSA/1668/131)



High bat roosting potential

Moderate bat roosting potential

Low bat roosting potential

Low bat roosting potential (roosting bats confirmed to be absent in 2018)

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Project	Land off Watmore Lane, Winnersh	Date Jan 2023	Drawing No. CSA/1668/131
Drawing Title	Preliminary Roost Assessments Plan	Scale Not to scale	Rev B
Client	Taylor Wimpey	Drawn LM	Checked TR

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Appendix I

Great Crested Newt Survey Report

1.0 Introduction

1.1 This report has been prepared by CSA Environmental on behalf of Taylor Wimpey. It sets out the findings of great crested newt survey work undertaken at Land off Watmore Lane, Winnersh (hereafter referred to as 'the Site') as part of proposals for residential development.

2.0 Legislation

2.1 Great crested newts *Triturus cristatus* are legally protected as European Protected Species (EPS) under Regulation 43 of the Conservation of Habitats and Species Regulations 2017. These Regulations make it an offence to:

- Deliberately capture, injure, kill or capture a great crested newt
- Deliberately disturb great crested newts, impairing their ability to survive, breed, reproduce or rear/nurture their young
- Damage or destroy a breeding site or resting place used by a great crested newt

2.2 Great crested newts are also fully protected under the Wildlife & Countryside Act 1981 (as amended), making it an offence to:

- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place of shelter or protection
- Intentionally or recklessly obstruct access to any structure or place of shelter or protection

2.3 Disturbance of great crested newts is covered by both the 2017 Regulations and the 1981 Act. Disturbance that impairs survival or successful reproduction would be covered by the Regulations, while less significant acts of disturbance may only be covered by the Act.

2.4 It is important to note that great crested newts and their habitats (such as breeding ponds) are protected throughout the year, regardless of whether or not newts are present at the time.

2.5 Great crested newts are also listed as a species of principal importance for the conservation of biodiversity in England, under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. The S41 species list is used to guide decision-makers, including planning authorities, in implementing their duty under Section 40 of the NERC Act to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

<u>Licensing</u>

2.6 Where development is proposed that would result in an offence under the Habitats and Species Regulations, a statutory derogation licence may be granted by Natural England to permit an act that would

otherwise be unlawful. To obtain an EPS licence for development, it must be demonstrated that the purpose of the act to be licensed is for:

- "preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment" (Regulation 55(2)(e))

2.7 In addition, Natural England will not grant an EPS licence unless they are satisfied that:

- "There is no satisfactory alternative" (Regulation 55(9)(a))
- "The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" (Regulation 55(9)(b))

3.0 Methods

Desktop Study

3.1 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography. A 500m radius is the generally accepted maximum dispersal range of this species, with great crested newt most likely to use terrestrial habitat within 250m of breeding ponds.

Habitat Suitability Index (HSI) Assessment

3.2 Where ponds were situated within the 500m radius and connected to the Site by traversable terrestrial habitats, access permission was requested to undertake a Habitat Suitability Index assessment, using the standard approach set out by Oldham *et al*. (2000). These assessments were initially undertaken in 2017 by Tom Richards ACIEEM (Class Survey Licence registration number: 2016-26343-CLS-CLS) and updated where possible in 2021 by Cerian Thomas MCIEEM (Class Survey Licence registration number: 2015-16296-CLS-CLS).

Environmental DNA (eDNA) Sampling

3.3 Environmental DNA sampling was used to determine the presence/likely absence of great crested newts within accessible ponds with suitability for this species. This method has been shown to be a highly effective in detecting the presence of great crested newts (Biggs *et al.* 2014).

3.4 Water samples were collected from Ponds P1 and P2 on 8 June 2017 by Tom Richards ACIEEM, and then a second set of samples were collected from P1 on 30 June 2021 by Cerian Thomas MCIEEM, following the recommended procedure. Appropriate biosecurity measures were taken to avoid cross contamination of great crested newt eDNA.

Subsequently the samples were sent to Fera Science Ltd (2017) and ADAS (2021) for DNA analysis.

4.0 Results

Desktop Study

4.1 The desk-based search for ponds and subsequent site visits identified 3 water bodies occurring within 500m of the Site. These ponds are identified on the Pond Plan (CSA/1668/120) in Appendix I.1. Pond P3 is situated c. 280m south of the Site on the far side of the M4 motorway. This pond was scoped out of further assessment at this point due to the motorway forming a significant barrier to dispersal of newts between the pond and Site.

