Tadmarton Road

Bloxham, Banbury

Ecological Impact Assessment

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The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Appendices

Drawings

G9731.02.007B Phase 1 Habitat Survey

Executive Summary

Site Details	The site is located to the south of Tadmarton Road, Bloxham, Banbury at central grid reference SP 42049 35945. The site application boundary measures approximately 4.4ha.
Proposals	An outline planning application was submitted for the construction of up to 60 residential dwellings with provision for public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point.
Designated Wildlife Sites	There is one locally designated wildlife site within 2km of the site; this is The Slade LNR. The site falls within the SSSI Impact Risk Zone (IRZ) for Bestmoor SSSI. Natural England were contacted during the determination period and have confirmed they have no objection to the development in relation to designated sites.
Important Ecological Features	The habitats on site with the greatest relative ecological value are the hedgerows, and the woodland and stream at the southern end of the site. Hedgerows and the stream are HPI. The woodland on-site is an extension of an area of off-site woodland which is a HPI. Although not considered 'important', all habitats on site are still of ecological value.
Recommendations	A Construction Environmental Management Plan (CEMP) should be implemented during construction to prevent pollution of retained habitats within and adjacent to the site. Root Protection Zones should be established for retained trees and hedgerows. Further survey requirements have been recommended for badger and water vole. Pre-commencement surveys have also been recommended for badger, red kite, barn owl, and otter. Precautionary working measures in relation to GCN and common amphibians, badger, bats, breeding birds, reptiles, otter and water vole, brown hare, polecat, and hedgehog have been recommended. An Invasive Species Method Statement in relation to signal crayfish has been recommended.
Conclusions	The site is considered to be of low to moderate ecological value. Impacts upon nearby designated sites and priority habitats will be mitigated for through the implementation of a CEMP. Impacts upon protected or notable species will be determined through the provision of additional species surveys for badger, red kite, barn owl, otter and water vole. With implementation of the recommended additional surveys and subsequent findings, the precautionary working methods, habitat enhancement recommendations, the production of a CEMP, sensitive timing of works and a sensitive lighting strategy, no significant ecological effects are expected on statutory or non-statutory wildlife sites, notable habitats or protected or notable species.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

1.0 Introduction

1.0 The Environment Partnership (TEP) was commissioned by Gladman Developments in January 2023 to undertake an Ecological Impact Assessment (EcIA) in support of an outline planning application for residential development at land south of Tadmarton Road, Bloxham, Banbury (hereafter referred to as 'the site').

1.1 An Ecological Desk Study has been produced under a separate cover to support this EcIA (TEP Ref: 9731.02.001). This is provided in Appendix A.

1.2 A Preliminary Ecological Appraisal (PEA) report was produced by TEP in May 2023 (TEP Ref: 9731.02.002). The PEA has been updated to an EcIA report following completion of all ecology services on site.

1.3 This EcIA report includes details of the methods employed and any limitations of the surveys undertaken. Results are provided with supporting maps, together with an evaluation of the ecological features within the site, an assessment of the potential impacts associated with the development proposals and requirements for mitigation. The assessment has been undertaken with due consideration for current best practice guidelines (CIEEM 2017a[1], 2018[2]).

Site Location

1.4 The site is located to the south of Tadmarton Road at the western edge of the village of Bloxham, Oxfordshire. Bloxham is located approximately 3 miles south-west of Banbury. The site boundary covers approximately 4.4ha and is centred on national grid reference SP 42049 35945. The location of the site is illustrated in Figure 1.

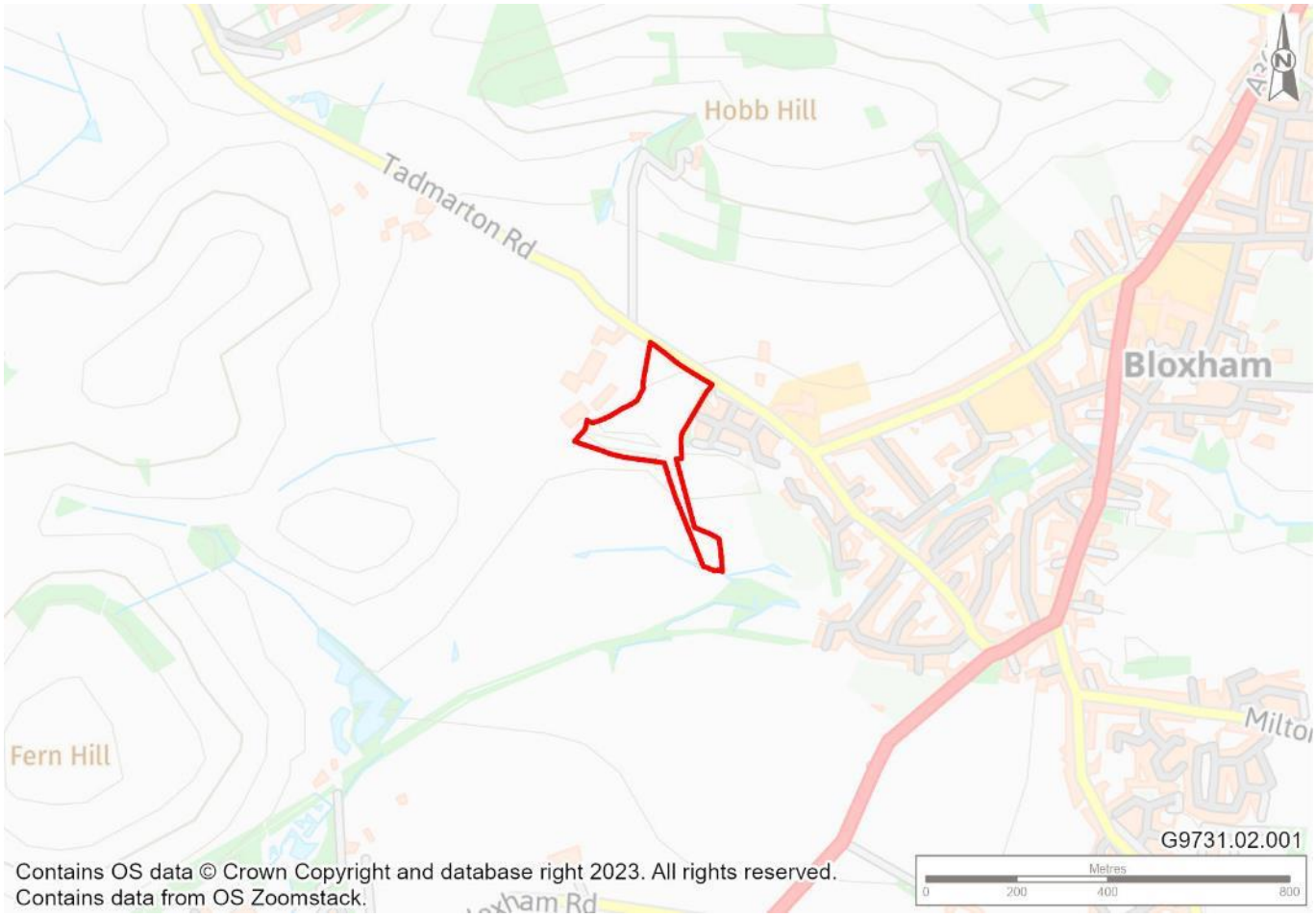
1.5 The site is dominated by two arable fields comprising temporary grassland ley. Hedgerows are present along Tadmarton Road on the northern boundary and along a field boundary. A short section of stream within semi-natural broadleaved woodland runs adjacent to the southern site boundary. Former quarry workings bisect the site encompassing a small section of running water, a large pond, dense scrub, and scattered trees. Wet ditches, tall ruderal vegetation, and scattered scrub habitats are also present within the site.

[1] CIEEM (2017a) Guidelines for Ecological Report Writing, 2nd Edition. Chartered Institute of Ecology & Environmental Management

[2] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester

1.6 Tadmarton Road forms the north-eastern site boundary, a working farm is located directly to the north-west of the site, and the eastern boundary abuts a new housing development and associated public open space beyond which lies the village of Bloxham. Rural land under agricultural use extends in all other directions.

Figure 1: Site Location



Proposals

1.7 An outline planning application was submitted for the construction of up to 60 residential dwellings with provision for public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point (Planning Ref: 23/01265/OUT).

Planning Context

1.8 The site formed part of a planning application for 136 dwellings (Planning Ref: 17/02502/OUT) that covered a much wider site. The application was validated in December 2017, but was subsequently withdrawn in July 2018 prior to determination.

1.9 Phase 2 ecology surveys and a Preliminary Ecological Appraisal (PEA)[3] were completed by RSK in November 2017 in support of the planning application for the wider site (Planning Ref: 17/02502/OUT).

Scope

1.10 This report provides baseline information on the habitats and protected species present on site, gathered during a desktop study and Phase 1 habitat survey undertaken in January and April 2023, respectively, and additional protected species surveys undertaken throughout 2023. In addition, it includes an assessment which considers potential ecological effects upon any notable habitats or species which may be present or adjacent to the site.

1.11 This report presents the findings of the EcIA, the objectives of which are to:

- Detail the methods and results of the aforementioned surveys;
- Identify features of ecological value within the application site such as legally protected species or habitats of importance to biodiversity;
- Identify any non-native invasive species on site and provide advice regarding removal or management;
- Advise on avoidance or mitigation requirements that may be needed prior to development commencing; and
- Provide outline recommendations for biodiversity enhancement within site proposals in accordance with the National Planning Policy Framework (NPPF).

[3] RSK (November 2017) Tadmarton Road, Bloxham – Preliminary Ecological Appraisal, 857109

2.0 Methods

Desk Study

2.0 In line with current best practice (CIEEM, 2016[4], 2017b[5]), information regarding designated sites, notable habitats and existing protected and notable species records of the past decade, within a 2km minimum radius of the site was collated and reviewed to inform this ecological assessment. Further detail regarding ecological zones of influence (EZOI) applied for different ecological features and the sources of information included are presented in the Ecological Desk Study (TEP Ref: 9731.02.001) in Appendix A.

2.1 In brief, key data sources included Natural England (open source data), Environment Agency (open source data); Cherwell District Council, Cherwell District Local Plan Map, and a review of relevant (within the past ten years) species records as provided by Thames Valley Environmental Records Centre (TVERC).

2.2 Statutory designated wildlife sites were searched for as follows (EZOI applied for each is indicated in brackets):

- Ramsar sites (10km);
- National Sites Network (10km), includes Special Areas of Conservation (SAC) and Special Protection Areas (SPA);
- Site of Special Scientific Interest (SSSI) (5km);
- National Nature Reserve (NNR) (5km); and
- Marine Nature Reserve (MNR) (5km);
- Local Nature Reserves (LNR) (2km).

2.3 Non-statutory designated wildlife sites were searched for within 2km of the site. These may include:

- Local Wildlife Site (LWS);
- Proposed Local Wildlife Site (pLWS);
- District Wildlife Site (DWS);
- Conservation Target Area / Biodiversity Opportunity Area;
- Sites of Local Importance to Nature Conservation (SLINC); and

[4] CIEEM (2016) Guidelines for Accessing and Using Biodiversity Data. Chartered Institute of Ecology & Environmental Management

[5] CIEEM (2017b) Guidelines for Preliminary Ecological Appraisal, 2nd Edition. Chartered Institute of Ecology & Environmental Management

- Non-Governmental Organisation Properties / Nature Reserves.

2.4 Notable habitats were searched for within and adjacent to the site. Notable habitats may include those listed under any of the following:

- Ancient woodland;
- Main rivers;
- Habitats of principal importance (HPI) as listed by the requirements of Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006[6]; and
- Local Biodiversity Action Plan Habitats (LBAP).

2.5 Pre-existing records for notable species were reviewed from the combined data sources, where found from within approximately 2km of the site. Notable species include those listed under any of the following:

- Protected animal species under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (EPS);
- Protected bird species under Schedule 1 of the Wildlife and Countryside Act 1981, as amended (WCA1);
- Protected animal species under Schedule 5 of the Wildlife and Countryside Act 1981, as amended (WCA5);
- Protected plant species under Schedule 8 of the Wildlife and Countryside Act 1981, as amended (WCA8);
- Invasive non-native plant species under Schedule 9 of the Wildlife and Countryside Act 1981, as amended (WCA9);
- Invasive non-native species under the Invasive Alien Species (Enforcement and Permitting) Order 2019 (IAS);
- Species of principal importance (SPI) as listed by the requirements of S41 of NERC;
- Protection of Badgers Act 1992 (PBA);
- Red and Amber listed Birds of Conservation Concern (BRd/BAm); and
- Oxfordshire Local Biodiversity Action Plan species (LBAP).

[6] Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England.

Limitations

2.6 Species records can provide a useful indication of the species present within the search area, although the absence of a given species from the dataset cannot be taken to represent actual absence.

Habitats and Flora

Habitat Survey

2.7 An extended Phase 1 habitat survey was completed by a TEP Ecologist, certified to Level 4 under the Field Identification Skills Certification (FISC)[7] on 12th April 2023, which updated an extended Phase 1 habitat survey completed by TEP on 6th January 2023. The survey was carried out in accordance with the Phase 1 habitat assessment methods (JNCC, 2010)[8] and Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017b[5]). The method records the habitat types present, within the survey area, based on the JNCC/UKHab descriptions. Plant species were identified in accordance with the New Flora of the British Isles (Stace, 2019[9]) and recorded as target notes using the DAFOR[10] scale, where relevant.

2.8 Habitats are displayed within the site boundary on Drawing G9731.02.007B.

Limitations

2.9 Any ecological survey represents a snapshot of ecological conditions at the time of survey; ecological conditions may change over time. Efforts to identify dominant plant species for the purposes of characterising broad habitat types do not constitute a detailed botanical survey.

Fauna

2.10 Ordnance Survey maps and aerials were reviewed to identify potentially suitable habitats offsite within influence (e.g. dispersal distances for mobile species) of the site. The Ecological Desk Study identified any pre-existing records for protected and notable species within at least 2km of the site.

[7] Field Identification Skills Certificates are issued by the Botanical Society of the British Isles. The test assesses botanical proficiency on a scale from 1 (beginner) to 7 (national expert).

[8] JNCC (2010) Handbook for Phase 1 Habitat Survey – a technique for environmental audit

[9] Clive Stace (2019) New Flora of the British Isles

[10] DAFOR = Dominant, Abundant, Frequent, Occasional & Rare

2.11 The habitat survey included an extended assessment of the habitats present for their potential to support notable or protected wildlife species. Any signs indicating the presence of these species were recorded.

2.12 In combination, this data informed the scope for further surveys required to inform this EcIA. The scope for the additional ecological surveys and review of existing data to inform this EcIA is summarised in Table 1 below.

Table 1: Summary of baseline faunal surveys

Species / Group	Scope
Amphibians (Appendix C, TEP Ref: 9731.02.005 Protected Species Report – Amphibians)	Review of pre-existing records provided by TVERC. Habitat Suitability Index (HSI) Assessments undertaken between January 2023 and May 2023. Environmental DNA (eDNA) surveys undertaken between April 2023 and May 2023).
Badger (TEP Ref: 9731.02.011 Protected Species Report - Badger)	Review of pre-existing records provided by TVERC. Badger survey undertaken in April 2023.
Bats (Appendix D, TEP Ref: 9731.02.008 Protected Species Report – Bat Activity Surveys)	Review of pre-existing records provided by TVERC. Ground-based tree assessments (GBTA) undertaken in January 2023 and April 2023. Commuting and foraging habitat assessment undertaken in April 2023. Bat activity transect and static detector surveys undertaken in April 2023, July 2023 and October 2023.
Breeding birds (Appendix E, TEP Ref: 9731.002.007 Protected Species Report – Breeding Bird Report)	Review of pre-existing records provided by TVERC. Breeding bird surveys undertaken in April 2023, May 2023 and June 2023.
Hazel dormouse	Review of pre-existing records provided by TVERC.

Invertebrates	Review of pre-existing records provided by TVERC.
Reptiles	Review of pre-existing records provided by TVERC.
Otter and Water vole (Appendix F, TEP Ref: 9731.002.006 Protected Species Report – Otter and Water Vole)	Review of pre-existing records provided by TVERC. Otter and water vole surveys undertaken in April 2023 and July 2023.
White-clawed crayfish (Appendix G, TEP Ref: 9731.002.009 Protected Species Report – White-clawed Crayfish)	Review of pre-existing records provided by TVERC. White-clawed crayfish field survey undertaken in July 2023. Environmental DNA (eDNA) survey undertaken in October 2023.

2.13 Full methodology of the faunal surveys undertaken is provided within the corresponding Protected Species Reports. GBTA methodology is provided below.

Ground-based Tree Assessment (GBTA) for Roosting Bats

2.14 A ground-based assessment of trees (GBTA) within the site was completed by a TEP Senior Ecologist and bat licensed ecologist on 6th January 2023.

2.15 A GBTA of three trees located outside of the site that will require removal to facilitate the proposed pedestrian access to the site was undertaken by a bat licensed Ecologist on 28th April 2023.

2.16 The GBTA consisted of the surveyor using close focussing binoculars to search from the ground for any features which may be used by bats. Most tree roosts are created by one or a combination of the following:

- Old woodpecker holes;
- Splits in trunk, bough, or large branches;
- Rot holes in trunk, bough or large branches;
- Holes formed by two boughs or branches growing in contact;
- Loose or lifting bark; and

- Underneath a covering of dense latticed creeper, usually ivy *Hedera helix*.

2.17 Physical evidence of use by bats may include the following:

- Live or dead bats;
- Bat droppings;
- Feeding remains (e.g., stripped moth or butterfly wings);
- Urine staining; and
- Fur oil staining.

2.18 Following this assessment, the trees were categorised in accordance with the criteria for roost assessments identified in the Bat Conservation Trust: Bat Surveys. Good Practice Guidelines (2016), and as shown in Table 2.

Table 2: Bat Roosting Habitat Categories (BCT, 2016)

Roost Category	Description of Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
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 – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A tree with one or more potential roost sites that are obviously suitable for use by a large number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.

Limitations

2.19 Ground level assessments of trees may identify apparent potential access/roosting features (PRF's) at height, which on closer inspection may be revealed to be only superficial in extent or otherwise unsuitable for bats; conversely, cryptic PRFs at height may only be visible during an up-close inspection and may therefore be missed by a ground-based assessment. Categorisation of a given tree as having Low/Moderate/High

suitability to support a bat roost may be revised up or down following an at-height/climbed inspection.

Ecological Assessment Process

2.20 This EcIA follows the published guidelines (CIEEM, 2018) and accepted best practice approach (BS42020:2013[11]) of the mitigation hierarchy whereby impacts are first avoided or, where this is not possible, reduced or mitigated or, as a last resort, compensated.

2.21 In summary, the following procedure was undertaken during this EcIA:

- Describe the baseline and identify important ecological features;
- Describe important ecological features and identify those which may potentially be affected by the Scheme;
- Identify potential impacts upon important ecological features and characterise the effect of such impacts (in respect of biophysical changes and taking account of relevant aspects of ecosystem structure or function);
- Incorporate measures to avoid or reduce these effects;
- Determine whether residual ecological effects are considered significant after avoidance or mitigation;
- Identify appropriate compensation measures to offset significant residual effects; and
- Identify opportunities for ecological enhancement.

2.22 Important ecological features are identified and valued, ecological impacts are characterised and assessed, and recommendations for appropriate mitigation, compensation and enhancement are made, in accordance with CIEEM guidance.