Habitat Suitability Index (HSI) Assessment

4.2 Pond P1 lies within the grounds of Winnersh Primary School, c. 350m north-west of the Site. The pond is situated within a fenced-off 'wildlife area' within the school playground and consisted of a small man-made pond with some aquatic vegetation, surrounded by hardstanding playground on all sides. Pond P2 was found to be a large, ornamental garden pond within a private property c. 495m north of the Site. The pond has a large island in the centre and fish were present at the time of survey. A variety of aquatic plant species were present, with surrounding habitat consisting of amenity grassland and planted shrubs. Access permission was not granted to re-visit Pond P2 in 2021 to update the HSI assessments and eDNA survey work. Pond P1 was revisited in June 2021.

4.3 The HSI assessments classified Pond P1 as having 'Below Average' suitability and Pond P2 as 'Poor' suitability for breeding great crested newts. A summary of the HSI calculations is provided in Table 1 below. While both ponds were found to be generally of low suitability for great crested newts, there still exists potential for great crested newt dispersal between the ponds and Site area. As a result, both ponds were subject to eDNA surveys to confirm presence/absence.

Table 1. Habitat Suitability Index assessment results

Suitability Indices (SI)	SI Value	
	P1	**P2**
SI1 Location	Zone A = 1	Zone A = 1
SI2 Pond area	<50m^2 = 0.05	1200m^2 = 0.925
SI3 Pond drying	Never dries = 0.9	Never dries = 0.9
SI4 Water quality	Moderate = 0.67	Moderate = 0.67
SI5 Shade	0-60% = 1	0-60% = 1
SI6 Fowl	Absent = 1	Absent = 1
SI7 Fish	Absent = 1	Major = 0
SI8 Ponds	2 = 0.6	2 = 0.6
SI9 Terrestrial habitat	Poor = 0.33	Poor = 0.33
SI10 Macrophytes	66-80% = 1	21-25% = 0.55
HSI Score	**0.599**	**0.477**
Pond Suitability	**Below Average**	**Poor**

Environmental DNA (eDNA) Sampling

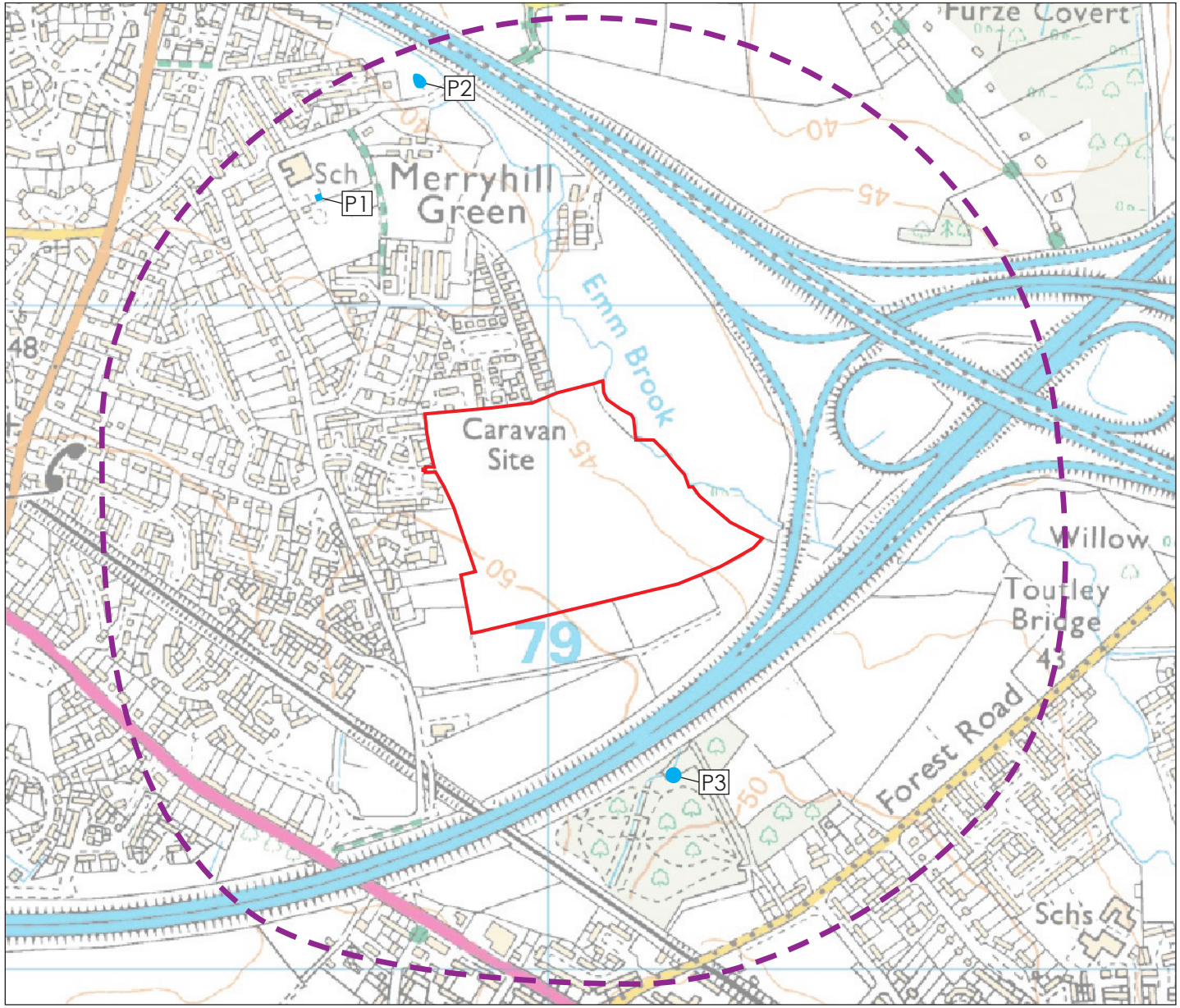
4.4 Water samples were taken from Ponds P1 and P2 in 2017 and sent to Fera Science Ltd for laboratory analysis. Samples from both ponds were returned as negative results for great crested newt DNA. In 2021, both ponds were approached to take an update eDNA sample. Access was only granted to assess P1. Samples were sent to ADAS for laboratory analysis and P1 again returned a negative result for great crested newts. Analysis results from 2017 and 2021 are provided in Appendix I.2.