2.23 BS42020:2013 defines a significant effect as one “which is important, notable, or of consequence, having regard to its context”. CIEEM describes significance as “a concept related to the weight that should be attached to effects when decisions are made”. CIEEM defines an ecological effect as significant if it is “sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project”.

[11] British Standards Institution (2013) BS 42020:2013: Biodiversity — Code of practice for planning and development. BSI Standards Limited, London

2.24 BS42020:2013 sets out a practical approach to determining the significance of an ecological effect, applicable at all levels of decision making in legal and policy terms, as follows:

- will the effect on biodiversity influence the balance of planning considerations and therefore the decision as to whether planning permission is likely to be refused or granted; and
- if planning permission is granted, is the effect important enough to warrant the use of planning conditions and/or obligations to guarantee proposed measures or to impose restrictions, or to seek further requirements (e.g. for mitigation, compensation, enhancement, monitoring or site management).

2.25 Significance is therefore assessed on a case-specific basis according to the importance of the ecological feature (site, habitat or species) within the conservation hierarchy, and the effect upon it.

Assumptions

2.26 Information provided by third parties, including publicly available information, is assumed to be correct at the time of publication.

3.0 Results

Planning Context

3.0 The NPPF at Chapter 11: Conserving and Enhancing the Natural Environment requires that development delivers net gains in biodiversity in addition to minimising the impacts on biodiversity. The chapter highlights the need to protect and enhance valued landscapes, geological conservation interests and soils, as well as recognising the wider benefits of ecosystems.

3.1 The Adopted Cherwell Local Plan 2011-2031 (Part 1) contains strategic planning policies for development and the use of land. It forms part of the statutory Development Plan for Cherwell to which regard must be given in the determination of planning applications.

3.2 The following policies relate to biodiversity and nature conservation:

- Policy ESD 5 – Renewable Energy;
- Policy ESD 6 – Sustainable Flood Risk Management;
- Policy ESD 9 – Protection of the Oxford Meadows SAC;
- Policy ESD 10 – Protection and Enhancement of Biodiversity and the Natural Environment;
- Policy ESD 11 – Conservation Target Areas;
- Policy ESD 12 – Cotswolds Area of Outstanding Natural Beauty;
- Policy ESD 14 – Oxford Green Belt;
- Policy ESD 16 – The Oxford Canal; and
- Policy ESD 17 – Green Infrastructure.

3.3 The site is not allocated for biodiversity purposes within the Local Plan.

Designated Sites

Statutory Wildlife Sites

3.4 Full details regarding designated sites are provided within the Ecological Desk Study in Appendix A.

3.5 There are no internationally designated wildlife sites or nationally designated wildlife sites within 10km and 5km of the site, respectively.

3.6 There is one locally designated wildlife site within 2km of the site. This is The Slade LNR located approximately 30m south of the site. The LNR comprises a wet meadow, woodland and disused railway embankment.

3.7 SSSI Impact Risk Zones (IRZ) highlight the potential for effects on a SSSI if certain types of development are planned within a specified radius of it. The site falls within one Impact Risk Zones (IRZ) for Bestmoor SSSI. The zone in which the site is situated identifies any discharge of water or liquid waste of more than 20m^3/day to ground (i.e. to seep away) or to surface water, such as a beck or stream, as likely to impact upon the SSSI.

Non-Statutory Wildlife Sites

3.8 There are five non-statutory wildlife sites identified within 2km of the site. These are:

- The Slade (DWS). The DWS is located approximately 30m to the south of the site;
- Swere Valley & Upper Sour (CTA). The CTA is located approximately 600m to the south-west of the site;
- Northern Valleys (CTA). The CTA is located approximately 800m to the east of the site;
- Barford Marsh (LWS). The LWS is located approximately 1.2km to the south of the site; and
- Tadmarton Orchid Field (pLWS). The pLWS is located approximately 2km to the north-west of the site.

Habitats and Flora

Pre-existing Data

3.9 There is an area of deciduous woodland (HPI) located approximately 30m to the south of the site, forming part of The Slade LNR and DWS. There is also a statutory main river located approximately 200m south-east of the site.

3.10 Habitats present within the site boundary comprise predominantly arable land, with areas of dense scrub, semi-natural broadleaved woodland, tall ruderal vegetation, standing and running water. Hedgerows are also present on site which are HPI.

3.11 No records of protected or non-native invasive plant species[12,13] were returned for the site itself. The following protected, notable and/or invasive plant records were returned within 2km of the site as follows:

- Himalayan balsam (WCA9, IAS); and
- Native bluebell (WCA8).

3.12 Habitats of ecological value present in and around the site are described below and illustrated in Drawing G9731.02.007B. Target notes are provided in Appendix B. Habitats identified on site in order of abundance include:

- Arable;
- Bare ground;
- Dense and scattered scrub;
- Hedgerow;
- Standing water;
- Scattered trees;
- Tall ruderal vegetation;
- Wet ditches;
- Semi-natural broadleaved woodland; and,
- Running water.

Arable

3.13 The site is dominated by arable fields.

3.14 Field F1 (Figure 2) and Field F2 (Figure 3) were found to be dominated by sown perennial rye-grass *Lolium perenne* at the time of survey. Additional species found to be present at the time of survey included abundant common chickweed *Stellaria media*, and red dead-nettle *Lamium purpureum*, frequent shepherd's-purse *Capsella bursa-pastoris*, and occasional white dead-nettle *Lamium album*, ground-ivy *Glechoma hederacea*, white clover *Trifolium repens*, creeping buttercup *Ranunculus repens*, mustard/rocket species *Sisymbrium sp.*, dandelion *Taraxacum officinale agg.*, and creeping thistle *Cirsium arvense*. Scattered tall ruderal species were present along the track fence lines and field margins. These included frequent broad-leaved dock *Rumex obtusifolia*, common nettle

[12]As listed on Schedule 9 of the Wildlife and Countryside Act 1981 as amended

[13] Statutory Instruments 2019 No. 527 The Alien Species (Enforcement and Permitting) Order 2019

Urtica dioica, cow parsley *Anthriscus sylvestris*, cleavers *Galium aparine*, and locally abundant hemlock *Conium maculatum*.

Figure 2: Field F1

Figure 3: Field F2

3.15 Field F3 (Figure 4) and Field F4 (Figure 5) contained strips of planted maize crops which dominated the areas within the redline boundary. Beyond these strips both fields were dominated by sown perennial rye-grass.

Figure 4: Field F3

Figure 5: Field F4

Bare Ground

3.16 A large area of largely unvegetated bare earth was present to the north of Field F3, with perennial rye-grass beginning to colonise (Figure 6). Bare ground within the site also formed tracks, along the northern boundary of Field F3 and linking Fields F2 and F3.

Figure 6: Bare ground (to the north of Field F3)

3.17 The initial Phase 1 habitat survey undertaken by TEP in January 2023 identified a pond located at TN6. However, the updated survey undertaken in April 2023 found that the pond had been filled in and was no longer present. Some scrub and tall ruderal species remained at the edges, but the pond was entirely covered with bare earth (Figure 7).

Figure 7: Bare ground (in location of former pond)

Dense/Continuous and Scattered Scrub

3.18 A large strip of dense and scattered scrub interspersed with scattered young and semi-mature trees (TN5) was present in the centre of the site within the former quarry workings (Figure 8). The scrub was semi-mature to a maximum height of approximately 5m. Scrub species present included frequent common ash *Fraxinus excelsior*, common hawthorn *Crataegus monogyna*, and Norway maple *Acer platanoides*, and occasional rose *Rosa sp.,* bramble *Rubus fruticosus agg*., and elder *Sambuca nigra*. The ground flora in this area was dominated by cow parsley, with locally abundant nettles, occasional cleavers, red dead-nettle, garlic mustard *Allaria petiolata*, meadow grasses *Poa sp*., and ivy.

Figure 8: Dense and Scattered Scrub (TN5)

3.19 Scattered scrub comprising common ash, hawthorn, and dog rose *Rosa canina* was present at TN6. Scattered bramble scrub was also present near the site entrance on a bunded area at TN1.

Standing Water

3.20 One pond was present within the site. P1 is located within the former quarry workings that bisect the site. Further great crested newt (GCN) *Triturus cristatus* surveys have been undertaken. Further description and photographs of the pond are provided within document 9731.02.005 Protected Species Report – Amphibians.

Hedgerows

3.21 There were two hedgerows present within the site, forming the northern boundary of Field F1 (H1), and the western boundary of Field F4 (H2). Both hedgerows were formed of native species and are priority habitat (HPI).

3.22 Hedgerow H1 was approximately 3m in height and 2-3m in width and was associated with a drainage ditch running along Tadmarton Road on the northern site boundary (Figure 9). The hedgerow was species-poor, intact, and managed. Three standard Norway maple trees were present in the hedgerow. The hedgerow comprised frequent common ash and elm species *Ulmus sp.*, with occasional common hawthorn, apple *Malus sp.,* hazel *Corylus avellana*, and dog rose. The ground flora comprised abundant ivy and common nettle, frequent cleavers, and lesser celandine *Ficaria verna*, and occasional bramble.

Figure 9: Hedgerow H1

3.23 Hedgerow H2 was approximately 2m in height and 1-1.5m in width (Figure 10). The hedgerow was species-rich, intact, and managed. The hedgerow was dominated by common hawthorn, with frequent hazel and common ivy, occasional elder, blackthorn *Prunus spinosa*, spindle *Euonymous europaeus*, apple species, and common ash, and dog rose was recorded rarely. The ground flora was dominated by common nettle, with frequent cleavers and lords and ladies *Arum maculatum*, with occasional ground-ivy, bramble, and cow parsley.

Figure 10: Hedgerow H2

Scattered Trees

3.24 Scattered semi-mature trees (up to 7m in height) are present amongst the scrub at TN5 with species including Norway maple, alder species *Alnus sp.,* common hawthorn, ash, willow *Salix sp.,* pine *Pinus sp.,* and pedunculate oak *Quercus robur.*

3.25 A broken line of semi-mature common hawthorn trees / scrub is present between Field F3 and Field F4, up to 6m in height.

3.26 Other scattered trees on site include three semi-mature Norway maple trees within H1 ranging in height from 7m to 10m, and a semi-mature ash in the corner of Field F2 (TN 2) approximately 7m in height.

3.27 Further descriptions and photographs of trees assessed as having suitability to support roosting bats are provided in the bat-specific section of this chapter.

Tall Ruderal

3.28 Areas of tall ruderal vegetation were found to be present within the site including on an earth bank at the eastern edge of Field F1 (TN 1), in the north-eastern and south-eastern corners of F2, and on the western edge of Field F2 (TN 3).

3.29 The areas of tall ruderal vegetation typically comprised dominant or abundant cow parsley and nettles, abundant creeping thistle and broad-leaved dock, frequent cleavers, occasional white dead-nettle, red dead-nettle, and rarely recorded lesser celandine.

Semi-natural Broad-leaved Woodland

3.30 A limited area of linear semi-natural broadleaved woodland (TN7) is present at the southern boundary of the site associated with the adjacent stream (Figure 11). This section of woodland is a continuation of an area of off-site broadleaved woodland (HPI), although is less mature.

3.31 Tree species recorded included occasional Norway maple, ash, alder species, willow species, and pedunculate oak. The understorey comprised occasional common hawthorn, apple, and elder. The ground flora comprised abundant nettles, frequent lords and ladies, ivy, and lesser celandine, and occasional dog rose, bramble, cow parsley, creeping buttercup, great willowherb *Epilobium hirsutum*, and herb-Robert *Geranium robertianum.*

Figure 11: Semi-natural Broad-leaved Woodland

Wet Ditches

3.32 Two wet drainage ditches were identified within or directly adjacent to the site during the Phase 1 habitat survey.

3.33 Ditch D1 is associated with hedgerow H1, adjacent to Tadmarton Road, and is located outside but adjacent to the site boundary (Figure 12). The ditch has shallow, earth banks, approximately 1.5m in height. The channel is approximately 1m in width. The ditch supports only limited in-channel vegetation, including ground-ivy *Glechoma hederacea* and great willowherb *Epilobium hirsutum*. Bankside vegetation includes grasses, cleavers *Galium aparine* and nettle *Urtica dioica* on the northern side, with hedgerow species on the southern side. The maximum depth of the water was 10 cm during an otter and water vole survey undertaken on 28th April 2023, although some sections contained more limited water and some sections were dry. The ditch was dry across its length on 10th July 2023.

Figure 12: Ditch D1

3.34 Ditch D2 is fed by an outflow pipe located within the former quarry workings surrounded by dense scrub and trees (Figure 13). The ditch has a soft earth base, and the channel was approximately 2m in width. There are no banks. The water depth was a maximum of 5 cm during an otter and water vole survey undertaken on 28th April 2023. The ditch supports no in-channel vegetation, and bankside vegetation is limited to only nettles. The ditch is heavily shaded by willow *Salix* species, hawthorn *Crataegus monogyna* and

bramble *Rubus fruticosus agg*. The water appeared to be of poor quality and high in nutrients.

Figure 13: Ditch D2

Running Water

3.35 A short section of stream (HPI) is present abutting the southern boundary and flowing west to east (TN 7) (Figure 14). The stream is lined with semi-mature to mature trees and woodland. The channel is approximately 2 – 3 m in width. The channel supports steep, earth banks, up to 1m in height. The ditch does not support any in-channel vegetation. Bankside vegetation includes ground-ivy, meadow sweet *Filipendula ulmaria*, cleavers, nettles, grasses, lesser celandine *Ficaria verna* and cow parsley *Anthriscus sylvestris*. The ditch is heavily shaded by hawthorn. The water was typically 50 cm deep on 28th April 2023, going to a maximum depth of 1 m in places. The water was generally 50 cm deep on 10th July 2023. The channel was approximately 1.5-2m wide and 0.5m deep and had an earth base and banks.

Figure 14: Stream at TN7

Notable or Invasive Flora

3.36 No notable or non-native invasive plant species were recorded on site and are therefore not considered further in this report.

Habitat Connectivity

3.37 The hedgerows, woodland, and stream within the site provide connectivity to habitats in the wider area including those associated with The Slade LNR and DWS as well as waterbodies in the wider landscape.

Fauna

3.38 The potential for the site to support legally protected and notable species has been assessed using the results of the desk study and observations made during the site survey of habitats within and immediately surrounding the site.

Amphibians

3.39 15 records of GCN (EPS, SPI, WCA5) were returned within 2km of the site, the nearest of which was recorded approximately 200m south-east of the site.

3.40 A review of Natural England's open datasets for GCN class licence returns and pond survey data between 2017 and 2019 confirmed the presence of GCN within 2km of the site.

3.41 A review of Natural England's MAGIC Map application and aerial imagery revealed the presence of two ponds on site and 11 ponds within a 500m radius of the site, which are not separated from the site by any barriers to amphibian dispersal (such as kerbed roads). One of the on-site ponds (Pond P2) had been filled in.

3.42 The site provides suitable terrestrial habitat in the form of hedgerows, broadleaved woodland, scattered and dense scrub, tall ruderal vegetation and arable field margins. These habitats also provide connectivity to other ponds in the wider area. Root balls associated with hedgerows, trees and mature scrub provide suitable hibernation habitat for amphibians.

3.43 In addition, a rock pile at TN4 (Figure 15), exposed rock strata at TN6 (Figure 16) and the earth bank at TN1 provide further suitable habitat for hibernating and sheltering amphibians.

Figure 15: Rock Pile (TN4)

Figure 16: Rock Strata (TN6)

Great Crested Newt Survey Results

3.44 HSI and eDNA surveys were undertaken at the 13 ponds identified on site and within 500m of the site.

3.45 The eDNA surveys confirmed that no GCN are present within ponds on site or within 250m of the site boundary. Overall, three ponds (P5, P7 and P10) tested positive for GCN, located between 280m and 334m from the site.

3.46 The on-site pond (P1) was assessed as providing "good" habitat for breeding GCN during the HSI assessment; however, GCN were confirmed absent from P1 during the eDNA survey.

3.47 Full results of the GCN surveys are provided in document 9731.02.005 Protected Species Report – Amphibians.

Badger

3.48 Six records of badger *Meles meles* were returned within 2km of the site. Due to confidentiality issues associated with badger records, no further detail was provided by TVERC.

3.49 The dense scrub, earth banks, arable field margins, hedgerows and woodland provide sett creation opportunities for badger within the site. Woodland and hedgerows are also located off site but within 30m of the site boundary, which additionally provide sett creation opportunities for badger. The arable habitat which dominates the site provides sub-optimal habitat for sett creation.

3.50 The habitats mentioned above additionally provide suitable habitat for foraging and ranging badger within the site and within influencing distance of the site. The bare ground and hardstanding habitats within the site provide suboptimal habitat for badger.

Badger Survey Results

3.51 Results of the badger survey are confidential. Please refer to the confidential report 9731.02.011 Protected Species Report – Badger.

Bats

3.52 Fifty-two records of the following bat species were returned within 2km of the site:

- Bat species (EPS, WCA5, SPI);
- Brown long-eared bat (EPS, WCA5, SPI);
- Common pipistrelle (EPS, WCA5);
- Myotis bat species (EPS, WCA5, SPI);
- Noctule bat (EPS, WCA5, SPI);
- Nyctalus bat species (EPS, WCA5, SPI);
- Pipistrelle bat species (EPS, WCA5); and
- Soprano pipistrelle (EPS, WCA5, SPI).

3.53 A review of Natural England's open datasets for European Protected Species Mitigation (EPSM) licences returned four licences within 2km of the site. All licences expired prior to or during 2019 and related to the damage and destruction of a resting place for brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and whiskered bat *Myotis mystacinus.*

Ground-Based Tree Assessment (GBTA) Results

3.54 The results of the GBTA are provided below. Only trees assessed as having suitability for roosting bats are detailed.

3.55 Tree references used are consistent with those within the TEP Arboricultural Impact Assessment (TEP Ref: 9731.01.001), although TN references for trees within the redline boundary are also provided for clarity.

Table 3: Ground-based Tree Assessment Results

Tree/Tree Group ID	Description	Roost Category	Photograph
T3 (TN2)	T3 is a semi-mature common ash tree approximately 7m in height. The tree supported several upward facing minor knotholes at varying heights and a minor wound on the trunk on the eastern aspect that was cluttered by scrub growing round the base of the tree. The PRFs identified were limited in size and suitability and would likely only support individual crevice dwelling bats on an opportunistic basis during the bat active period. T3 was therefore assessed as having low suitability to support roosting bats.	Low	
G4 (TN5)	G4 comprised a group of semi-mature trees, within the former quarry workings, with species including common ash, pedunculate oak, common hawthorn, and Norway maple. Most of the trees located within G4 did not support suitable features for roosting bats. Several trees however supported dense ivy cladding. On some trees, the ivy stems were thick enough to provide crevices that would be suitable for use by roosting bats. On other trees, the ivy cladding may have obscured features that may have been suitable for roosting bats. The PRFs identified in association with G4 were limited in extent and suitability. G4 was therefore assessed as having low suitability to support roosting bats.	Low	

G1 (TN7)	G1 comprised the semi-mature woodland habitat associated with the stream in the south of the site. Species included common ash, pedunculate oak, common hawthorn, Norway maple, and alder species. Trees ranged in height from 5 to 14m. Many of the larger trees supported PRFs including splits in branches, knot holes, and ivy cladding.	Moderate to High	
T7	T7 is a semi-mature Norway maple located along Tadmarton Road, approximately 8m in height. The tree supported dense ivy cladding which may have obscured PRFs and created some small crevices associated with thicker stems. Additional PRFs included a split branch on the northern elevation at approximately 3m, and some lifted bark on the southwestern elevation at approximately 2.5m. The PRFs identified at T7 were limited in extent and suitability. T7 was therefore assessed as having low suitability to support roosting bats. The location of tree T7 is shown on Drawing D9731.01.001 within the Arboricultural Impact Assessment (TEP Ref: 9731.01.001).	Low	

3.56 Overall, the woodland in the south of the site (G1) was assessed as having moderate to high suitability to support roosting bats and T3, T7 and G4 were assessed as having low bat roosting suitability.

Commuting and Foraging Habitat Assessment

3.57 The hedgerows and associated wet ditches, dense scrub, scattered trees, pond, woodland and stream all provide suitable commuting and foraging habitat for bats within the site boundary. The hedgerows, woodland and stream are also well connected to further suitable habitat off site. The arable fields have low/negligible potential for commuting and foraging bats.

3.58 There were no sources of artificial lighting within the site at the time of survey, which would be likely to suppress bat activity.

3.59 Overall, the site was assessed as having low suitability to support commuting and foraging bats.

Bat Activity and Static Detector Survey Results

3.60 At least six bat species were confirmed as present within the site during the surveys.

3.61 The site was assessed as supporting a bat assemblage of no more than Local importance. Results indicate that the stream and woodland corridor in the south of the site supports significantly higher numbers of bats and a greater species diversity.

3.62 Full results of the bat activity surveys are provided in document 9731.02.008 Protected Species Report – Bat Activity Report.

Birds

3.63 Numerous records for protected and notable bird species were returned within 2km of the site, full details of which are provided in Appendix A.

3.64 An example of some species that are likely to utilise habitats on site include barn owl *Tyto alba* (WCA1), red kite *Milvus milvus* (WCA1), kingfisher *Alcedo atthis* (WCA1), grey partridge *Perdix perdix* (SPI, BRd), yellowhammer *Emberiza citrinella* (SPI, BRd), house sparrow *Passer domesticus* (SPI, BRd) and marsh tit *Poecile palustris* (SPI, BRd).

3.65 The scrub, hedgerows, scattered trees and woodland have the potential to support a range of breeding birds including farmland specialists and passerines. The woodland to the south of the site may support raptors and the stream may support commuting and

foraging kingfisher. These habitats also provide suitable foraging and commuting habitat for a wide range of bird species.

3.66 The arable fields are considered to have only low potential to support ground nesting birds, including skylark *Alauda arvensis*, lapwing *Vanellus vanellus* and meadow pipit *Anthus pratensis*. This is due the small size of the fields on site (< 5 ha), presence of boundary features including tall hedgerows and woodland, and due to that the majority of the fields within the site are intensively managed and therefore not optimal for ground nesting birds.

Breeding Bird Survey Results

3.67 37 bird species were recorded within the site boundary and 100m survey buffer during the 2023 breeding bird survey; 23 species were recorded within the site itself.

3.68 No species were confirmed to be breeding within the site during the 2023 surveys. Four species were confirmed to be breeding within the 100m buffer. Of these four species, house sparrow (1 colony) was the only notable species recorded. Ten species were probable breeding species within the site and 100m buffer with four species being probable breeding species within the site itself. There were also 19 species recorded as possible breeders within the site and 100m buffer. Results indicate that the site and buffer are of local significance for breeding birds.

3.69 No ground nesting birds, including skylark, lapwing or meadow pipit were recorded during the 2023 surveys.

3.70 Full results of the breeding bird surveys are provided in document 9731.02.007 Protected Species Report – Breeding Bird Report.

Wintering Birds

3.71 The desk study returned minimal records for waterfowl or waders although lapwing *Vanellus vanellus* (SPI, BRd) was recorded within 2km of the site.

3.72 The site supports habitats suitable to support wintering skylark *Alauda arvensis* (SPI, BRd), yellowhammer, finch *Fringillidae* and bunting *Emberizidae* flocks, and other notable passerine species during the winter.

3.73 Given that the site is not located within proximity to any internationally or nationally designated sites for wintering birds, the nearest SPA is more than 30km from the site, and that the desk study returned minimal records for waders and waterfowl, it is considered highly unlikely that wintering birds would represent a significant constraint to development. Wintering birds are therefore not considered further within this report.

Hazel Dormouse

3.74 No records of hazel dormouse *Muscardinus avellanarius* (EPS, WCA5, SPI) were returned within 2km of the site.

3.75 A review of Natural England's open datasets for European Protected Species Mitigation (EPSM) licences revealed no dormouse mitigation licences within 2km of the site. Additionally, a study completed of woodland across Oxfordshire in 2017 by the Oxfordshire Mammal Group identified a lack of records for dormouse within 5km of the site[14].

3.76 The hedgerows, dense scrub, and woodland within the site provide suitable habitat for hazel dormouse. However, given that known dormouse populations in Oxfordshire are isolated/sporadic, the lack of records for hazel dormouse, and the closest mitigation licence for dormouse is located approximately 30km south of the site, it is considered highly unlikely that dormouse would be present within the site. Therefore, dormouse is not considered further within this report.

Invertebrates

3.77 No records of notable or protected invertebrates were returned within 2km of the site.

3.78 The hedgerows, scrub, woodland, and scattered trees provide potential opportunities for a range of invertebrate species. The site is however dominated by arable fields which provide suboptimal habitat for invertebrates. Given this, the limited extent of the site, and the lack of records, it is considered unlikely that the site would support an important assemblage of invertebrates. Invertebrates are not considered further within this report.

Reptiles

3.79 Four records of grass snake *Natrix helvetica* (SPI, WCA5) and two records of slow-worm *Anguis fragilis* (SPI, WCA5) were returned within 2km of the site, the nearest of which were located approximately 500m east and 400m east of the site, respectively.

3.80 The dense scrub, woodland, hedgerows, and arable field margin habitats within the site are suitable to support commuting, foraging, and breeding common reptiles. The pond edges, wet ditches, and stream may be of value to grass snake if present within the site. A rock pile at TN4, exposed rock strata at TN6, and the earth bank at TN1 provide potential habitat for hibernating and sheltering common reptiles.

[14] Peter Newbold, Oxfordshire Mammal Group, Amanda Lloyd, Lynda Newbold, Meryl Gedling (2017): Dormouse Distribution in Oxfordshire - *PowerPoint Presentation (oxonmammals.org)*

Otter and Water Vole

3.81 Two records of otter *Lutra lutra* (EPS, SPI, WCA5) were returned within 2km of the site, the nearest of which is located approximately 200m south-east of the site. No records of water vole Arvicola amphibius (SPI, WCA5) were returned within 2km of the site.

3.82 The stream in the south of the site provides suitable habitat for commuting, foraging, and resting otter. The woodland associated with the stream and extending into The Slade LNR and DWS off site may additionally provide suitable habitat for breeding otter.

3.83 The stream and wet ditches within the site could provide suitable habitat for breeding, foraging, and commuting water vole.

Otter and Water Vole Surveys

3.84 Evidence of otter, in the form of a footprint, was recorded along the stream to the south-east of the site, indicating that otter utilise the stream, likely for foraging and commuting. No evidence of otter was found at ditches D1 or D2.

3.85 No otter holts, resting places, or couches were identified along any watercourse or amongst suitable habitat including woodland or trees within 30m of a watercourse.

3.86 No evidence of water vole was recorded within any watercourse during the surveys.

3.87 Full results of the otter and water vole surveys are provided in document 9731.02.006 Protected Species Report – Otter and Water Vole.

White-clawed Crayfish

3.88 The desk study did not provide any records for white-clawed crayfish *Austropotamobius pallipes* (EPS, SPI, WCA5) within 2km of the site.

3.89 The stream to the south of the site was assessed as providing suitable habitat for foraging and breeding white-clawed crayfish. Ditches D1 and D2 were assessed as being unsuitable for the species.

White-clawed Crayfish Survey

3.90 No evidence of white-clawed crayfish was recorded during the survey and eDNA results confirmed white-clawed crayfish to be absent from the stream. However, signal crayfish *Pacifastacus leniusculus* (WCA9) were sighted in the stream.

3.91 Full results of the white-clawed crayfish surveys are provided in document 9731.02.009 Protected Species Report – White-clawed crayfish.

Other Relevant Species

3.92 31 records of European hedgehog *Erinaceus europeaus* (SPI) were returned within 2km of the site, the nearest of which is located approximately 200m east of the site.

3.93 The hedgerows, woodland edge, and dense scrub habitats within the site are suitable to support foraging, commuting, and hibernating hedgehog. The field margins also provide potential commuting and foraging habitat.

3.94 Two records of polecat *Mustela putorius* (SPI) were returned within 2km of the site, the closest record being located approximately 1.2km south-east of the site. The woodland and hedgerow habitats within the site are suitable to support polecat.

3.95 The mosaic of habitats on site, including arable fields, woodland and hedgerow, also provide potential to support brown hare *Lepus europaeus* (SPI). No records of brown hare were returned within 2km of the site.

4.0 Assessment of Potential Impacts

4.0 This section assesses the potential impacts on ecological features associated with the proposed development.

4.1 Consideration is given to the 'mitigation hierarchy', i.e. that impacts are first avoided or where this is not practicable, mitigated and as a final resort, compensated (off-set).

Wildlife Sites

Statutory Designated Sites

4.2 There are no internationally designated wildlife sites located within 10km of the site boundary. Consequently, and given the scale of the proposed development, there will be no direct or indirect impact on any internationally designated statutory wildlife sites as a result of development of the site.

4.3 There are no nationally designated wildlife sites located within 5km of the site boundary. Given this, and the scale of the proposed development there will be no direct impacts on any nationally designated wildlife sites as a result of development.

4.4 However, the proposed discharge into the stream in the south of the site may result in indirect impacts on nationally designated statutory wildlife sites at a greater distance than 5km, based on the distance of flow along the watercourse and the catchment areas it may impact, and given the predicted outflow from the development.

4.5 The site falls within the SSSI IRZ for Bestmoor SSSI (approximately 8.8km south-east). Any discharge of water or liquid waste of more than $20m^3$/day to ground or to surface water, such as the stream within the site, is cited as having potential to pose a risk to the SSSI. The RSK Flood Risk Assessment & Outline Surface Water Drainage Strategy indicates that although it is very unlikely that daily discharge rates would exceed $20m^3$ each day, the rate would depend on rainfall levels and therefore may exceed this level during periods of heavy rain.

4.6 Natural England[15] were consulted by the client during the determination period and, based on the plans submitted, they consider that the proposed development will not damage or destroy the interest features for which the SSSI has been notified and therefore has no objection to the development in relation to designated sites.

[15] Natural England 11082023

4.7 There is one locally designated wildlife site located within 2km of the site boundary. This is The Slade LNR located 30m to the south of the site and is hydrologically linked to the site by the stream in the south. It is possible that indirect impacts on the LNR will occur as a result of noise, dust deposition, and water pollution without mitigation during the construction phase while the drainage is being installed. Hydrological impacts may extend beyond the construction phase due to the potential use of the stream for drainage outflow. However, noise and light from the residential development is unlikely to have a significant impact due to the distance of the LNR from the proposed developed area within Field F2.

4.8 Consideration may need to be given to potential impacts on any LNRs that are hydrologically connected to the site that fall outside of the standard 2km zone of influence.

Non-statutory Designated Sites

4.9 Five non-statutory wildlife sites of local importance were identified within 2km of the site. No direct impacts on any non-statutory designated wildlife sites are anticipated due to separation distance.

4.10 The potential risk of indirect impacts on The Slade DWS due to the proximity to the site and given that hydrological connections are as those described above relating to The Slade LNR. It is additionally possible that indirect impacts to the Northern Valleys CTA caused by water pollution may occur without mitigation due to the hydrological connection to the site.

4.11 Due to distance, lack of hydrological connection, and the small scale of the proposed development, no indirect impacts are anticipated on the remaining three non-statutory designated wildlife sites.

Habitats and Flora

Biodiversity Net Gain (BNG)

4.12 A BNG Assessment has been undertaken by Gladman Developments and was submitted under a separate cover (Gladman Developments Report Ref: 2017-028_April 2023).

4.13 The report indicates that based upon the current scheme, the development is anticipated to result in a biodiversity net gain, and it is considered likely that on-site measures could achieve and exceed a 10% net gain.

4.14 Under the current proposals, the development is expected to achieve a net gain of 3.86 Biodiversity Units (BU), equating to a 37.33% net gain for area-based habitats, and a net gain of 3.38 BU, equating to a 127.93% net gain for linear-based (hedgerow) habitats.

Habitats

4.15 Without mitigation, indirect impacts on retained habitats may include loss, disturbance and damage through dust deposition and pollution run-off during construction, and impacts caused by increased lighting and recreational pressure may occur after occupation.

4.16 The semi-natural broad-leaved woodland is of high ecological value, offering potential habitat for a range of protected and notable species as detailed in Section 3 of this report. The woodland is also a continuation of an area of off-site woodland which is an HPI. Temporary minor direct impacts may be required on the woodland to install drainage into the stream.

4.17 The hedgerows within the site qualify as a priority habitat (HPI) and are of high ecological value. Hedgerows form ecological linkages and corridors within the landscape and are important at a local level. Hedgerows within the site provide potential habitat for a range of protected and notable species as detailed in Section 3 of this report, and habitat connectivity to the wider area. The hedgerows will be retained under the proposals.

4.18 The standing water within the site is of high ecological value, offering potential habitat for a range of protected and notable species as detailed in Section 3 of this report, including amphibians. GCN (EPS, SPI, WCA5) were confirmed absent from the pond, however, the pond may support common amphibian species, including common toad *Bufo bufo* (SPI). If the pond supports common toad, the pond would qualify as a priority habitat (HPI) due to the presence of a UK BAP species. However, survey has not been undertaken to confirm common toad presence.

4.19 The scrub within the site is of ecological value, creating structural diversity and providing potential habitat for a range of protected and notable species as detailed in Section 3 of this report, and qualifies as a LBAP habitat within Oxfordshire. Minor temporary loss of scrub at TN5 to install the drainage for the site, if required, would impact the ecological value of the site but would be considered readily replaceable.

4.20 Scattered trees have an intrinsic ecological value offering potential habitat for a range of protected and notable species as detailed in Section 3 of this report. All trees are semi-mature and category B or C, as detailed within the TEP Arboricultural Impact Assessment (TEP Ref: 9731.01.001). Proposals show only three trees (identified as T7, T8, and T9 within the Arboricultural Impact Assessment) will require removal to facilitate the proposed footway connection at the site access.

4.21 The stream to the south of the site is of ecological value offering potential habitat for a range of protected and notable species as detailed in Section 3 of this report. The stream

was identified to support foraging and commuting otter (EPS, WCA5, SPI), and is therefore an HPI. Watercourses form ecological linkages and corridors within the landscape and are important at a local level. This habitat will be retained and protected under the proposals. Direct impacts to this habitat will occur through drainage outflow from the site into the stream.

4.22 The wet ditches within the site were considered to be of ecological value, offering potential habitat for a range of protected and notable species as detailed in Section 3 of this report. The wet ditches will be retained and protected under the proposals.

4.23 The arable, bare ground, hard standing, and tall ruderal habitats are of low ecological value providing limited function for protected and notable species. Arable and bare ground habitats will be lost to development. However, the loss of these habitats will not have a significant negative impact on the ecological value of the site, when considered alongside the habitat enhancement measures on site.

Habitat Connectivity

4.24 The retention of hedgerows, woodland, ditch and stream habitats within the site will maintain connectivity to the wider area.

4.25 Indirect impacts on connectivity caused by lighting may occur in the absence of mitigation.

Fauna

Amphibians

4.26 The pond within the site (P1) has been confirmed to be absent of GCN although may support breeding common amphibians, including common toad.

4.27 GCN were found to be present in three ponds (P5, P7 and P10) during the eDNA surveys, all located between 250m and 500m from the site. Wet ditches within the site may also provide aquatic habitat for common amphibian species.

4.28 Ponds P5 and P7 are separated from the site by Tadmarton Road. Tadmarton Road is a minor road, with no kerb edges adjacent to the site. This road does not act as a major barrier to amphibian dispersal from ponds P5 and P7 but will provide a minor barrier to movement of amphibians. Pond P10 is not separated from the site by any barriers to amphibian dispersal.

4.29 Given that potential suitable terrestrial habitat for amphibians, including woodland, scrub, and hedgerows as well as aquatic habitat within the site, and that there are no significant

barriers for amphibian dispersal between the site and the GCN positive ponds, it is considered possible that amphibians, including common amphibians and GCN, may be present on site. Individual amphibians could therefore be harmed during site clearance and construction works.

Badger

4.30 Results of the badger survey are confidential. Please refer to the confidential report 9731.02.011 Protected Species Report – Badger for an assessment of potential impacts of the development in relation to badgers.

Bats

4.31 Current proposals indicate that one tree (T7) identified as having low suitability to support roosting bats will require removal to facilitate the proposed pedestrian access to the site. In the absence of mitigation, loss of this tree could result in killing or injury to bats.

4.32 The site was assessed as having low suitability to support commuting and foraging bats. Hedgerows, wet ditches, woodland, scrub, and pond habitats within the site are suitable to support commuting and foraging bats, although limited in extent and current proposals indicate that these habitats will be retained. The woodland and stream which offer moderate suitability to support commuting and foraging bats will be retained and buffered from development.

4.33 In the absence of mitigation, there will be indirect impacts on retained bat roosting, commuting, and foraging habitat, within and adjacent to the site, caused by increased light spill from development.

Breeding Birds

4.34 There is a risk of damaging or destroying a nest if vegetation clearance (including tree pruning) is carried out in the nesting period (generally considered to be March to August inclusive, although geographical position of the site will influence this period and some species also commonly nest outside this period), or when birds are nesting outside of this period.

4.35 There is potential for impacts on red kite *Milvus milvus* (WCA1) if construction works at the southern end of the site are undertaken during the red kite breeding season (March to August). There is also potential for impacts on barn owl *Tyto alba* (WCA1) if they are found to be nesting on site, or within the vicinity of the site, during site clearance and construction works.

4.36 There may be a requirement for further mitigation or compensation for the loss of suitable nesting and foraging habitat for birds within the site.

Reptiles

4.37 The woodland, hedgerows, pond, stream, wet ditches, earth banks, and scrub habitats as well as features at TN1, TN4 and TN6 were considered suitable for basking, foraging, ranging, and hibernating common reptiles within the site. There is potential for individuals to be harmed during site clearance and construction in the absence of mitigation.

Otter and Water Vole

4.38 The stream, pond and wet ditches are considered suitable to support otter and water vole.

4.39 No evidence of water vole was found during surveys. There will therefore be no impacts on water voles and this species will not be considered further in this report.

4.40 As no otter holts, couches or resting places were found during the surveys, there are no implications to the development proposals in relation to otter. However, an otter footprint was identified at the stream, indicating that otter do utilise the stream, likely for commuting and foraging purposes.

White-clawed Crayfish

4.41 The stream was assessed as providing suitable habitat for white-clawed crayfish. No evidence of white-clawed crayfish was recorded during the survey. Environmental DNA (eDNA) sampling confirmed white-clawed crayfish to be absent from the stream. Therefore, no impacts on this species are anticipated and it will not be considered further in this report.