5.0 Summary

5.1 Two ponds were found to be present within a dispersal distance of the Site, consisting of Pond P1 c. 350m north-west and Pond P2 c. 495m north. Both ponds were subject to a HSI assessment in 2017, which was updated for P1 only in 2021, categorising P1 as 'below average' and P2 as 'poor' for great crested newt suitability. Both ponds underwent eDNA analysis in 2017, returning negative results for great crested newt DNA. Pond P1 was re-tested in 2021 and again tested negative. Great crested newts are considered to be likely absent from the Site.

Appendix I.1

Pond Plan
(CSA/1668/120)



N

Site boundary

Approximate 500m buffer

Pond

Pn Pond reference number

0 100 200 300 400 500m

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Project	Land off Watmore Lane, Winnersh	Date Jan 2023	Drawing No. CSA/1668/120
Drawing Title	Pond Plan	Scale Refer to bar	Rev B
Client	Taylor Wimpey	Drawn BGW	Checked TR

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Appendix I.2

Environmental DNA Survey Results

DNA Analysis Report - Commercial in Confidence

Customer:	CSA Environmental
Address:	Unit 1, Deer Park Business Centre Woollas Ha Pershore Pershore Worcestershire WR10 3DN
Contact:	Sally Pitchforth
Email:	sally.pitchforth@csaenvironmental.co.uk
Tel:	01386751100
Report date:	28-Jun-2017
Order Number:	GCN17-0571
Samples:	Pond Water
Analysis requested:	Detection of Great Crested Newt eDNA from pond water.

Thank you for submitting your samples for analysis with the Fera eDNA testing service. The details of the analysis are as follows:

Method:
The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., et al, (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

The limits of this method are as follows: 1) the results are based on analyses of the samples supplied by the client and as received by the laboratory, 2) any variation between the characteristics of this sample and a batch will depend on the sampling procedure used. 3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve, 4) a 'not detected' result does not exclude presence at levels below the limit of detection.

The results are defined as follows:

Positive:	DNA from the species was detected.
eDNA Score:	Number of positive replicates from a series of twelve.
Negative:	DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive:	Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided.

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DNA Analysis Report - Commercial in Confidence

CustomerReference	Fera Reference	GCN Detection	GCN Score	Inhibition	Degradation
W2	S17-006638	Negative	0	NO	NO
W1	S17-006639	Negative	0	No	No
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

The results indicate that eDNA for great crested newts was detected in one of the samples and in the remaining samples eDNA was not detected (as detailed in the table above). Analysis was conducted in the presence of the following controls: 1) Extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs, and was performed under the conditions of licensing arrangements with Applied Biosystems and patent rights owned by F. Hoffman-La Roche Ltd.

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Client: Kate Hammond,
CSA Environmental

ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

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

www.adas.uk

Sample ID: ADAS-2610	Condition on Receipt: White Precipitate	Volume: Passed
Client Identifier: School, 1668	Description: pond water samples in preservative	
Date of Receipt: 12/07/2021	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control†	2 of 2	Real Time PCR	13/07/2021
Degradation Control§	Within Limits	Real Time PCR	13/07/2021
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	13/07/2021
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)#	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	Dr Helen Rees	Report Issued by:	Dr Ben Maddison
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	15/07/2021	Date of issue:	15/07/2021

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

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

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

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

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

Appendix 1: Interpretation of results

Sample Condition

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

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

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

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

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

What do my results mean?

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

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

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

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

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

Appendix J

Reptile Survey Report

1.0 Introduction

1.1 This report has been prepared by CSA Environmental on behalf of Taylor Wimpey. It sets out the findings of reptile survey work undertaken at Land off Watmore Lane, Winnersh (hereafter referred to as 'the Site') as part of proposals for residential development.

2.0 Legislation

2.1 All native British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act. In addition, all native British reptile species are adopted as Species of Principal Importance for the Conservation of Biodiversity in England in respect of Section 41 of the Natural Environment and Rural Communities Act 2006.

3.0 Methods

3.1 A total of 105 reptile refugia, comprising rectangles of roofing felt measuring a minimum of 0.5m x 0.5m were set out in areas of suitable habitat across the Site (see Reptile Survey Plan CSA/1668/119 in Appendix J.1). Two separate sets of reptile surveys have been completed at the Site, one in 2017 and a second, update survey, in 2021. The reptile surveys were set-up on 08 June 2017 and 17 July 2021 respectively.

3.2 Following an initial 2-week 'bedding-in' period for refugia, surveys were carried out on seven occasions each year during favourable weather conditions (e.g. intermittent or hazy sunshine, not too windy, sunny spells following wet or cloudy weather). Each survey visit comprised a slow walk of the Site to visually and physically check refugia for the presence of reptiles. On each occasion a visual search was also carried out within areas of suitable habitat whilst walking between refugia locations.

3.3 The primary aim of the reptile survey work was to establish the presence or likely absence of widespread reptile species within the survey area, rather than to estimate abundance or population size. To this end, seven survey checks, an effort generally considered 'reasonable effort' in establishing the presence or likely absence of reptiles at a Site, were carried out. As reptiles are confirmed to be present and mitigation action is required, approximations of population size have been identified in order to guide reptile mitigation strategies.

3.4 There are several published methods for broadly 'categorising' reptile population sizes in the UK, with the most commonly employed by ecological consultants being HGBI (1998), Froglife (1999) and/or Natural England (2011 [now rescinded]). These three approaches vary in their application, assumptions and limitations, and therefore outputs have been reported for all three methods for comparison below.

Limitations

3.5 The three metrics referenced below, HGBI (1998), Froglife (1999) and/or Natural England (2011; now rescinded), rely on varying proxies to calculate/estimate reptile populations. The HGBI categories are based on adult population densities, as opposed to peak counts. Moreover, the categorisation by HGBI is intended to inform capture effort for translocation exercises and, therefore, is not directly applicable to providing a population size class estimate, though it is widely applied within the industry for this purpose.

3.6 The Froglife method is based on peak adult counts where surveys have used refugia densities of 10 per hectare. Surveys carried out by CSA used densities of c. 15 per hectare of suitable reptile habitat to maximise site coverage and opportunities to confirm the presence or likely absence of reptiles. Therefore, to enable comparison with the Froglife categories, peak counts have been divided by a factor of 1.5 so that they are proportionate to the Froglife survey effort of 10 refugia per ha.

3.7 Finally, the Natural England methods provide population class size estimates based upon a refugia density of 100 per hectare and, in addition, goes on to consider habitat suitability. As with the Froglife method, survey results have been scaled to be proportionate to a survey effort of 100 refugia per hectare. The consideration of peak counts and habitat suitability may be the most ecologically sound, or holistic, of the three indices. However, in light of the guidance having been rescinded, this metric cannot be exclusively relied upon.

4.0 Results

4.1 Small numbers of slow-worms *Anguis fragilis* were recorded on-site, with no other reptile species found to be present. Several new-born and sub-adult slow-worms were recorded in both 2017 and 2021, indicating that a breeding population is present. However, numbers of adults recorded were still found to be very low, with numerous reptile checks yielding no adults at all and the highest peak adult count being eight individuals in 2017 and seven in 2021. A summary of the survey findings for both survey years are provided in Table 1 below. See Appendices J.1 and J.2 for reptile record locations and full survey results.

Table 1. Summary of reptile survey results (2017 and 2021)

Survey Date	Slow-worm				
	Adult Male	Adult Female	Adult (Unsexed)	Sub-adult	New-born
2017					
21/07/2017	2	2	1	0	0
27/07/2017	2	2	0	0	0
04/08/2017	0	3	0	1	0
18/08/2017	0	0	0	1	0
24/08/2017	4	4	0	0	8
07/09/2017	0	2	0	1	2
11/09/2017	0	4	0	2	6
2021					
16/08/2021	2	2	0	1	3
20/08/2021	4	2	0	1	6
25/08/2021	2	3	0	1	0
01/09/2021	3	4	0	1	4
06/09/2021	1	2	0	1	1
16/09/2021	0	2	0	2	4
30/09/2021	0	1	0	0	0

4.2 Slow-worm were recorded in all five survey areas (areas A-E, see Reptile Survey Plan in Appendix J.1). They were recorded in greatest densities in survey areas A (northern boundary), B (eastern boundary) and D (western boundary). In comparison, slow-worm were only recorded on one or two occasions in very small numbers along the southern boundary of the Site (survey area C) and the central margin between the grassland and the then cropland areas (area E).