Other Relevant Species

4.42 The site has potential to support hedgehog (SPI), polecat (SPI) and brown hare (SPI). There is potential for harm to these species during site clearance and construction works in the absence of mitigation. However, given that additional extensive areas of suitable habitats for these species are present within the wider area, minor loss of suitable habitat within the site is unlikely to have a significant impact on local populations.

4.43 A signal crayfish *Pacifastacus leniusculus* was recorded within the stream during the surveys. Signal crayfish are an invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). There are therefore implications to the development in relation to this species.

5.0 Mitigation and Enhancement

5.0 This section describes appropriate and proportionate measures for impact avoidance, mitigation and enhancement required or recommended to address the potential ecological effects described in Section 4.0.

Standard Recommendations to Preserve Wildlife

5.1 Standard pollution prevention and dust control measures should be set out in a Construction Environmental Management Plan (CEMP) and implemented during site clearance and construction works. The CEMP will identify measures to ensure the potential for indirect impacts on retained habitats within and adjacent to the site.

5.2 It is recommended that an ecological Precautionary Working Method Statement (PWMS) for the protection of habitats and species be drafted to inform ecological input into the contractors CEMP.

5.3 If applicable, the PWMS will identify any further measures to ensure that impacts on priority habitats (HPI) are reduced to a reasonable minimum such that the qualifying features of such designations are not negatively affected by the proposed development.

Wildlife Sites

5.4 Standard pollution prevention and dust control measures set out in the CEMP will be implemented during site clearance and construction works. The CEMP will identify measures to ensure the potential for indirect impacts on nearby statutory and non-statutory designated sites are reduced to a minimum.

5.5 A SUDs drainage system will be adopted, and this will connect to the stream through an existing connection. As a result, the discharge will be controlled and there will be no significant impact on the stream and connected wildlife sites. However, it is recommended that this is reviewed once detailed drainage plans and working methods are available.

Habitats and Flora

Proposals

5.6 The semi-natural broad-leaved woodland within the south of the site will be retained and protected.

5.7 An existing access point will be utilised to the north of the site and as a result, hedgerow H1 and hedgerow H2 will be retained and protected. Additionally, a native species-rich hedgerow will be planted along the western boundary to define the development edge resulting in an overall net gain for hedgerow within the site. The BNG Assessment report

indicates a 3.38 BU gain for linear features (hedgerows) under the proposals, equating to a net gain of 127.93%.

5.8 Both ditches will be retained and enhanced through the removal of agricultural pressures such as pesticide inputs and runoff into these habitats.

5.9 Pond P1 will be retained and enhanced under the proposals through removing agricultural pressures alongside suitable planting and scrub thinning. Pond P2, which had been infilled, will be replaced.

5.10 Scrub will largely be retained and enhanced through selective felling of non-native species and planting of native species, as well as thinning / creating clearing and improving the edge habitat. Small areas that may be lost to accommodate drainage, will be left to recolonise upon completion.

5.11 Proposed habitat creation measures in the site, including hedgerow and tree belt planting, which will enhance the connectivity both within the site and into the wider area.

Recommendations

5.12 It is recommended that the BNG calculations are revisited at the detailed design stage of the project when further information will be available. Biodiversity net gain is often secured via a planning condition requiring the submission of a 'management plan' (e.g., Landscape and Ecology Management Plan (LEMP)) which reflects the habitats to be created and enhanced to achieve a net gain along with a 30 year maintenance programme.

5.13 Retained trees and hedgerows within and adjacent to the site should be protected from accidental damage during site clearance and construction, in accordance with BS5837:2012 Trees in relation to design, demolition and construction.

Fauna

Amphibians

5.14 GCN and their habitats are fully protected under the Habitats Regulations and the Wildlife & Countryside Act 1981 (as amended). GCN and common toad are also SPI. GCN are also an LBAP species.

Avoidance and Mitigation Required

5.15 No GCN are present within ponds on site or within 250m of the site boundary. Works over 250m from a GCN breeding pond are not considered licensable. Works between 250m

and 500m of a GCN breeding pond, which is not separated from the site by a significant barrier to amphibian dispersal, should be conducted under a Precautionary Working Measures Method Statement (PWMS).

5.16 GCN have been confirmed as present within three ponds (P5, P7 and P10). The entire of the redline site boundary falls within a 250m to 500m buffer of these ponds. Any clearance of suitable habitat for GCN on site should therefore be done under a PWMS. The PWMS will minimise the risk of harm and injury to GCN and other common amphibians, including common toad (SPI), if present on site, under the works.

5.17 If GCN are found on site during site clearance under the PWMS, works must stop, and a licence must be applied for. In this case, it will be possible to register the site under the Nature Space GCN District Level Licencing (DLL) Scheme. Works can only continue once a licence has been granted.

5.18 The measures outlined above would be detailed within the PWMS which could be conditioned to the application and form part of the recommended CEMP.

5.19 Avoidance and mitigation requirements are also provided in document 9731.02.005 Protected Species Report – Amphibians.

Badger

5.20 Badgers are protected under the Protection of Badgers Act 1992 from killing, injury and certain acts of cruelty. Their setts are also protected from damage, obstruction or destruction.

Avoidance and Mitigation Required

5.21 Once the landscape masterplan has been finalised, a further badger survey should be undertaken to confirm that no badger setts have been excavated within the site or within a 30m buffer of the site which may be impacted by the works. The survey can be undertaken at any time of year; however, it is recommended that the survey takes place over the winter months when vegetation has died down.

5.22 If works have not commenced within 3 months of the survey date, an additional pre-commencement badger survey will be required. The pre-construction badger survey should be conducted a maximum of 3 months prior to the commencement of works or at the start of each phase of development and should include all land within the site and the 30m buffer.

5.23 If a sett is identified during the detailed badger survey or pre-construction badger survey which may be impacted by the proposals, monitoring of the sett may be required to confirm activity levels. There should be no works within the 30m buffer zone of an active

sett. If works take place within the buffer zone, there is potential for disturbance to badgers because of higher levels or activity, noise and possibly vibration.

5.24 If it is not possible for an appropriate buffer zone to be either implemented or maintained around an active badger sett during future works, the requirement for a licence from Natural England will be reviewed.

5.25 Any soft landscaping proposals should include the planting of native fruit and berry producing shrubs and trees to increase foraging opportunities for badger.

5.26 There is potential for impacts on foraging and ranging badgers during site clearance and construction works, if present on site. Standard precautionary working measures will need to be implemented to ensure no harm or disturbance to foraging or ranging badger as a result of the development.

5.27 Full details are provided within the confidential report 9731.02.011 Protected Species Report – Badger.

Bats

5.28 All British bats are European protected species, afforded full protection under the Habitats Regulations and the Wildlife & Countryside Act 1981 (as amended). Bats are protected from killing or injury, and from disturbance at the place of rest. Bat roosts are also protected from obstruction, damage or destruction (whether or not a bat is in occupation at the time). Brown long-eared, Myotis species, noctule *Nyctalus noctule*, Nyctalus species and soprano pipistrelle species are also SPI.

Avoidance and Mitigation Required

5.29 Tree T7 was identified as having low suitability to support roosting bats and will require removal under the proposals. It is recommended that this tree is subject to a pre-works check by a suitably licensed bat ecologist immediately prior to felling and is soft felled under supervision.

5.30 Fitting additional integral or built-in bat roosting bricks into the south and east facing edges of new buildings and retained semi-mature trees will provide long-lasting opportunities for roosting bats that require minimal maintenance. Models suitable for local species include the Schwegler 1FR Bat Tube and the Schwegler 2F General Purpose Bat Box. These details should be integrated into the elevation drawings to ensure that the bat boxes are installed in/on the right buildings.

5.31 Proposals indicate that direct impacts on habitats of importance for commuting and foraging bats are highly unlikely to occur. The proposed planting of an additional

hedgerow, trees, and scrub will result in an overall gain in commuting and foraging habitat for bats within the site. Furthermore, indirect impacts on the river corridor in the south of the site will be temporary during the installation of drainage and a significant buffer will be left between the residential development and the river corridor.

5.32 Maintenance of dark corridors along woodland edge habitats, scrub/tree lines and hedges will maintain connectivity within the site, particularly to the most valuable habitats for bats (e.g., scrub and woodland edge features).

5.33 A Sensitive Lighting Strategy should be implemented to minimise light spill from the site on to retained potential bat roosting, foraging and commuting habitat, as described above. The Sensitive Lighting Strategy will benefit bats and other nocturnal and crepuscular species. The Sensitive Lighting Strategy will address four key design principles:

- Use of unnecessary lighting will be avoided;
- Spatial spread of lighting – The horizontal and vertical spread of artificial light will be minimised and take into account both primary and reflected light sources. Directional lighting can be achieved through the use of LED bulbs and by angle and orientation of beam. Use of a cowl, louvre or other light shield could also be implemented if required;
- Variable lighting regime – Timers will be used to ensure that overall illumination is reduced during core night-time hours and
- Intensity and colour of lighting – Light intensity will be as low as possible whilst meeting the objectives of the intended function. Light sources selected will emit zero ultra-violet light wherever possible.

5.34 The measures outlined above would be detailed within the PWMS which could be conditioned to the application and form part of the recommended CEMP.

5.35 Further details on avoidance and mitigation requirements are provided in document 9731.02.008 Protected Species Report – Bat Activity Report.

Birds

5.36 Native nesting birds, their nests and eggs are protected under the Wildlife & Countryside Act 1981 (as amended) from damage and destruction, from the time of nest construction to fledging of the young. In addition, red kite are a WCA Schedule 1 species, identified as possible breeding species within a 100m buffer of the site. There is also potential for barn owl to breed nearby. WCA Schedule 1 species are afforded additional protection where it is an offence, subject to certain clauses, to intentionally or recklessly: disturb any wild

bird on the WCA Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; or disturb dependent young of such a bird.

Avoidance and Mitigation Required

5.37 Any planned vegetation clearance should be undertaken outside of the bird breeding season (March to August inclusive), to avoid damage to nesting birds. All works undertaken during the breeding season, or when nesting is suspected/likely, will require a nesting bird check to be carried out by a suitably qualified ecologist immediately prior to any clearance works commencing. If evidence of nesting is observed, a buffer zone will need to be set up around the nest, the size of which will be dependent upon the species nesting. The ecologist will monitor the nest to confirm when any young have fledged, following which vegetation clearance works can proceed.

5.38 Prior to any construction works commencing at the southern end of the site during the red kite breeding season (March to August), a red kite nesting survey should be carried out. This should include checking the woodland for any signs of nesting red kite within at least 300m of the development. Should any nesting red kite be found, measures will need to be implemented to prevent disturbance to this species from the development while they are nesting.

5.39 Before the removal of any mature tree or any other tree containing cavities, a thorough check should be carried out by a suitably qualified ecologist to determine if any nesting barn owl are present. Suitable off-site trees within 100m of any construction works should also be checked for nesting barn owl to ensure this WCA1 species is not disturbed during nesting. If barn owl are found to be nesting, a suitable disturbance buffer will need to be established around the nest until nesting is confirmed to have ended. Barn owls may nest at any time of year, so this mitigation applies all year round.

5.40 The proposed hedgerow, and tree planting will result in an increase in suitable habitat for foraging and breeding birds within the site. In addition, bird boxes should be installed on trees and buildings to help encourage nesting birds. This is best undertaken with the assistance of an ecologist who can ensure that the highest chance of occupancy can be achieved.

5.41 The measures outlined above would be detailed within the PWMS which could be conditioned to the application and form part of the recommended CEMP.

5.42 Further details on avoidance and mitigation requirements are provided in document 9731.02.007 Protected Species Report – Breeding Bird Report.

Reptiles

5.43 Common lizard *Zootoca vivipara*, slow-worm, grass snake and adder *Vipera berus* are protected under the Wildlife and Countryside Act 1981 (as amended) from killing and injury and are all SPI.

Avoidance and Mitigation Required

5.44 Proposed enhancements will result in an increase of suitable habitat for reptiles within the site, such as hedgerow planting which will enhance connectivity.

5.45 Works will be carried out under a PWMS which will ensure that common reptiles are not harmed, if present within the site.

Otter and Water Vole

5.46 Otter and their habitats are fully protected under the Habitats Regulations and the Wildlife & Countryside Act 1981 (as amended) and are also SPI. Water vole are fully protected under the Wildlife & Countryside Act 1981 (as amended) and are also SPI. Both species are protected from capture, killing and injury and from disturbance in their place of shelter. Their places of shelter are also protected from damage, destruction, and obstruction.

Avoidance and Mitigation Required

5.47 As otter are known to be present within the area, a pre-construction check of all watercourses on site for otter is recommended prior to the commencement of development works. The survey will re-affirm the absence of holts within influencing distance of the works.

5.48 Given that water voles are dynamic species and that the ditches and stream provide suitable habitat, it is recommended that a repeat of the survey should be undertaken if, after 12 months from the date of the initial surveys, no works have occurred.

5.49 Standard pollution prevention measures set out within the CEMP will ensure any impacts on the stream are mitigated for.

5.50 Further details on avoidance and mitigation requirements are provided in document 9731.02.006 Protected Species Report – Otter and Water Vole.

Other Relevant Species

5.51 Brown hare, polecat and hedgehog are S41 species of principal importance.

5.52 Signal crayfish (WCA9) are known to be present within the stream along the southern site boundary. There is also potential for signal crayfish to also be present within the ditches on site, which also provide suitable habitat for this species.

Avoidance and Mitigation Required

5.53 Precautionary working measures set out in the PWMS for herptiles (amphibians and reptiles) will also prevent harm to brown hare, polecat and hedgehog.

5.54 Gaps should be left under fences to allow for easy movement of hedgehogs across the site. Hedgehog hibernation boxes should also be installed to provide shelter, nesting, and hibernation opportunities for hedgehog.

5.55 An Invasive Species Method Statement will be required to ensure legislation compliance in relation to the signal crayfish present on site. The method statement will include the following:

- A buffer zone should be applied of at least 7m from the edge of all streams and ditches. Fencing should be used to mark out the buffer zone.
- A toolbox talk should be delivered to all contractors.
- Anything going within the 7m buffer, including machinery and footwear, should be thoroughly decontaminated before and after, following strict biosecurity protocols to minimise the risk of the spread of crayfish plague.
- Any drainage works within a watercourse or 7m buffer should be supervised by an Ecological Clerk of Works (ECoW) to dispatch any signal crayfish encountered.

Additional Habitat Enhancements

5.56 Detailed habitat enhancement recommendations will form part of the BNG Assessment and Habitat Management Plan (or similar) that should be produced for the site at the detailed planning stage.

5.57 A number of opportunities for habitat enhancements which will benefit biodiversity are outlined below.

5.58 Habitat creation measures within the proposals including scrub, hedgerow, and tree planting, have shown to seek to incorporate and/or increase the provision of priority habitats and habitats for protected and notable species which occur in the surrounding area.

5.59 The planting strategy adopted should aim to utilise a range of native wildlife friendly species which will produce nectar and berries, and where necessary, non-native/ornamental species which have acknowledged value for biodiversity. The planting scheme should create structural diversity and maximise connectivity to the wider area.

5.60 Where possible, species-rich grassland areas should be created and include a mosaic of sward heights to include short, intermediate, and long grass, with long grass in particular retained over winter along boundary habitats. This would enhance the foraging opportunities for a variety of local wildlife, including invertebrates, bats, birds, badgers, and hedgehogs.

5.61 Where possible, wetland habitat will be retained and enhanced, and new wetland habitat created in the form of a SUDs basin. It is recommended that, where practicable, this basin be designed with shallow sloping banks and the planting of suitable vegetation for amphibian egg laying and invertebrates to maximise their value to biodiversity. The habitat surrounding ponds should provide potential refuge and foraging habitat for amphibian, reptile and bird species and foraging opportunities for bats and badgers. These principles will also be used, where possible, to enhance retained wetland habitat.

5.62 During the site clearance works, consideration should be given to chipping or composting vegetation for re-use on the new habitats on site, or creation of brash piles on the periphery of the site as a further aid to increasing biodiversity. This could also enhance the site for hedgehogs by providing additional refuge opportunities for this species which is frequently recorded in residential gardens.

5.63 Bug hotels could be installed in the vicinity of semi-natural habitat. This will provide additional habitat for SPI invertebrates on site.

5.64 Green walls, trellis structures and fencing accommodating native climbing plant species such as roses and honeysuckle could be incorporated into building and landscape designs.

6.0 Conclusions

6.0 The habitats on site are relatively common and widespread. The habitats on site with the greatest relative ecological value are the hedgerows, on-site pond, and the woodland and stream at the southern end of the site. Recommendations for habitat retention, creation and enhancement measures have been provided.

6.1 Potential impacts upon protected or notable species have been identified, and appropriate mitigation has been proposed, including production of a CEMP, sensitive timing of works, precautionary working measures, a sensitive lighting strategy, and recommendations for habitat enhancements.

6.2 Further surveys have been recommended for badger, once the landscape masterplan has been finalised, and for water vole, if works have not commenced within 12 months of the date of the last survey. Pre-commencement surveys have also been recommended for badger, red kite, barn owl and otter.