4.3 The Site measures c. 11.4ha in size and suitable reptile habitat present at the time of survey was within the grassland field areas and field boundaries along the entire field perimeter. The arable crop section of the field (within Field F2) was considered to be unsuitable and was omitted from the survey area and total reptile habitat measurements. At the time of survey suitable reptile habitat measured c. 6.9ha at the Site. Within this area, 105 artificial refugia were used to provide a survey refugia density of c. 15 refugia per hectare. The most recent survey work undertaken in 2021 provides the latest status of the slow-worm population on-site and associated peak counts have been used to provide an estimate of the population size, as summarised in Table 2 below.

Table 2. Reptile population size category estimates

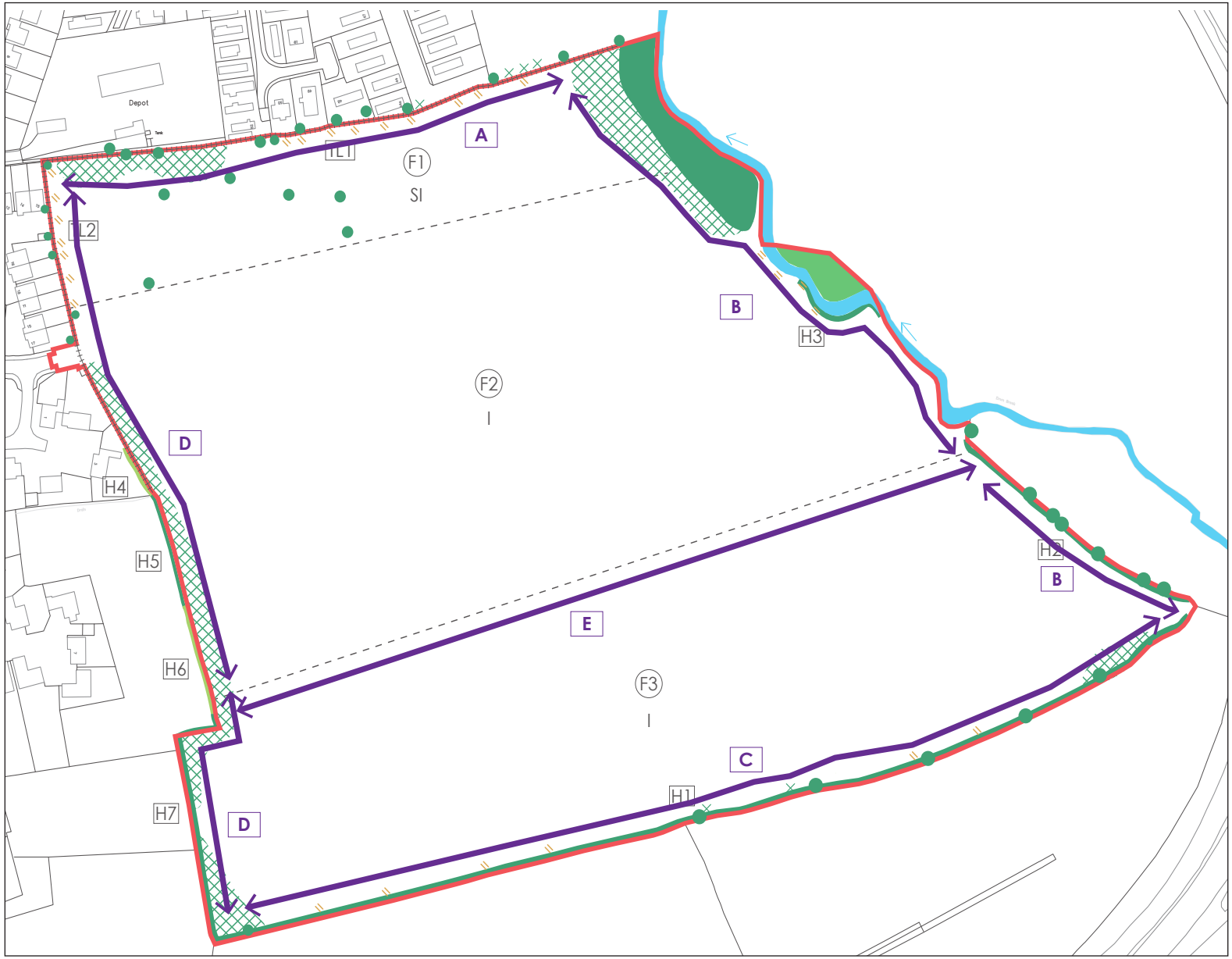
Method	Species
	Slow-worm
Peak adult count between August and September 2021	7
HGBI (1998)	Low
Froglife (1999)	Low
Natural England (2011)*	Large

*Rescinded

4.4 It is acknowledged that the above metrics have their limitations. However, on consideration of this information, balanced against an ecological understanding of the Site and survey findings, it is estimated that the Site supports a 'low' population of slow-worm.

Appendix J.1

Reptile Survey Plan
(CSA/1668/119)



N

Site boundary

Reptile refugia locations

X Refugia location references

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Project	Land off Watmore Lane, Winnersh	Date Jan 2023	Drawing No. CSA/1668/119
Drawing Title	Reptile Survey Plan	Scale Not to scale	Rev D
Client	Taylor Wimpey	Drawn LM	Checked TR

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Appendix J.2

Reptile Survey Results

Table 1. Reptile Survey Results (2017)

Date	Start Time	Weather Conditions				Area / Field No	Slow-worm				
		Temp. (°C)	Cloud Cover (Oktas)	Wind (Beaufort Scale)	Rain		Adult Male	Adult Female	UnID Adult	Sub-adult	New-born
Survey 1											
21/07/2017	09:00	16	0	3	Dry	A	-	-	**1**	-	-
						B	**1**	**2**	-	-	**-**
						C	**-**	**-**	-	**-**	-
						D	**1**	-	**-**	-	-
						E	**-**	**-**	-	-	-
Survey 2											
27/07/2017	09:00	15	7	2	Dry	A	-	-	-	-	-
						B	**1**	**1**	-	-	-
						C	-	**-**	-	**-**	**-**
						D	**1**	-	-	-	-
						E	-	**1**	-	-	-
Survey 3											
04/08/2017	09:15	19	4	2	Dry	A	-	-	-	-	-
						B	-	**1**	-	-	-
						C	**-**	**1**	-	**-**	-
						D	-	**1**	-	-	-
						E	-	**-**	-	**1**	-
Survey 4											
18/08/2017	08:15	17	3	4	Dry	A	**-**	**-**	-	-	-
						B	**-**	-	-	-	-
						C	**-**	**-**	-	-	-
						D	-	-	-	**1**	-
						E	-	-	-	**-**	-
Survey 5											
24/08/2017	09:30	16	6	2	Dry	A	-	**1**	-	-	-
						B	**4**	**2**	-	-	-
						C	**-**	**-**	-	**-**	**-**
						D	-	**1**	-	-	**8**
						E	**-**	**-**	-	-	-
Survey 6											
07/09/2017	09:15	16	3	3	Dry	A	-	**-**	-	-	-
						B	**-**	**1**	-	1	2
						C	-	**-**	-	**-**	-
						D	-	1	-	-	-
						E	-	-	-	-	-
Survey 7											
11/09/2017	10:00	15	6	2	Dry	A	-	**1**	-	**-**	-
						B	**-**	**1**	-	**2**	**3**
						C	-	-	-	-	-
						D	-	**2**	-	-	**3**
						E	-	-	-	-	-
							Total Adult			Total Juvenile	
							26			21	

Table 2. Reptile Survey Results (2021)

Date	Start Time	Weather Conditions				Area / Field No	Slow-worm				
		Temp. (°C)	Cloud Cover (Oktas)	Wind (Beaufort Scale)	Rain		Adult Male	Adult Female	UnID Adult	Sub-adult	New-born
Survey 1											
16/08/2021	10:15	16	6	3	Dry	A	-	-	-	-	-
						B	**2**	**1**	**-**	**1**	**-**
						C	**-**	**-**	-	**-**	-
						D	-	**1**	-	-	**3**
						E	**-**	**-**	-	-	-
Survey 2											
20/08/2021	13:10	20	8	2	Dry	A	**1**	-	-	-	-
						B	**2**	**1**	-	**1**	-
						C	-	**-**	-	**-**	**-**
						D	**1**	**1**	-	-	**6**
						E	-	-	-	-	-
Survey 3											
25/08/2021	10:40	18	4	2	Dry	A	-	-	-	-	-
						B	**2**	-	-	-	-
						C	**-**	**-**	-	**-**	-
						D	-	-	-	-	-
						E	-	**-**	-	-	-
Survey 4											
01/09/2021	11:00	17	8	2	Very light shower during survey	A	**1**	**1**	-	-	-
						B	**1**	**2**	-	-	-
						C	**-**	**-**	-	-	-
						D	**1**	**1**	-	-	**2**
						E	-	-	-	**-**	**2**
Survey 5											
06/09/2021	10:30	20	6	1	Dry	A	-	**1**	-	-	-
						B	-	-	-	**1**	-
						C	**-**	**-**	-	**-**	**-**
						D	**1**	**1**	-	-	**1**
						E	**-**	**-**	-	-	-
Survey 6											
16/09/2021	10:25	17	8	2	Dry	A	-	**1**	-	**1**	**2**
						B	**-**	**-**	-	**1**	-
						C	-	**-**	-	**-**	-
						D	-	**1**	-	-	**2**
						E	-	-	-	-	-
Survey 7											
30/09/2021	12:00	14	8	2	Dry	A	-	-	-	**-**	-
						B	**-**	**1**	-	-	-
						C	-	-	-	-	-
						D	-	-	-	-	-
						E	-	-	-	-	-
							Total Adult			Total Juvenile	
							25			23	