Appendix A: Ecological Desk Study (TEP Ref: 9731.02.001)

Tadmarton Road

Bloxham, Oxfordshire

Ecological Desk Study

Prepared For: Gladman Developments

Document Reference: 9731.02.001

November 2023

Version 3.0

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Project Name:	Tadmarton Road
Location:	Bloxham, Oxfordshire
Document Title:	Ecological Desk Study
Client:	Gladman Developments
Year of Surveys:	2023
Prepared by:	The Environment Partnership Ltd
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1.0	April 2023	Issued as draft for client comments	DL	RW	KS
2.0	May 2023	Updated following client comments.	RW	RW	KS
3.0	Nov 2023	Updated following completion of EcIA Report	MB	KM	KS

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The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Tables

Appendices

1.0 Introduction

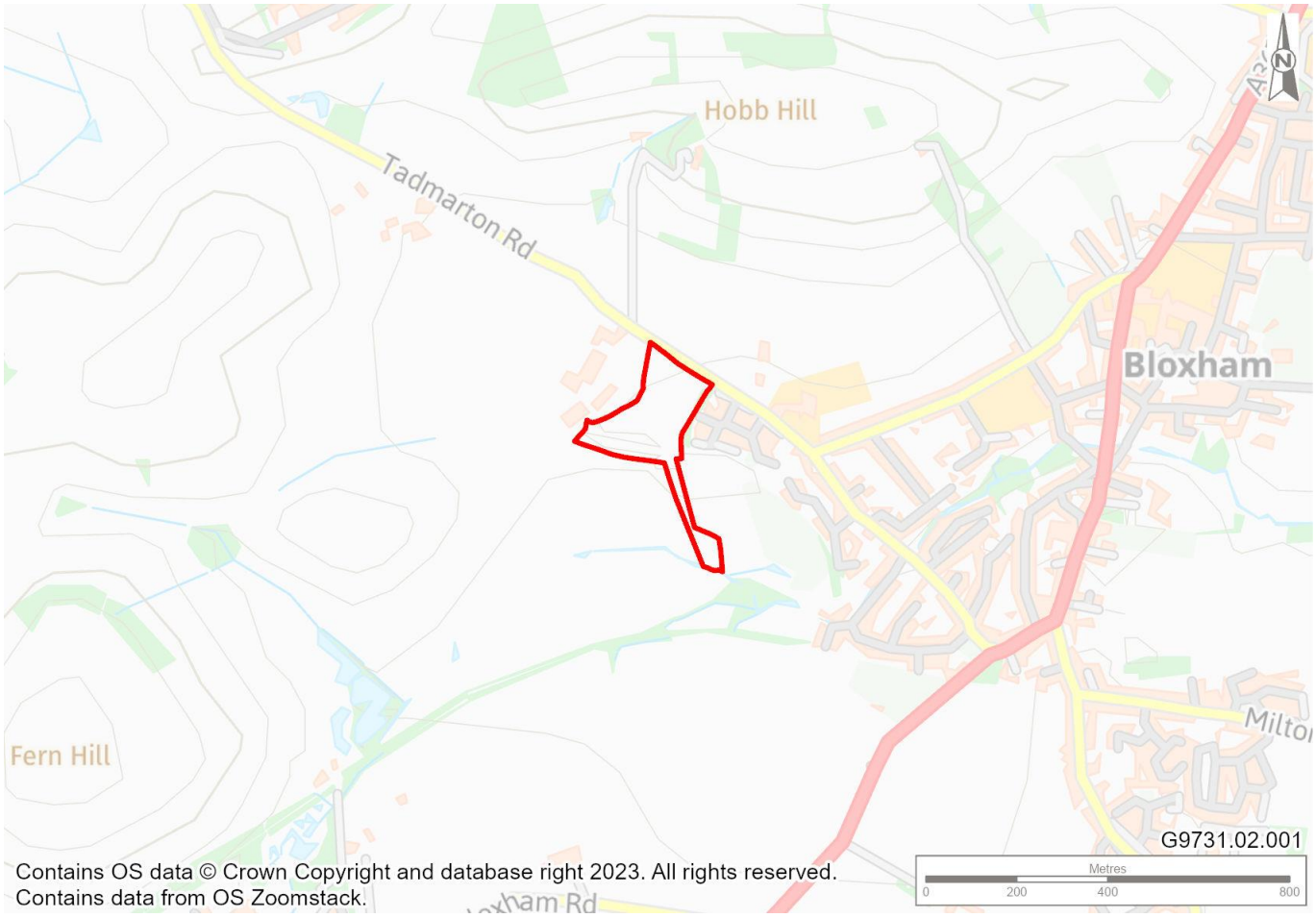
1.1 The Environment Partnership (TEP) was commissioned by Gladman Developments in November 2022 to complete an Ecological Impact Assessment (EcIA) for land to the south of Tadmarton Road, Bloxham Oxfordshire (hereafter referred to as 'the site'). To inform the EcIA, an ecological desk study was also completed.

Location of Site

1.2 The site is within the administrative area of Cherwell District Council. The site is not allocated for biodiversity purposes.

1.3 The site is located to the south of Tadmarton Road, Bloxham, Oxfordshire and is centred on national grid reference SP 42049 35945. The location of the site is shown in Figure 1 below.

Figure 1: Location of site



Context

1.4 It is understood that an outline planning application will be submitted for the construction of circa 60 dwellings with public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point. All matters reserved except for means of access.

Purpose

1.5 This Ecological Desk Study report details the method of data gathering and interpretation and presents the findings of the desk-based assessment.

1.6 This report is not sufficient in isolation to support a planning application. This report should be read in conjunction with the EcIA Report (TEP Ref: 9731.02.010).

2.0 Methods

Scope and Data Sources

2.1 The ecological Zone of Influence (ZOI) is an area defined by the ecological assessment within which valued ecological features may be subject to significant biophysical changes as a consequence of the proposed development under assessment.

2.2 For the purposes of this assessment, the preliminary ZOIs within which ecological features were searched for as part of this desk study were varied according to the geo-spatial and/or legal significance of the feature.

2.3 Table 1 summarises the scope and the preliminary ZOIs applied for this desk study. The preliminary ZOIs were applied by extending search radii of the respective distances from the Scheme boundary.

Table 1: Scope and preliminary ecological Zones of Influence (ZOI)

Feature	Scope	Key Source(s)	ZOI
Statutory wildlife sites:	Ramsar sites Proposed Ramsar sites Special Areas of Conservation (SAC) Possible SAC SAC with marine components Special Protection Areas (SPA) Potential SPA Marine Conservation Zones	Natural England (public sector information) Cherwell Local Plan (Adopted 2015)[1]	10km
	Sites of Special Scientific Interest (SSSI) National Parks National Nature Reserves (NNR) Marine Nature Reserves (MNR)	Natural England (public sector information) Cherwell Local Plan (Adopted 2015)	5km
	Local Nature Reserves (LNR) Country Parks Strategic Nature Areas	Natural England (public sector information) Cherwell Local Plan Interactive Map[2]	2km
Non-statutory wildlife sites:	Local Wildlife Sites (LWS) Potential Local Wildlife Sites (pLWS) Cherwell District Wildlife Sites (DWS)	Thames Valley Environmental Records Centre (TVERC) Cherwell Local Plan (Adopted 2015)	2km

[1] *https://www.cherwell.gov.uk/download/downloads/id/8144/final-adopted-local-plan-2011-2031-incorporating-re-adopted-policy-bicester-13.pdf* [Accessed 23/10/23]

[2] *Cherwell Local Plan (arcgis.com)* [Accessed 23/10/23]

Feature	Scope	Key Source(s)	ZOI
	Conservation Target Areas / Biodiversity Opportunity Areas Sites of Local Importance to Nature Conservation (SLINC) NGO Properties / Nature Reserves	Cherwell Local Plan Interactive Map	
Notable habitats:	Ancient Woodland Habitats of principal importance Local Biodiversity Action Plan (LBAP) habitats Main rivers Habitat Network / Nature Recovery Network	Natural England (public sector information) Environment Agency (public sector information) TVERC Oxford Biodiversity Action Plan (LBAP)[3] Google Earth	500m
Protected or notable species:	Pre-existing records for protected or notable species[4], non-native invasive species	TVERC	2km
	Protected species licences granted by Natural England Great crested newt survey pond records (2017 – 2019) held by Natural England	Natural England (public sector information)	2km
Policy and Related Guidance	Land allocations and relevant environment / biodiversity policy Local biodiversity priority habitats and species	Cherwell Local Plan (Adopted 2015) Cherwell Local Plan Interactive Map	As applicable to site

2.4 An absence of records does not indicate the absence of protected species from the search area.

[3] *BAPnewsletterFINAL.pdf (oxfordshire.gov.uk)* [Accessed 23/10/23]

[4] Notable and protected species records may include those listed under any of the following:

- Protected species listed under Schedule 2 (animals) or Schedule 5 (plants) under the Conservation of Habitats and Species Regulations 2017 (EPS);
- Protected bird species under Schedule 1 of the Wildlife and Countryside Act 1981, as amended (WCA1);
- Protected animal species under Schedule 5 of the Wildlife and Countryside Act 1981, as amended (WCA5);
- Protected plant species under Schedule 8 of the Wildlife and Countryside Act 1981, as amended (WCA8);
- Invasive non-native plant species under Schedule 9 of the Wildlife and Countryside Act 1981, as amended (WCA9);
- Invasive Alien Species (Enforcement and Permitting) Order 2019 (IAS);
- Protection of Badgers Act 1992 (PBA);
- Species of principal importance (SPI) listed by requirements under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
- Red and Amber listed Birds of Conservation Concern (BRd/BAm); and
- Local Biodiversity Action Plan Species (LBAP).

2.5 Geological sites are not designated for ecology reasons and is therefore excluded from further consideration in this ecological assessment.

3.0 Legislation and Policy

3.1 The following summarises the legislation and planning policy which may have relevance to the site. Only legislation and policy of key relevance to biodiversity are listed. Further information is provided in Appendix A.

- International Conventions:
  - The Convention on Wetlands of International Importance especially as Waterfowl Habitat ('Ramsar Convention'[5] or 'Wetlands Convention');
  - The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention[6]);
  - The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention[7] or CMS)
  - The Convention on Biological Diversity (Biodiversity Convention[8] or CBD)
- Conservation of Habitats and Species Regulations 2017[9] (the 2017 Regulations);
- Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[10] (the 2019 Regulations);
- Wildlife and Countryside Act (WCA) 1981[11];
- Environment Act 2021[12];
- Countryside and Rights of Way Act (CROW) 2000[13];
- Natural Environment and Rural Communities (NERC) Act 2006[14];
- Hedgerow Regulations 1997[15];
- Protection of Badgers Act (PBA)1992[16];
- Wild Mammals (Protection) Act (WMPA) 1996[17];
- National Planning Policy Framework (NPPF) 2023[18];

[5] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2.2.1971 *https://www.ramsar.org/*

[6] Convention on the Conservation of European Wildlife and Natural Habitats. Bern, 1979 *https://www.coe.int/*

[7] Convention on the Conservation of Migratory Species of Wild Animals, Bonn, June 1979 *https://www.cms.int/*

[8] Convention on Biological Diversity, Rio de Janeiro, June 1992*https://www.cbd.int/*

[9] Conservation of Habitats and Species Regulations 2017 (SI 2017/1012) *https://www.legislation.gov.uk/uksi/2017/1012/*

[10] Conservation of Habitats and Species Regulations 2019 (SI 2019/579) *https://www.legislation.gov.uk/uksi/2019/579/*

[11] Wildlife and Countryside Act 1981 c. 69 *https://www.legislation.gov.uk/ukpga/1981/69/*

[12] Environment Act 2001 c.30 *https://www.legislation.gov.uk/ukpga/2021/30/*

[13] Countryside and Rights of Way Act 2000 c. 37 *https://www.legislation.gov.uk/ukpga/2000/37/*

[14] Natural Environment and Rural Communities Act 2006 c. 16 *https://www.legislation.gov.uk/ukpga/2006/16/*

[15] The Hedgerow Regulations 1997 (SI 1997/1167) *https://www.legislation.gov.uk/uksi/1997/1160/*

[16] Protection of Badgers Act 1992 c. 51 *https://www.legislation.gov.uk/ukpga/1992/51/*

[17] Wild Mammals (Protection) Act 1996 c.3 *https://www.legislation.gov.uk/ukpga/1996/3*

[18] National Planning Policy Framework (2023). Department for Levelling Up, Housing and Communities. *https://www.gov.uk/government/publications/national-planning-policy-framework--2*

- Government Circular 06/2005[19].

Local Planning Policy

3.2 The Adopted Cherwell Local Plan 2011-2031 (Part 1)[1] contains strategic planning policies for development and the use of land. It forms part of the statutory Development Plan for Cherwell to which regard must be given in the determination of planning applications.

3.3 The following policies relate to biodiversity and nature conservation:

- Policy ESD 5 – Renewable Energy;
- Policy ESD 6 – Sustainable Flood Risk Management;
- Policy ESD 9 – Protection of the Oxford Meadows SAC;
- Policy ESD 10 – Protection and Enhancement of Biodiversity and the Natural Environment;
- Policy ESD 11 – Conservation Target Areas;
- Policy ESD 12 – Cotswolds Area of Outstanding Natural Beauty;
- Policy ESD 14 – Oxford Green Belt;
- Policy ESD 16 – The Oxford Canal; and
- Policy ESD 17 – Green Infrastructure.

3.4 The site is not allocated for biodiversity purposes within the Local Plan.

3.5 Policy ESD 6 states that opportunities will be sought to increase the biodiversity value of watercourses.

3.6 Policy ESD 10 states that this will be achieved by: seeking a net gain in biodiversity for new developments; the protection of trees will be encouraged; any impacts on a site of biodiversity value or habitats or species of principal importance must be mitigated to achieve a net gain for biodiversity; development proposals will be expected to incorporate features to encourage biodiversity and enhance existing features of nature conservation value; and, that relevant habitat and species surveys and reports will be required to accompany planning applications which may affect a site, habitat, or species of known or potential ecological value.

3.7 Policy ESD 11 states that where there is potential for a development to adversely impact the aims of a CTA, mitigation and biodiversity enhancements must be employed to benefit the CTA.

[19] Office of the Deputy Prime Minister (2005) 'Government Circular: Geological and Biological Conservation – Statutory obligations and their implications within the planning system' ODPM circular 06/2005, DEFRA circular 01/2005 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf*

Bloxham Neighbourhood Plan

3.8 The Bloxham Neighbourhood Plan[20] was adopted by Cherwell District Council in December 2016. Policy BL11 states, inter alia, that development should *"take opportunities to protect and wherever possible enhance biodiversity and habitats"*.

[20] *Bloxham Neighbourhood Plan | Cherwell District Council* [Accessed 27th October 2023]

4.0 Biodiversity Initiatives and Strategies

Local Biodiversity Action Plans (BAP)

4.1 The Oxfordshire BAP[3] does not list specific priority and notable species, however Oxfordshire has a list available from Thames Valley Environmental Records Centre (TVERC).

5.0 Wildlife Sites

Statutory Sites

5.1 There is one locally designated wildlife site within 2km of the site, summarised in Table 2 below. Distances are calculated between the closest points. Links to data forms and citations are also provided, where applicable.

Table 2: Statutory wildlife sites

Site Name	Designation & Citation Link	Distance and Direction from site	Reason(s) for Designation
Statutory wildlife sites of regional/local significance within 2km of site (Drawing G9731.02.004)			
The Slade	LNR *Designated Sites View (naturalengland.org.uk)*	30m south of the site	Comprises a wet meadow, woodland and disused railway embankment. Over 170 species of plants have been recorded and the site is good for butterflies and birds.

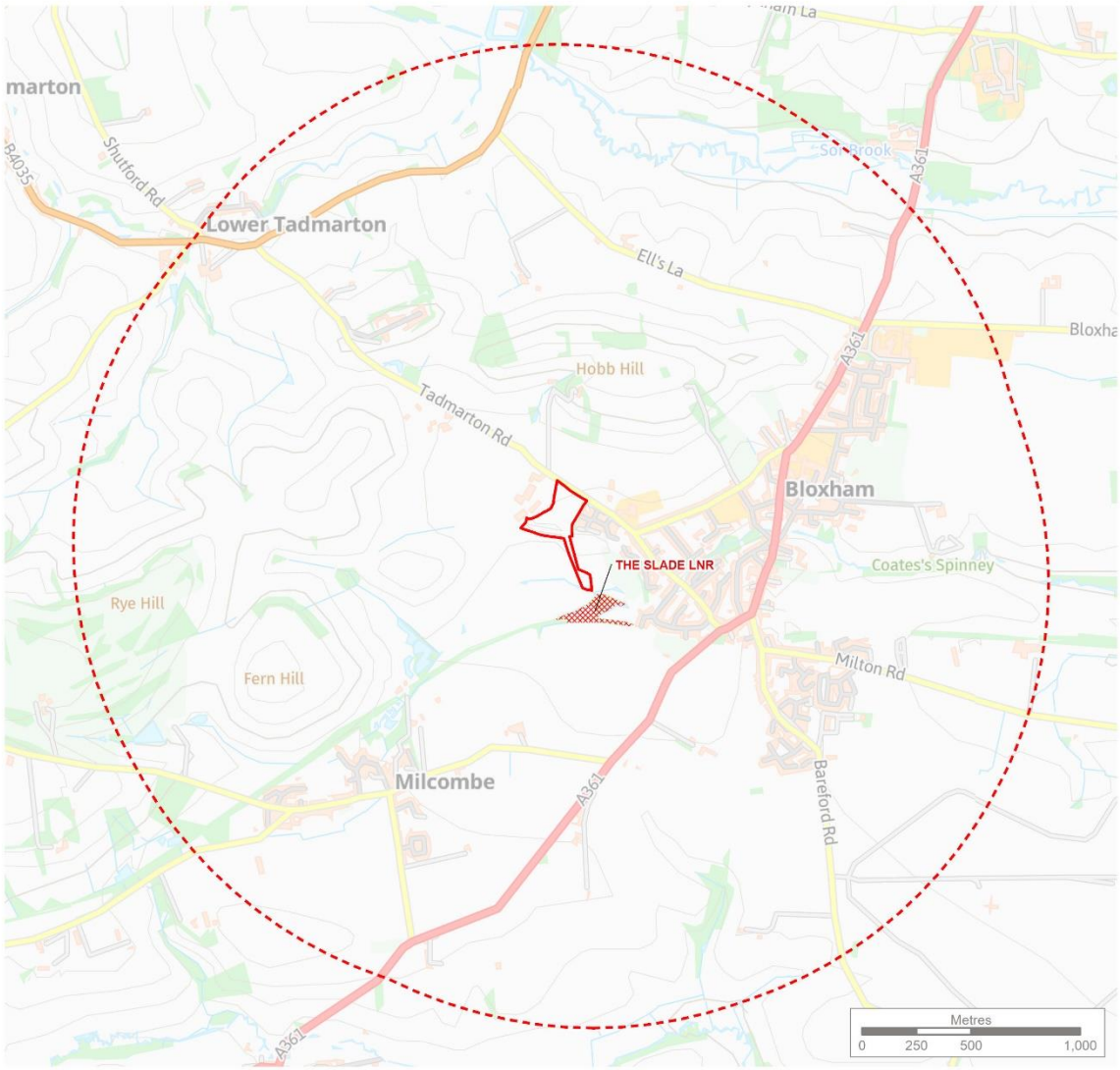
5.2 The site lies within one SSSI Impact Risk Zones (IRZ) – these are zones determined by Natural England that identify likely impacts upon SSSIs, SACs, SPAs or Ramsar sites that may result from planned development.

5.3 Figure 3 illustrates and references the IRZs that overlap with the site. The relevant IRZ and risk criteria are cross-referenced in Table 3. The site falls within the SSSI IRZ for Bestmoor SSSI.

Table 3: SSSI Impact Risk Zones crossed by the site

PROPOSAL	LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
Discharge	Any discharge of water or liquid waste of more than 20m3/day to ground (ie to seep away) or to surface water, such as a beck or stream.