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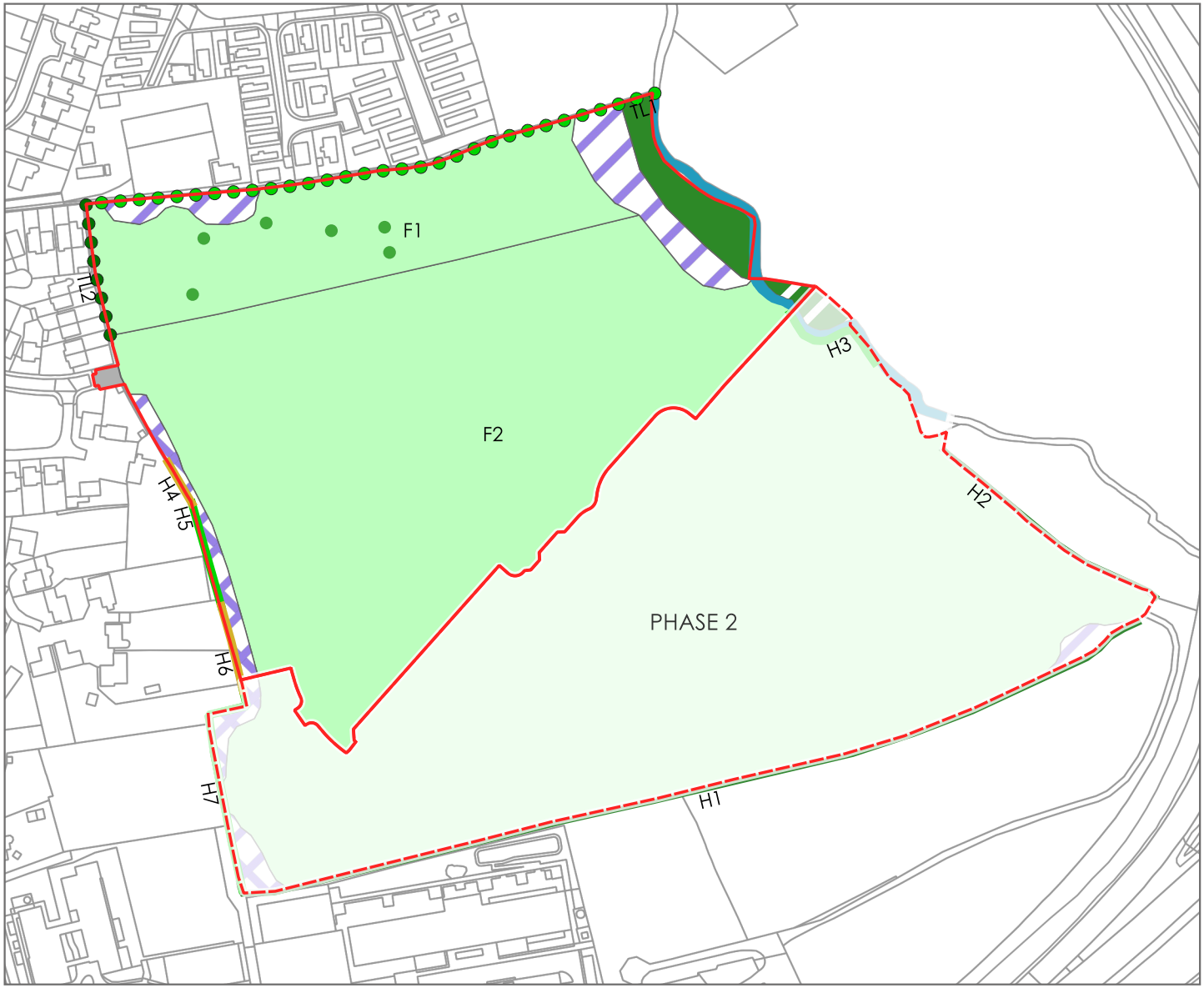
Appendix B