Figure 2: Statutory wildlife sites of regional/local significance within 2km of the site



Key

- Site boundary
- Site boundary - 2km buffer
- Local Nature Reserve

Sites searched for were as follows:
- Local Nature Reserves

TEP | THE ENVIRONMENT PARTNERSHIP

Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project: Tadmarton Road, Bloxham

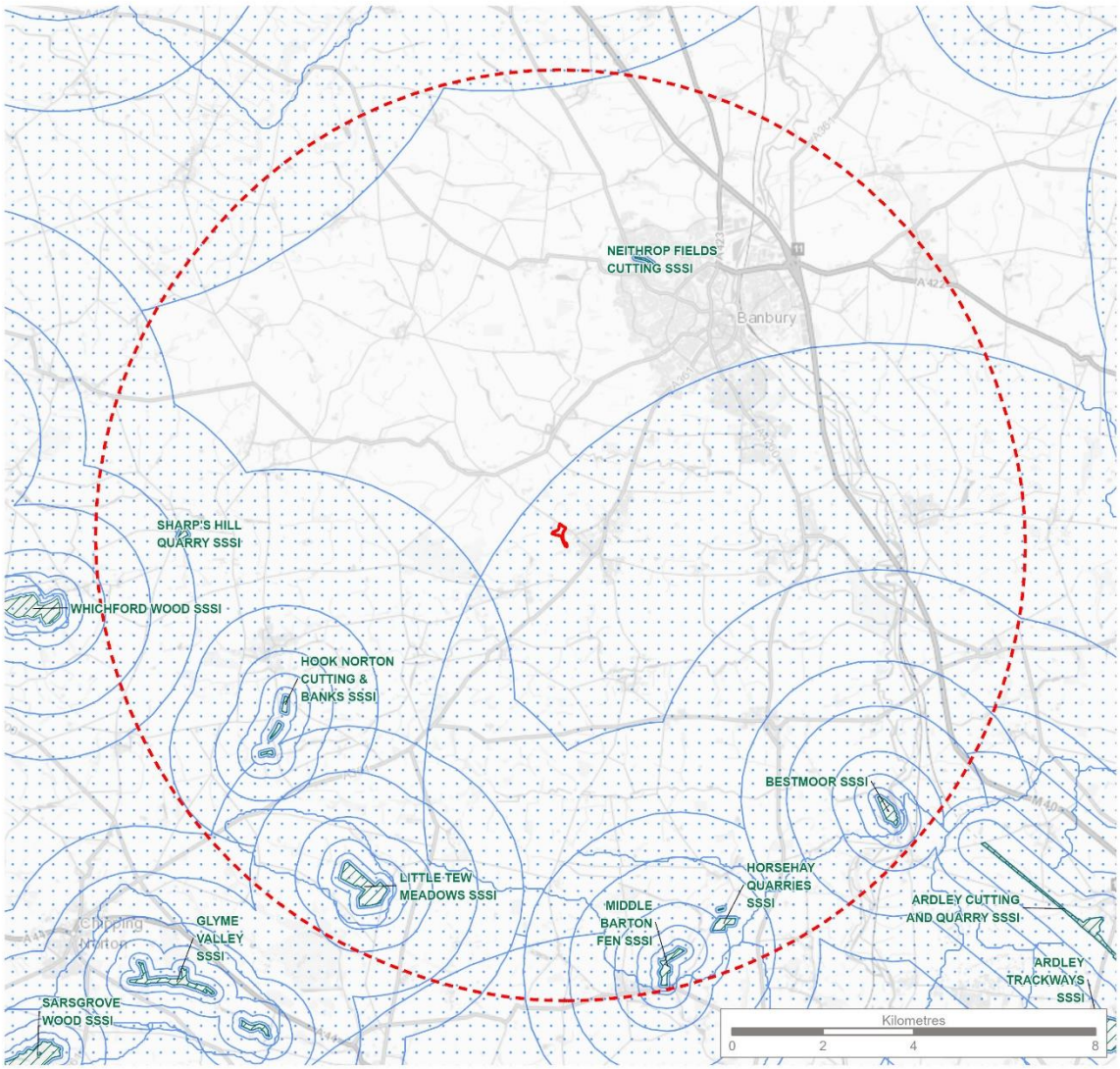
Title: Statutory Locally Designated Sites Within a 2km Buffer

Drawing Number: G9731.02.004

Scale	Date
1:25,000 @ A4	24/04/2023

Drawn	Checked	Approved
ET	MK	RS

Figure 3: SSSI Impact Risk Zones relevant to the site



Key

- Site boundary
- Site boundary - 10km buffer
- Sites of Special Scientific Interest (SSSI)
- Sites of Special Scientific Interest - Impact Risk Zone

TEP | THE ENVIRONMENT PARTNERSHIP
Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project: Tadmarton Road, Bloxham

Title: Sites of Special Scientific Interest - Impact Risk Zone

Drawing Number: G9731.02.006

Scale	Date
1:120,000 @ A4	24/04/2023

Drawn	Checked	Approved
ET	MK	RW

Non-Statutory Wildlife Sites

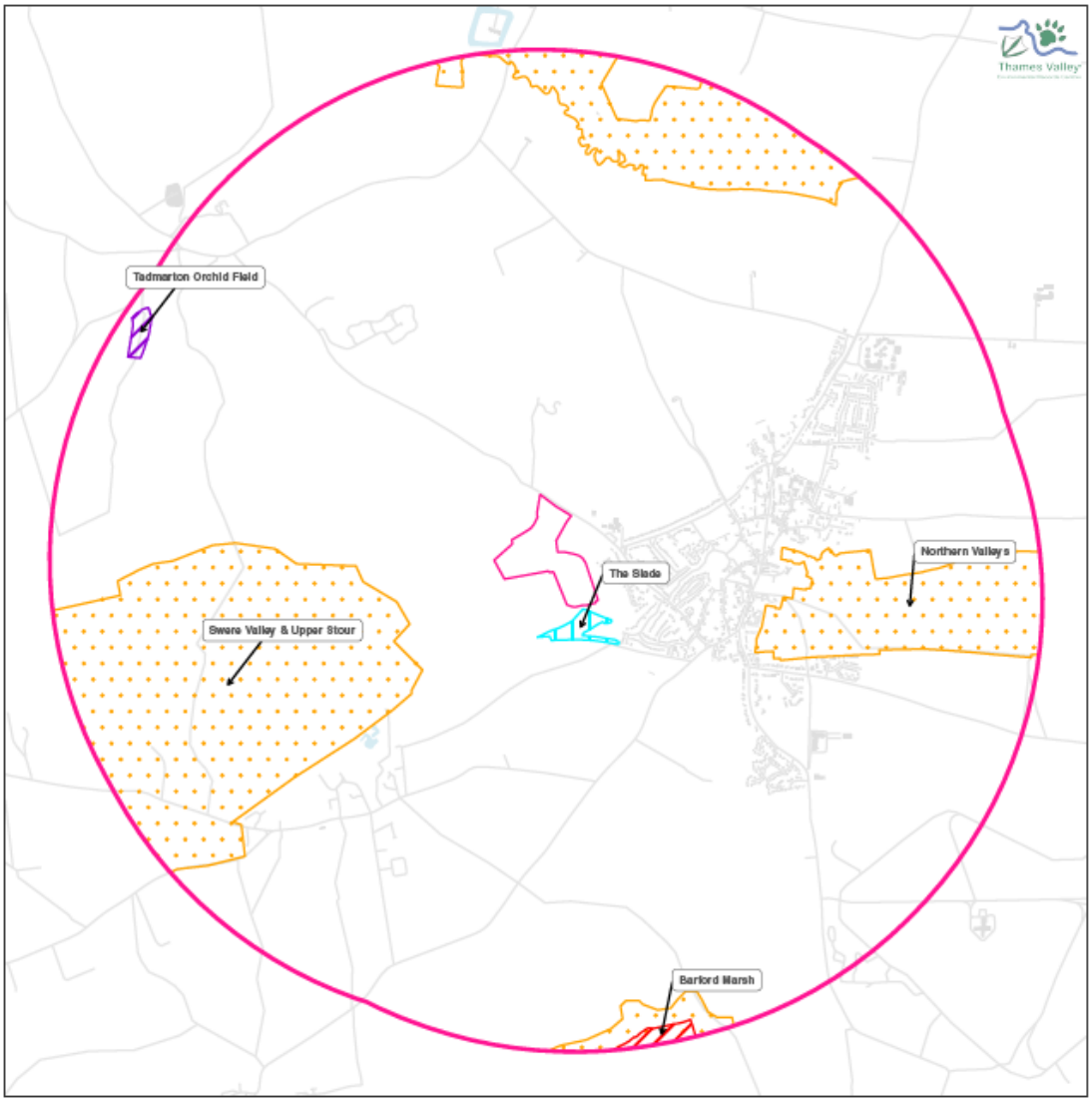
5.4 Table 4 summarises the non-statutory locally designated wildlife sites identified within 2km of the site. Distances are calculated between the closest points.

5.5 Data relating to local wildlife sites were provided by Thames Valley Environmental Records Centre (TVERC) record centre. These sites, in so far as they fall within 2km of the site, are illustrated in Figure 4.

Table 4: Non-statutory local wildlife sites

Site Name	Status	Distance and Direction from site	Key Interest Feature(s)
The Slade	DWS	30m south of the site	Contains wet woodland, lowland mixed deciduous woodland and lowland (HPIs) and numerous protected and notable fauna.
Swere Valley & Upper Sour	CTA	600m south-west of the site	BAP Targets associated with the site include management, restoration and creation of lowland meadow and limestone (lowland calcareous) grassland, management and restoration of fen (and swamp), and management of wet woodland (adjoining rivers) and lowland mixed deciduous woodland.
Barford Marsh	LWS	1.2km south of the site	Area of wet grassland next to River Swere comprising semi-improved grassland with good remnants of a richer flora.
Northern Valleys	CTA	800m east of the site	BAP Targets associated with the site include management and restoration of limestone (lowland calcareous) grassland, lowland dry acid grassland, lowland meadows and management of fen (and swamp).
Tadmarton Orchid Field	pLWS	2km north-west of the site	A wet meadow alongside Sor Brook (Lowland meadow HPI) with an area of good limestone flora including a large population of meadow saxifrage *Saxifraga granulata.*

Figure 4: Non-statutory wildlife sites within 2km of the site (map provided by TVERC)



6.0 Notable Habitats

Ancient Woodland

6.1 No areas of ancient woodland identified on Natural England's ancient woodland inventory are present within the site boundary or adjacent to the site (Figure 5).

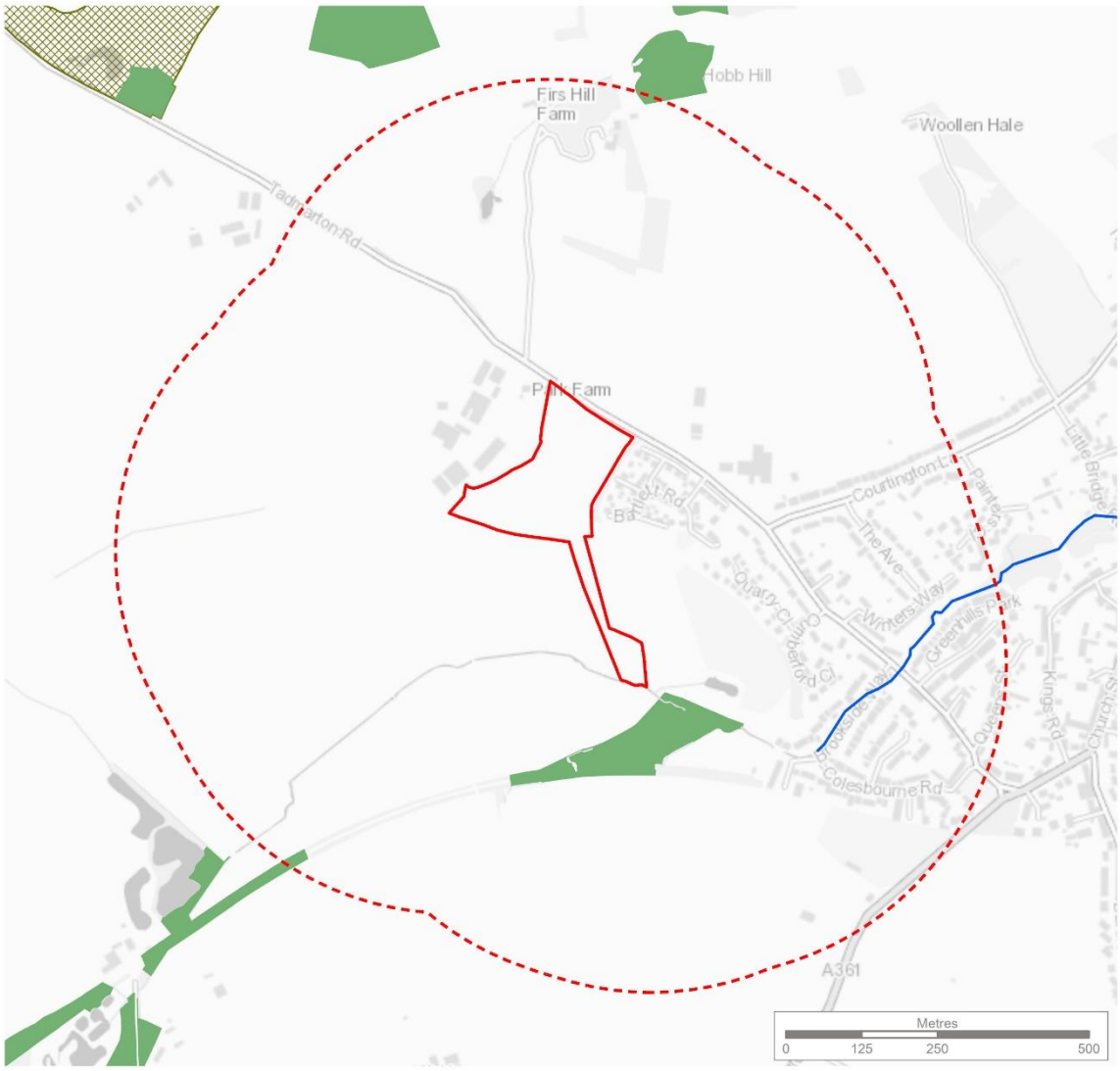
Habitats of Principal Importance (HPI)

6.2 No notable habitats identified on Natural England's priority habitat inventories are present within the site boundary (Figure 5).

6.3 There is an area of deciduous woodland located approximately 30m south of the site, forming part of The Slade LNR. There is also a statutory main river, which is an HPI, located approximately 200m south-east of the site.

6.4 Habitats present within the site boundary comprise predominantly arable land, with small areas of scrub, woodland, tall ruderal habitat, standing and running water. Hedgerows are present on site which are HPI.

Figure 5: Notable habitats within and adjacent to the site



Key

- Site boundary
- Site boundary - 500m buffer
- Statutory main rivers (England)
- Deciduous woodland
- Wood pasture and parkland

THE ENVIRONMENT PARTNERSHIP
Genesis Centre, Birchwood Science Park, Warrington WA3 7BH
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project: Tadmarton Road, Bloxham

Title: Notable Habitats Within and Adjacent to the Site

Drawing Number: G9731.02.005

Scale	Date
1:9,000 @ A4	24/04/2023

Drawn	Checked	Approved
ET	MK	RW

7.0 Protected and Notable Species

Protected Species Licences

7.1 A review of Natural England's open datasets for granted protected species licences returned four licences within 2km of the site, as listed below:

- Application EPSM2010-2514 – granted the destruction of a common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus* resting place between 12th November 2010 and 30th April 2011, located approximately 890m north-east of the site.
- Application EPSM2009-1443 – granted the destruction of a common pipistrelle and brown long-eared bat resting place between 23rd March 2010 and 22nd March 2012, located approximately 1.2km north-east of the site.
- Application 2014-2708-EPS-MIT – granted the destruction of a whiskered bat *Myotis mystacinus* resting place between 11th August 2014 and 31st August 2019, located approximately 1.2km south-west of the site.
- Application 2017-28642-EPS-MIT – granted damage to a common pipistrelle and brown long-eared bat resting place between 1st May 2017 and 31st August 2017, located approximately 1.2km south-west of the site.

7.2 A review of Natural England's open datasets for great crested newt (GCN) *Triturus cristatus* class licence returns and pond survey data between 2017 and 2019 confirmed the presence of GCN within 2km of the site.

Pre-existing Species Records

7.3 Numerous species records were returned from TVERC for within 2km of the site. These are summarised in Table 5.

Table 4: Summary of pre-existing species records returned by TVERC

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Amphibians			
Great crested newt	EPS, WCA5, SPI	15	200m south-east
Birds			
Barn owl	WCA1	10	Within 2km
Black redstart	WCA1	1	Within 2km

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Black headed-gull	BAm	3	Within 2km
Bullfinch	SPI, BAm	16	Within 2km
Common gull	BAm	1	Within 2km
Crossbill	WCA1	2	Within 2km
Cuckoo	SPI, BRd	1	Within 2km
Dunnock	SPI, BAm	9	Within 2km
Fieldfare	WCA1	13	Within 2km
Greenfinch	BRd	12	Within 2km
Grey partridge	SPI, BRd	5	Within 2km
Grey wagtail	BAm	28	Within 2km
Hawfinch	SPI, BRd	2	Within 2km
Hen harrier	WCA1, SPI, BRd	2	Within 2km
Hobby	WCA1	11	Within 2km
House martin	BRd	2	Within 2km
House sparrow	SPI, BRd	7	Within 2km
Kestrel	BAm	167	Within 2km
Kingfisher	WCA1	4	Within 2km
Lapwing	SPI, BRd	7	Within 2km
Lesser black-backed gull	BAm	2	Within 2km
Lesser redpoll	SPI	10	Within 2km
Linnet	SPI	24	Within 2km
Marsh tit	SPI, BRd	26	Within 2km
Meadow pipit	BAm	1	Within 2km
Merlin	WCA1, BRd	1	Within 2km
Mistle thrush	BRd	3	Within 2km

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Peregrine	WCA1	1	Within 2km
Red kite	WCA1	233	Within 2km
Redstart	BAm	3	Within 2km
Redwing	WCA1, BAm	14	Within 2km
Reed bunting	SPI, BAm	14	Within 2km
Ring ouzel	SPI, BRd	3	Within 2km
Rook	BAm	2	Within 2km
Sedge warbler	BAm	1	Within 2km
Skylark	SPI, BRd	4	Within 2km
Snipe	BAm	5	Within 2km
Song thrush	SPI, BAm	9	Within 2km
Sparrowhawk	BAm	132	Within 2km
Spotted flycatcher	SPI, BRd	2	Within 2km
Swift	BRd	173	Within 2km
Tawny owl	BAm	34	Within 2km
Tree pipit	SPI, BRd	3	Within 2km
Whinchat	BRd	1	Within 2km
Whitethroat	BAm	14	Within 2km
Willow warbler	BAm	12	Within 2km
Woodcock	BRd	26	Within 2km
Woodpigeon	BAm	4	Within 2km
Wren	BAm	7	Within 2km
Yellow wagtail	SPI, BRd	1	Within 2km
Yellowhammer	SPI, BRd	3	Within 2km

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Flowering plants			
Himalayan balsam	WCA9, IAS	1	Within 1km
Native bluebell	WCA8	3	100m south
Terrestrial Mammals – Bats			
Bats (unknown species)	EPS, WCA5, SPI	7	200m south
Brown long-eared	EPS, WCA5, SPI	4	200m south
Common pipistrelle	EPS, WCA5	21	200m south
Myotis bat	EPS, WCA5, SPI	4	200m south
Noctule bat	EPS, WCA5, SPI	5	300m south
Nyctalus species	EPS, WCA5, SPI	3	300m south
Pipistrelle species	EPS, WCA5, SPI	5	300m south
Soprano pipistrelle	EPS, WCA5, SPI	3	300m south
Terrestrial Mammals			
Eurasian badger	PBA	6	Within 2km
Eurasian otter	EPS, WCA5, SPI	2	200m south-east
Polecat	SPI	2	1.2km south-east
West European hedgehog	SPI	31	200m east
Reptiles			
Grass snake	WCA5, SPI	4	500m east
Slow-worm	WCA5, SPI	2	400m east

Appendix A: Key Ecological Legislation and National Policy

Relevant Legislation

International Conventions

A.1 The UK is a Contracting Party to numerous environmental conventions, the commonest form of international agreements to encourage a coordinated response to managing the environment. Key environmental conventions ratified in the UK include:

- The Convention on Wetlands of International Importance especially as Waterfowl Habitat ('Ramsar Convention'[21] or 'Wetlands Convention') - provides the only international mechanism for protecting sites of global importance;
- The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention[22]) - imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species;
- The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention[23] or CMS) - provides strict protection for endangered migratory species. The UK has currently ratified four legally binding Agreements under the convention relating to bats (EUROBATS), African-Eurasian migratory birds (AEWA), small cetaceans in the Baltic, Irish and North Seas (ASCOBANS) and albatrosses and petrels (ACAP) in addition to five Memorandum of Understanding (MoU) and is non-party range state to a further Agreement and a further MoU;
- The Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO World Heritage Convention) - seeks to protect both cultural and natural heritage;
- The Convention on Biological Diversity (Biodiversity Convention[24] or CBD) - provides a legal framework for biodiversity conservation. Within the UK, delivery of the CBD and the Strategic Plan for Biodiversity 2011-2020[25] is guided by the UK Post-2010 Biodiversity Framework[26].

A.2 The legal obligations of the multiple Conventions to which the UK is a Contracting Party are enacted through a suite of national environmental legislation. The most relevant are described in the following paragraphs.

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[21] Convention on Wetlands of International Importance especially as Waterfowl Habitat, Ramsar, 2.2.1971 *https://www.ramsar.org/*

[22] Convention on the Conservation of European Wildlife and Natural Habitats. Bern, 1979 *https://www.coe.int/*

[23] Convention on the Conservation of Migratory Species of Wild Animals, Bonn, June 1979 *https://www.cms.int/*

[24] Convention on Biological Diversity, Rio de Janeiro, June 1992*https://www.cbd.int/*

[25] In October 2010, at the 10th Conference of the Parties to the CBD in Nagoya, Japan, the Parties adopted a new 'Strategic Plan for Biodiversity 2011–2020' along with its 20 'Aichi targets'. *https://www.cbd.int/sp/*

[26] The framework is overseen by the Environment Departments of the four UK governments working through the Four Countries' Biodiversity Group. It demonstrates how the UK, through each of the four countries, contributes to achieving the 'Aichi targets', and identifies the activities required to complement the individual country biodiversity strategies *https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/*

Conservation of Habitats and Species Regulations

A.3 The Conservation of Habitats and Species Regulations 2017[27] (2017 Regulations) transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives) into domestic law.

A.4 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[28] (2019 Regulations) amends the 2017 Regulations to make them operable following the withdrawal of the United Kingdom from the European Union (EU). Most of the changes involve transferral of functions from European Commission to the appropriate authorities in England and Wales, also extending to Scotland and Northern Ireland and applies to Scotland and Northern Ireland (including the adjacent territorial sea to a limited degree), as regards reserved and excepted matters respectively. It also amends Section 27 of the Wildlife and Countryside Act 1981 to maintain existing protections and enforcement for species of wild birds.

A.5 All other processes or terms in the 2017 Regulations remain unchanged and existing guidance and obligations (of a competent authority) remain relevant.

National Site Network

A.6 Under the 2019 Regulations, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) in the UK no longer form part of the EU's 'Natura 2000' ecological network, but instead (along with new SACs and SPAs designated under the 2019 Regulations) form the new National Site Network (NSN). Ramsar sites[5] do not form part of the NSN but remain protected in the same way as SACs and SPAs.

A.7 Proposals which may significantly affect a site belonging to the NSN and which are not connected with or necessary to the management of that site require (by Regulations 63 and 64 of the 2017 Regulations, as amended by Regulations 24 and 25 of the 2019 Regulations, respectively) competent authorities to undertake an Appropriate Assessment of the implications of the plan or project in view of that site's conservation objectives. This process is commonly referred to as a 'Habitats Regulations Assessment' (HRA). The assessment must consider the potential effects both of the plan/project itself and in combination with other plans or projects. Where an adverse effect on the site's integrity cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest (IROPI) and if the necessary compensatory measures can be secured.

[27] Conservation of Habitats and Species Regulations 2017 (SI 2017/1012) *https://www.legislation.gov.uk/uksi/2017/1012/*

[28] Conservation of Habitats and Species Regulations 2019 (SI 2019/579) *https://www.legislation.gov.uk/uksi/2019/579/*

Protected Species

A.8 Certain animals and their breeding sites or resting places are protected under Regulation 43 of the 2017 Regulations, which makes it illegal to:

- Deliberately capture, injure or kill any such animal or to deliberately take or destroy the eggs of such an animal;
- Deliberately disturb such an animal; and
- Damage or destroy a breeding site or resting place of such an animal.

A.9 Disturbance is defined in the 2017 Regulations as an activity which is likely to impair a species' ability to survive, to breed or reproduce, to rear or nurture young or, in the case of animals hibernating or migratory species, to hibernate, migrate or which may affect significantly the local distribution or abundance; of the species.

A.10 A bat's resting place is known as a roost site. Because bats tend to be faithful to roost sites but their biology is such that different roost site characteristics are preferred at different times of the year by different species for different functions, a bat roost is considered to be afforded protection even when it is not occupied.

A.11 Certain plant species are protected under Regulation 47 of the 2017 Regulations against deliberate picking, collecting, cutting, uprooting or destruction. It is also an offence to be in possession or control and to transport any live or dead plant or part of a plant of such a species which has been taken in the wild.

A.12 The 2017 Regulations (Regulation 55) enables a relevant licensing body to grant a licence for certain activities that may affect animal or plant species protected by the above provisions. The purpose must conform to one of those listed under Regulation 55(2). For most development related activities, the purpose normally relates to Regulation 55(2)(e) 'preserving public health or public safety or other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequence of primary importance for the environment' – commonly known as the IROPI test. Regulation 55(9) introduces two further tests that the licensing body must consider:

- There is no satisfactory alternative; and
- The favourable conservation status of the species concerned will be maintained and/or enhanced.

A.13 Under Regulation 9(1) of the 2017 Regulations (as amended), competent authorities "must exercise their functions which are relevant to nature conservation… so as to secure compliance with the requirements of the Directives". Regulation 9(3) requires a competent authority, in exercising any of its function, to "have regard to the requirements of the Directives so far as they be affected by the exercise of those functions." Local planning authorities must therefore consider the above three 'tests' when determining if planning permission should be granted for developments likely to cause an offence under the Regulations.

Wildlife and Countryside Act 1981

A.14 The Wildlife and Countryside Act 1981 (as amended)[29] (WCA) is a major legal instrument for wildlife protection in the UK. In respect of habitats and flora, the WCA protects important habitats and/or species as Sites of Special Scientific Interest (SSSI). The designation of UK Ramsar sites[5] has usually been underpinned through prior notification of these areas as SSSI and accordingly they receive statutory protection under the WCA.

A.15 The obligations of the Bern Convention[6] (the protection of wild plant and animal species and their natural habitats) are transposed into law for England and Wales[30] by the WCA. The legal requirement for the protection of migratory species listed by the Bonn Convention[7] is also provided by the WCA.

A.16 All wild birds (as defined by the WCA and with exception to species listed in Schedule 2) are protected under the WCA, which makes it illegal to:

- Intentionally kill, injure or take any wild bird;
- Take, damage or destroy the nest (whilst being built or in use) of any wild bird; or
- Take or destroy the eggs of any wild bird.

A.17 Special penalties are available for offences related to birds listed in Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The WCA also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

A.18 Certain animal species (listed under Schedule 5) of the WCA receive protection which makes it illegal (with certain exceptions) to:

- Intentionally kill, injure or take any such animal;
- Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal;
- Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.

A.19 The Environment Act (EA) 2021 amends the licensing regime under Section 16 of the WCA 1981 to enable licences to be granted (in England only) for reasons of overriding public interest. This new purpose will enable those involved in development activities to apply for a derogation under the WCA for species domestically protected under Schedule 5 of the WCA 1981.

[29] Wildlife and Countryside Act 1981 c. 69 *https://www.legislation.gov.uk/ukpga/1981/69/*

[30] In Scotland by the Nature Conservation (Scotland) Act 2004 (as amended) and in Northern Ireland by Wildlife (Northern Ireland) Order 1985 and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.

A.20 The amendments introduced by the EA 2021 at Section 16(3) requires that licensed may only be granted (in England) where:

- there is no other satisfactory solution, and
- the grant of the licence is not detrimental to the survival of any population of the species of animal or plant to which the licence relates.

A.21 Plant species listed under Schedule 8 of the WCA 1981 are protected from unauthorised intentional picking, uprooting and destruction.

A.22 It is an offence to plant or otherwise cause to grow in the wild any plant that is included in Schedule 9.

Countryside and Rights of Way Act 2000

A.23 Part III of the Countryside and Rights of Way Act 2000[31] (CROW) deals specifically with wildlife protection and nature conservation. It requires that Government Departments have regard for the conservation of biodiversity, in accordance with the CBD. In addition, it requires that The Secretary of State publishes a list of living organisms and habitat types that are considered to be of principal importance in conserving biodiversity.

A.24 CROW also amends the WCA, expanding the terms of offences to include reckless activity. It increases the legal protection of threatened species, by also making it an offence to "recklessly" obstruct access to a sheltering place used by an animal listed in Schedule 5 of the WCA or "recklessly" disturb an animal occupying such a structure or place.

Natural Environment and Rural Communities (NERC) Act 2006

A.25 Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC)[32] places a duty to conserve biodiversity on public authorities in England. It requires local authorities and government departments to have regard to the purposes of conserving biodiversity in a manner that is consistent with the exercise of their normal functions such as policy and decision-making. 'Conserving biodiversity' may include enhancing, restoring or protecting a population or a habitat.

A.26 Section 41 requires the Secretary of State to publish and maintain lists of species and types of habitats which are regarded by Natural England to be of "principal importance" for the purposes of conserving biodiversity in England.

A.27 These habitats and species of principal importance (HPI and SPI) are drawn from earlier lists of United Kingdom Biodiversity Action Plan Priority Species and Habitats. The

[31] Countryside and Rights of Way Act 2000 c. 37 *https://www.legislation.gov.uk/ukpga/2000/37/*

[32] Natural Environment and Rural Communities Act 2006 c. 16 *https://www.legislation.gov.uk/ukpga/2006/16/*

Section 41 (S41) lists of HPI and SPI are needed by decision-makers in local and regional authorities when carrying out their duties under Section 40 of the Act.

Environment Act 2021

A.28 The Environment Act 2021[33] was passed into law in November 2021. The Act applies only to England, although many of its measures are designed to be operable across the UK with the consent of devolved administrations. The Act requires statutory long-term (15+ years) targets to be set (and monitored, reported and reviewed) in the four priority areas of waste reduction, air quality, water resources and biodiversity as well as additional targets relating to species abundance and fine particulates by 2030.

A.29 The Environment Act amends the Town and Country Planning Act 1990[34] in that planning permissions granted after the provisions come into force[35] are deemed to be subject to a condition prohibiting the start of development before a biodiversity gain plan has been submitted to and approved by the Local Planning Authority (LPA).

A.30 The biodiversity gain plan must demonstrate a net gain of at least 10% in the biodiversity value of the development site "as at the time the development is completed". Biodiversity net gain must be demonstrated by calculations using the biodiversity metric (currently version 3.1 published by Natural England)

A.31 The Environment Act introduces Local Nature Recovery Strategies (LNRS), a new system of spatial strategies for nature, covering the whole of England. LNRS are to be prepared and published by the 'responsible authority', namely the local authority, mayoral authority or National Park authority whose area is, or is within, the strategy area, the Broads Authority or Natural England. Section 40 of the NERC Act (duty to conserve biodiversity) makes provision about the duties of public authorities in relation to LNRS.

A.32 A 'responsible authority' is to be appointed to lead each LNRS area, which could include LPAs and which in mayoral combined authorities is highly likely to be the mayor. The responsible Authority must map the most valuable existing natural habitat in its area and develop a biodiversity strategy, including specific proposals for creating or improving habitats and priorities for nature recovery.

A.33 In addition to the above, the Environment Act Part 6 (Nature and biodiversity) will also:

- Strengthen the biodiversity duty through amendments to Section 40 of the NERC Act.
- Impose a duty upon Local Authorities to consult on street tree felling;
- Strengthen woodland protection enforcement measures;

[33] Environment Act 2001 c.30 *https://www.legislation.gov.uk/ukpga/2021/30/*

[34] Town and Country Planning Act 1990 c. 8 *https://www.legislation.gov.uk/ukpga/1990/8/*

[35] The Biodiversity Gain provision of the Environment Act requires the Secretary of State to first publish detailed regulations (see s147(3) of the Act). These are anticipated in November 2023.

- Introduce Conservation Covenants (agreements between a landowner and a responsible body);
- Protected Site Strategies (prepared and published by Natural England) to improve the conservation and management of a protected site (including SACs, SPAs listed before exit day, Sites of Community Importance (SCI)[36] listed before exit day and those sites proposed before exit day as SACs).
- Species Conservation Strategies (prepared and published by Natural England) to improve the conservation status of any species of flora or fauna, with which a LPA in England and any prescribed authority must have regard so far as relevant to its functions, including when discharging its duties under the 2017 Regulations (as amended);
- Prohibit larger UK businesses from using commodities associated with wide-scale deforestation (where 'forest' is defined as "*an area of land of more than 0.5 hectares with a tree canopy cover of at least 10% (excluding trees planted for the purpose of producing timber or other commodities)*", which includes "*land that is wholly or partly submerged in water whether temporarily or permanently*");
- Require regulated businesses to establish a system of due diligence for each regulated commodity used in their supply chain, requires regulated businesses to report on their due diligence, introduces a due diligence enforcement system.

Hedgerow Regulations 1997

A.34 Important hedgerows are protected from removal by the Hedgerows Regulations[37] (as amended). Regulation 3 defines the hedgerows to which the Regulations apply. Regulation 4 sets out the criteria for identifying "important hedgerows" including ecological, landscape or historical/cultural reasons. Under the Hedgerow Regulations it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. Works to "important hedgerows" are exempt under the Hedgerow Regulations if planning consent is granted which allows their removal.

A.35 The identification of important hedgerows also provides an additional means to value hedgerows aside from their botanical value (e.g. species richness) as the assessment of importance also includes characteristics relating to maturity and structure (e.g. associated features, connectivity, integrity) which will affect the functional value of the hedgerow.

[36] SCIs are established under the European Union Habitats Directive (92/43/EEC) and are (under the Habitats Directive) the pre-requisite step for establishing SACs and SPAs.

[37] The Hedgerow Regulations 1997 (SI 1997/1167) *https://www.legislation.gov.uk/uksi/1997/1160/*

Protection of Badgers Act 1992

A.36 Badgers and their setts receive statutory protection under the Protection of Badgers Act 1992 (PBA)[38]. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett.

A.37 Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "any structure or place, which displays signs indicating current use by a badger."

Wild Mammals (Protection) Act 1996

A.38 All UK wild mammals are afforded a degree of protection from certain cruel acts. The Act is intended to preserve animal welfare more so than nature conservation. The Act makes it an offence to use a variety of methods to intentionally cause suffering to a wild mammal. It also has exemptions including in relation to euthanasia and otherwise lawful use of certain methods of killing.

Relevant National Policy

National Planning Policy Framework

A.39 The National Planning Policy Framework (NPPF23)[39] sets out the Government's planning policies for England and how these are expected to be applied at a local level in development plans and how developers should address them. The Framework places great emphasis on plans and developments contributing to sustainable development.

A.40 Policy relating to sustainable design, climate resilience and green infrastructure are integrated throughout the NPPF. Relating to the planning and delivery of large-scale developments, Paragraph 22 requires that a vision should look at least 30 years ahead.

A.41 Paragraph 73 identifies a number of considerations to help guide such large-scale proposals including consideration of opportunities presented by the scope for net environmental gains, ensuring sustainable communities, quality of places, rates of delivery and establishment of Green Belt around or adjoining new developments of significant size.

A.42 Paragraph 131 states that "Planning policies and decisions should ensure that new streets are tree-lined and that opportunities are taken to incorporate trees elsewhere in developments and that appropriate measures are put in place to secure the long-term maintenance of newly planted trees, and that existing are retained where possible."

[38] Protection of Badgers Act 1992 c. 51 *https://www.legislation.gov.uk/ukpga/1992/51/*

[39] National Planning Policy Framework (2023). Department for Levelling Up, Housing and Communities. *https://www.gov.uk/government/publications/national-planning-policy-framework--2*

A.43 Paragraph 153 state that plans should take a proactive approach to mitigating and adapting to climate change, considering the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts.

A.44 Furthermore paragraph 154 requires that new development should be planned to avoid increased impacts from climate change. In areas which are vulnerable from impacts of climate change these should be mitigated against and managed through suitable adaption measures, such as green infrastructure.

A.45 Part 15 Paragraphs 174 to 188 relate expressly to conserving and enhancement the natural environment. Paragraph 174 requires that planning policies and decisions should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

A.46 Paragraphs 175 and 176 relate designated sites, prioritising allocation of land with least environmental or amenity value, establishing a strategic approach to maintaining and enhancement landscape networks and the sensitive location and design of development within the setting of designated sites to avoid or minimise impacts upon those sites.

A.47 Paragraphs 179 to 182 specifically relate to habitats and biodiversity. Under paragraph 179, plans should identify, map and safeguard designated sites of importance for biodiversity and wider ecological networks (corridors and stepping stones) that connect them, promote conservation, restoration and enhancement of these networks, priority habitats and priority species recovery in addition to pursuing measurable biodiversity net gain.

A.48 Paragraph 180 requires local planning authorities to apply the following principles when determining planning applications:

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats[40] should be refused, unless are wholly exceptional reasons and a suitable compensation strategy exists; and;
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."

A.49 Paragraph 181 stipulates that the following should be given the same protection as habitats sites[41]:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

A.50 Paragraph 182 confirms the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

A.51 Paragraphs 183 to 188 relate to ground conditions and pollution, including light pollution. Paragraph 185(c) requires policies and planning decisions ensure that new developments

[40] Noted by NPPF23 as "Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen".

[41] Defined by NPPF23 as "Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant Marine Sites".

limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Government Circular 06/2005

A.52 Government Circular 06/2005[42] remains pertinent in national policy even though PPS9, which it originally supported, was revoked by the NPPF. NPPF23 references the Circular and the guidance contained within, namely the statutory obligations for biodiversity and geological conservation and their impact within the planning system.

A.53 The Circular provides guidance on the protection of designated international and national nature conservation sites, non-designated sites, the conservation of species, and advice on the related issues and statutory powers.

A.54 Part IV relates to conservation of species protected by law and confirms the presence of such a species is a material consideration for planning decisions. Paragraph 99 states "*It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have addressed in making the decision*".

A.55 Paragraphs 104 to 117 summarise legal status of species afforded protection under the Habitats Regulations (now, the 2017 Regulations) and the licensing process while paragraphs 118 to 122 explain the same for species afforded protection under the WCA. Paragraphs 123 and 124 summarise the protective status of badgers under the PBA. Paragraph 124 states that "*the likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions. Although consideration of the case for granting a licence is separate from the process of applying for planning permission, a planning authority should advise anyone submitting an application for development in an area where there are known to be badger setts that they must comply with the provisions of the Act*".

[42] Office of the Deputy Prime Minister (2005) 'Government Circular: Geological and Biological Conservation – Statutory obligations and their implications within the planning system' ODPM circular 06/2005, DEFRA circular 01/2005 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf*

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Appendix B: Phase 1 Target Notes

Target Notes Report – Tadmarton Road, Bloxham, Banbury

Survey 9731.02.02

Target Note TN01 – Earth Bund with Tall Ruderal and Scattered Scrub

An earth bund forming the eastern boundary of field F1 covered with tall ruderal vegetation, including common nettle Urtica dioica, rosebay willowherb *Chamaenerion angustifolium* and thistle species *Cirsium sp.*, and scattered bramble *Rubus fruticosus agg.* scrub.