Habitats Plan
(CSA/7168/205)



N

- Site boundary (Phase 1)
- Site boundary (Phase 2)
- Modified grassland
- Blackthorn scrub
- Bramble scrub
- Developed land; sealed surface
- Broadleaved deciduous woodland
- Other woodland; broadleaved
- Native hedgerows with trees
- Native hedgerows
- Ornamental hedgerows
- Line of trees
- Lines of trees (ecologically valuable)
- Emm Brook
- Rural trees

0 50 100 m

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Project	Land off Watmore Lane, Winnersh	Date	April 2025	Drawing No.	CSA/7168/205
Drawing Title	Habitats Plan (Phase 1)	Scale	Refer to scale	Rev	-
Client	Taylor Wimpey West London	Drawn	TR	Checked	KC

Appendix C

Photographs

Photograph 1. Short species-poor modified grassland in southern section of Site.

Photograph 2. Eastern boundary of the Site illustrating field edge adjacent to the Emm Brook.

Photograph 3. North part of the Site where grassland management changes.

Photograph 4. Longer grassland area to the north, view east towards ancient woodland and scrub.

Appendix D

Update Ground Level Tree Assessments (GLTA) Results

Methods

Ground Level Tree Assessments

1.1. Ground level tree assessments were undertaken by Tom Richards MCIEEM (Natural England bat level 1 class licence reference: 2017-31786-CLS-CLS) on 17 June 2024. All trees on-site where removal or remedial actions are proposed were inspected from ground level, using binoculars and a high-powered torch as appropriate. The aims of these assessments were to record direct (i.e. actual roosting bats) or indirect evidence of roosting bats (e.g. droppings), as well as the nature and number of features with 'potential' to support roosting bats.

1.2. A description of each tree was made, including the species, maturity and condition. Tree reference numbers are consistent with the Tree Constraints Plan for the Site (1894-KC-XX-YTREE-TCP01RevC).

1.3. The aim of this inspection was to record direct (i.e. actual roosting bats) or indirect evidence of roosting bats (e.g. droppings), as well as the number and characteristics of features with 'potential' to support roosting bats, referred to as Potential Roosting Features (PRF). This includes consideration of trees to support bats whilst in hibernation.

Assessing the Suitability of Trees to Support Roosting Bats

1.4. Each PRF identified was assessed to be one of three categories in respect to their 'suitability' for roosting bats.

- ***PRF-I*** –only suitable for individual bats or very small number of bats either due to size or lack of suitable surrounding habitat.
- ***PRF-M*** –suitable for multiple bats and may therefore be used by a maternity colony.
- ***Negligible*** – no suitability to support roosting bats.

1.5. Following the GLTA, trees are assessed to one of three categories in respect to their 'suitability' for roosting bats, or the confirmation of any bat roosts identified. This helps to determine whether further aerial inspections are required. The following categories are assigned to trees herein;

Either:

- ***NONE*** – either no PRFs present in the tree or there are highly unlikely to be any.
- ***FAR*** – further assessment required to establish if PRFs are present within the tree.
- ***PRF*** – a tree with at least one PRF present.

1.6. The potential of a tree to support roosting bats is often influenced by its maturity, condition, environment and levels of human activity such as light spill. Furthermore, the proximity to foraging habitat, particularly woodland, parkland and wetland, as well as the presence of

navigational routes (e.g. hedgerows, treelines and watercourses) influence both the potential for bats to roost, as well as the species which may roost. Professional judgement is therefore applied, based upon known factors which effect the suitability of features to support roosting bats, insofar as determining the need or scope of further surveys or inspections.

Results

1.7. Ground level tree assessments in 2024 assessed four key trees where definitive remedial actions have been set out within arboricultural reporting (Trees 52, 61, 63 and 79), see Table 1 below. A number of other trees are denoted as unsuitable for retention (1, 19, 20, 26, 88, 89 and 90), however removal or remedial actions are not recommended and given their locations within established woodland and hedgerow habitats, these features will be retained to retain the ecological niches they provide.

Table 1. Ground Level Tree Assessment Results

Tree Reference	Species	Suitability Category	Notes
52	Pedunculate oak	PRF-I	Oak in decline, collapsed into field area, with superficial lifted bark and splits on southern leading limb. Fallen branches causing possible minor cavities. Tree has been subject to dusk and dawn surveys showing no roosting bats present.
61	Ash	NONE	No features identified.
63	Elm and field maple	NONE	Group of small saplings at field gate entrance. No suitability for roosting bats.
79	Ash	PRF-I	Minor hollow at 6m facing east, second hollow on the same aspect at 10m. Tree has been subject to dusk and dawn surveys showing no roosting bats present. Situated in highly cluttered environment with surrounding vegetation providing dense cover to potential features.

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