Target Note TN02 – Scattered Tree with Bat Roost Suitability

A semi-mature ash *Fraxinus excelsior* tree approximately 7m in height. The tree supported several upward facing minor knotholes at varying heights and a minor wound on the trunk on the eastern aspect that was cluttered by scrub growing round the base of the tree. The tree was assessed as having low suitability to support roosting bats.

Target Note TN03 – Tall Ruderal

An area of tall ruderal vegetation within an old pheasant enclosure. The tall ruderal vegetation was dominated by common nettle *Urtica dioica*.

Target Note TN04 – Rock Pile

A pile of rocks at the edge of some dense scrub that provided potential habitat for sheltering and hibernating amphibians, reptiles, and small mammals.

Target Note TN05 – Former Quarry Workings

A large strip of dense and scattered scrub was present within the former quarry workings with scattered Norway maple *Acer paltanoides*, alder species *Alnus sp.*, common hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior* and pedunculate oak *Quercus robur* trees.

The vegetation surrounded a drainage ditch fed by an outflow pipe that was largely dry to the west and a large pond to the east.

The scrub was semi-mature to a maximum height of approximately 5m. Scrub species present included frequent common ash *Fraxinus excelsior* and common hawthorn *Crataegus monogyna*, and occasional dog rose *Rosa canina*, elder *Sambuca nigra*, and bramble *Rubus fruticosus agg.*, with Norway spruce *Picea abies* recorded rarely.

Many trees within this area were found to be covered with dense ivy cladding. The group was assessed as having low suitability to support roosting bats. Habitats within this area were considered suitable to support reptiles, amphibians, including GCN, small mammals, including hedgehog, and nesting birds.

Target Note TN06 – Bare Ground at Former Pond

A previous survey by TEP in January 2023 recorded a pond in this area. It was found during the updated survey that the pond had been filled in and now comprised bare ground habitat.

Exposed rock strata at the northern edge of the former pond provides suitable habitat for hibernating or sheltering amphibians and reptiles.

Target Note TN07 – Broadleaved Semi-Natural Woodland and Stream

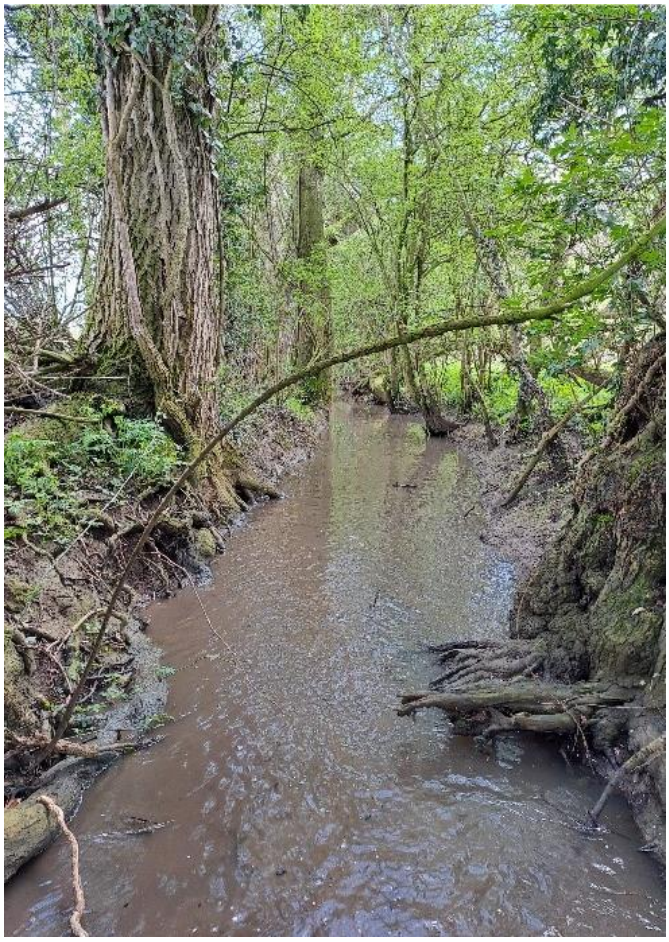
A short section of stream is present within the site, crossing into the site adjacent to the southern boundary, and flowing west to east. The channel was approximately 1.5-2m wide and 0.5m deep and had an earth base and banks. The stream was lined with semi-mature to mature trees and woodland.

Tree species recorded included occasional Norway maple, ash, alder species, willow species *Salix sp.*, and pedunculate oak. The understorey comprised occasional common hawthorn, apple *Malus sp.*, and elder. The ground flora comprised abundant nettles, frequent lords and ladies *Arum maculatum*, ivy *Hedera helix*, and lesser celandine *Ficaria verna*, and occasional dog rose, bramble, cow parsley *Anthriscus sylvestris*, creeping buttercup *Ranunculus repens*, great willowherb *Epilobium hirsutum*, and herb-Robert *Geranium robertianum*.

Target Note TN08 – Tall Ruderal Vegetation

A sizeable rabbit warren.

Appendix C: Amphibian Survey Report (TEP Ref: 9731.02.005)



Tadmarton Road

Bloxham, Banbury

Protected Species Report: Amphibians

Prepared For: Gladman Developments

Document Reference: 9731.02.005

November 2023

Version 1.0

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The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Tables

Annexes

Drawings

G9731.02.012 GCN Crested Newt eDNA Survey Results

G9731.02.013 GCN Positive Ponds with Buffer Zones

G9731.02.007B Phase 1 Habitat Survey

Executive Summary

Introduction	▸ The site is located at Tadmarton Road, Bloxham, Banbury. ▸ A total of 2 ponds were located on site with a further 11 ponds located within a 500m buffer. All on-site and off-site ponds were subject to Habitat Suitability Assessments. All on-site ponds and 10 of the 11 off-site ponds were subject to eDNA surveys. ▸ There are proposals for residential development at the site.
Surveys Undertaken	▸ The desk study was completed January 2023. ▸ Aquatic Habitat Suitability Index (HSI) Assessments took place 6th January 2023 for Pond P2; 19th – 20th April 2023 for Ponds P1, P3 – P6 and P9 – P13; and on 26th May 2023 for Ponds P7 and P8. ▸ eDNA sampling was undertaken at Ponds P1, P3, P5, P9, P10, P12 and P13 on 19th and 20th April 2023. eDNA sampling was undertaken at Pond P7 on 26th May 2023. ▸ eDNA sampling was not undertaken at Pond P2 as it has been filled in at the time of survey. Ponds P4, P6 and P11 were not surveyed as they were dry. Access was not granted to survey Pond P8 by eDNA. ▸ A Phase 1 habitat survey was also undertaken on 6th January 2023, with an updated habitat survey undertaken on 12th April 2023.
Results	▸ HSI assessment results confirmed ponds ranged from having Poor to Excellent suitability to support great crested newts (GCN). ▸ eDNA testing returned positive results for P5, P7 and P10. The ponds are located between 280m and 334m from the site. ▸ Suitable habitat for GCN is present on site, ponds, hedgerows, scattered and dense scrub, tall ruderal vegetation and scattered trees.
Further requirements	▸ Works over 250m from a GCN breeding pond are not considered licensable. Works between 250m and 500m of a GCN breeding pond, which is not separated from the site by a significant barrier to amphibian dispersal, should be conducted under a Precautionary Working Measures Method Statement (PWMS). ▸ A 250m buffer and 500m has been applied to Ponds P5, P7 and P10, which are returned positive for GCN. The entire redline site boundary falls within the 250m to 500m buffer. Any clearance of suitable habitat for GCN on site should therefore be done under a Precautionary Working Measures Method Statement (PWMS). ▸ If GCN are found on site during site clearance under the PWMS, works must stop and a licence must be applied for. It this case, it will be possible to register the site under the Nature Space GCN District Level Licencing (DLL) Scheme. Works must then not continue until the licence has been granted.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

1.0 Introduction

Project Context

1.1 The Environment Partnership (TEP) was commissioned by Gladman Developments Ltd in March 2023 to undertake Habitat Suitability Index (HSI) assessments and eDNA sampling at ponds within the site and within a 500m buffer of the site located at Tadmarton Road, Bloxham, Banbury (hereafter referred to as 'the site'). The site is located at grid reference SP 42049 35945 and is approximately 4.4ha in area.

1.2 Along with the aquatic Habitat Suitability Index (HSI) assessment and eDNA sampling, the site has also undergone a Phase 1 habitat survey.

Contains OS data © Crown Copyright and database right 2023.

Figure 1: Location of Scheme, ponds within 500m and relevant barriers to amphibian dispersal

1.3 The surveys are required to support an outline application for residential development.

Ecological Context

1.4 Two ponds are present within the site development footprint. A further 11 ponds are identified within 500m of the Scheme boundary.

1.5 A Phase 1 habitat survey was completed at the site on 6th January 2023 and was updated on 12th April 2023. The site is dominated by land under agricultural use including arable fields with a minor provision of semi-improved grassland. Hedgerows are present along field boundaries and a short section of stream within semi-natural broadleaved woodland grazes the southern site boundary. Former quarry workings bisect the site encompassing a small section of running water, a large pond, dense scrub, and scattered trees. Wet ditches, tall ruderal vegetation, and scattered scrub habitats were also found within the site.

1.6 Tadmarton Road forms the north-eastern site boundary, a working farm is located directly to the northwest of the site, and the eastern boundary abuts a new housing development and associated public open space beyond which lies the village of Bloxham. Rural land under agricultural use extends in all other directions.

Legal Protection

1.7 All British amphibian species receive legal protection in the United Kingdom though the degree to which different species are protected varies. Great crested newts (GCN) *Triturus cristatus*, natterjack toad *Epidalea calamita* and pool frog *Pelophylax lessonae* and their habitats (places used for breeding and shelter) receive the highest level of protection in the UK under the combination of the Wildlife and Countryside Act 1981 as amended and the Conservation of Habitats and Species Regulations 2017 as amended. While natterjacks and pool frogs have restricted distributions within the UK, GCN are relatively widespread.

1.8 Licences to allow derogation from the protection afforded to GCN (and NT and PF) may be granted under the provisions of the 2017 Regulations.

1.9 Further information relating to legal protection afforded to native amphibian species is presented in Annex A.

1.10 GCN, natterjack and common toads *Bufo bufo* and the pool frog are listed as Species of Principle Importance (SPI). Section 40 of the Natural Environment and Rural Communities Act 2006 imposes a Duty upon public authorities to conserve biodiversity. Commonly referred to as the 'biodiversity duty', this includes local planning authorities in their decision making for planning applications or other plans or projects which may affect SPI.

Survey Rationale

Survey Guidance

1.11 Amphibian survey follows best practice and published guidance, including:

- Habitat Suitability Index (HSI) Assessment (ARGUK, 2010)[1]
- Great crested newt mitigation guidelines (English Nature, 2001)[2]
- Great crested newt conservation habitat (Froglife, 2001)[3]

Survey Design and Scope

1.12 The surveys were designed to determine whether or not great crested newts (GCN) *Triturus cristatus* are present within the site boundaries or in ponds within ranging distance of the site.

1.13 Both ponds within the Tadmarton Road site (Ponds P1 and P2) and all 11 ponds located within 500m of the site boundary (Ponds P3 – P13) were subject to survey.

1.14 All ponds were subject to Habitat Suitability Index (HSI) Assessments. Ponds P1, P3, P5, P7, P9, P10, P12 and P13 were subject to environmental DNA (eDNA) survey. eDNA sampling was not undertaken at Pond P2 as it had been filled in at the time of survey. Ponds P4, P6 and P11 were not surveyed as they were dry. Access was not granted to survey Pond P8 for eDNA.

1.15 Table 1 sets out the rationale for ponds with potential influence (500m) of the Scheme.

Table 1: Survey Rationale

Waterbody ID	Distance & Direction	Description and Survey Rationale	Scoped In
P1	On-site	A large pond within the former quarry workings area of the site. Has potential to support amphibians.	Yes
P2	On-site	A moderate sized pond within the former quarry workings area of the site. Had potential to support amphibians before it was filled in.	Yes
P3	178m North	A small pond located within a pastoral field. Has potential to support amphibians.	Yes
P4	176m Northeast	A small pond located within a pastoral field. Has potential to support amphibians, although was dry at the time of survey.	Yes
P5	334m Northeast	A small to medium sized pond in a fenced off area within a field. Has potential to support amphibians.	Yes
P6	250m Northeast	A former field pond. Very little evidence of the area being a pond was found at the time of survey. It was considered possible that the depression holds water during periods of high rainfall, and therefore has potential to support amphibians. Pond was dry at the time of survey.	Yes
P7	280m East	A small wildlife pond in the grounds of a school. Has potential to support amphibians.	Yes

[1] ARG UK Advice Note 5 (May 2010) Great Crested Newt Habitat Suitability Index

[2] English Nature (2001) Great Crested Newt Mitigation Guidelines (Version August 2001), English Nature, Peterborough

[3] Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth

Waterbody ID	Distance & Direction	Description and Survey Rationale	Scoped In
P8	92m East	A large pond within the biodiversity mitigation area of the adjacent recent residential development. Could be viewed from a distance to undertake a Habitat Suitability Index (HSI) assessment, not accessible for eDNA survey. Has potential to support amphibians.	Yes
P9	275m South	A moderate sized pond within some woodland at the edge of fields. Has potential to support amphibians.	Yes
P10	280m West	A moderate sized pond at the edge of an arable field. Has potential to support amphibians.	Yes
P11	500m West	A small pond in the centre of an arable field. Has potential to support amphibians.	Yes
P12	373m Northwest	A very small pond at the edge of an arable field by Tadmarton Road. Has potential to support amphibians.	Yes
P13	284m Northwest	A moderate sized pond within an arable field with an island in the centre. Has potential to support amphibians.	Yes

Surveyor Qualifications and Competency

1.16 Amphibian surveys were undertaken by TEP Ecologists in possession of a Natural England GCN survey licence, with relevant training and experience. Further confirmation of survey competency can be provided upon request.

2.0 Methods

Data Search

2.1 An ecological desk study was completed in January 2023 to identify pre-existing records for GCN and other protected or SPI amphibians within 2km of the scheme. The desk study, reported under separate cover (Document Ref: 9731.02.001), included a data request to the Thames Valley Environmental Records Centre (TVERC).

2.2 The data search also included a review of citations and site forms (where available) for statutory and non-statutory designated sites within 2km of the proposed scheme where amphibians were mentioned.

Aquatic Habitat Suitability Index (HSI) Assessments

2.3 Aquatic HSI assessment was undertaken at a total of 13 ponds, including two ponds on site and 11 ponds within 500m of the Scheme. Access was granted to both ponds on site and to all 11 of the ponds located within 500m of the scheme.

2.4 A HSI assessment of Pond P2 on site was undertaken on 6th January 2023 prior to the pond being filled in. HSI assessments of Ponds P1, P3, P4, P5, P6, P9, P10, P11, P12 and P13 were undertaken on 19th and 20th April 2023. A HSI assessment of Ponds P7 and P8 was undertaken on 26th May 2023.

2.5 HSI is a standard measure of calculating the suitability of a pond to support breeding great crested newts, based on an assessment of 10 characteristics (indices), including size, shading, depth, and vegetation profile. The assessment generates a number between 0 and 1 for each of the indices which are combined to provide an overall assessment of a pond's suitability to support GCN on a categorical scale, as presented in Table 2. The assessment has not been designed for or tested on other waterbodies such as ditches.

Table 2: HSI Suitability Scores

HSI Score	Suitability	Predicted GCN Occupancy of Ponds in each Category
<0.5	Poor	3%
0.5 to 0.59	Below Average	20%
0.6 to 0.69	Average	55%
0.7 to 0.79	Good	79%
>0.8	Excellent	93%

Environmental DNA (eDNA) Sampling

2.6 Environmental DNA (eDNA) sampling was undertaken at a total of 12 ponds, located either on site or within 500m of the Scheme. Access was granted to both ponds on site, and to 10 of the 11 ponds located off-site within 500m of the scheme.

2.7 eDNA sampling was undertaken at Ponds P1, P3, P5, P9, P10, P12 and P13 on 19th and 20th April 2023. eDNA sampling was undertaken at Pond P7 on 26th May 2023.

2.8 eDNA sampling was not undertaken at Pond P2 as it had been filled in at the time of survey. Ponds P4, P6 and P11 were not surveyed as they were dry. Access was not granted to survey Pond P8 by eDNA.

2.9 Sample collection was undertaken by TEP licensed surveyors. Sample kits and analysis was provided by ADAS. Both organisations followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England. In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.
- Survey locations were distributed around the pond perimeter, but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.
- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Chain of Custody

2.10 On receipt from ADAS the sampling kits were registered on a central database using the unique bar codes. Immediately prior to survey, sampling kits were issued to surveyors with individual Sample Forms using the unique bar code as identification. The site name and date of issue was also recorded on this form (and on the central database). Once in the field and at the ponds, the surveyor confirmed that the appropriate field survey sheet was being completed by checking the bar code on the box and double checking the corresponding bar codes on the sample tubes. The surveyor then filled in the date of survey and the pond ID number (as well as other information relating to survey conditions) on the Sample Form.

2.11 On returning to the office the Sample Forms were signed to confirm for each sample who received the samples and checked them into the fridge and the temperature of the fridge. The pond IDs on each form were checked against a site map confirming which ponds had been sampled and this map was stored with the Sample Forms. All this information was also recorded on the central

database. The sample preserving tubes were stored in a fridge until the morning of collection by the courier. The Sample Forms and the central database were updated to confirm the date of collection by the courier.

2.12 The unique bar codes were used by ADAS to report results. All results were recorded in the central database by one member of staff and cross checked by a second member of staff before issuing to the project leader for review.

Survey Limitations

2.13 All ponds were subject to HSI. Access was not granted to survey Pond P8 for eDNA. Ponds P4, P6 and P11 could not be subject to eDNA surveys as they were dry. Pond P2 had been filled in by the time of the eDNA survey.

2.14 There were no limitations to the HSI or eDNA surveys conducted within the surveyed ponds. The results obtained are considered to show an accurate overview of the GCN presence within these ponds.

Surveyor Qualifications and Competency

2.15 GCN surveys were undertaken by TEP Ecologists in possession of a Natural England GCN survey licence, with relevant training and experience. Further confirmation of survey competency can be provided upon request.

3.0 Results

Desk Study

3.1 The desk study confirmed habitats within and adjacent to the scheme have the potential to support amphibians.

3.2 Data searches using Magic Maps confirmed the presence of amphibian species records within 2km from the scheme boundary. In brief, these records included:

- Great crested newt (GCN) (EPS, WCA5, SPI);
- Common frog (WCA5 section 9.5a);
- Palmate newt (WCA5 section 9.5a); and
- Smooth newt (WCA5 section 9.5a).

Pond Survey

HSI Assessment

3.3 The results of all ponds subject to a HSI assessment are set out in Table 3 below.

Table 3: HSI Assessment Results

Water body ID	SI1 Location	SI2 Area	SI3 Permanence	SI4 Water Quality	SI5 Shade	SI6 Waterfowl	SI7 Fish	SI8 Density	SI9 Terrestrial Habitats	SI10 Macrophyte Cover	HSI Overall Score	HSI Suitability Category
P1	A	700	Sometimes	Poor	60%	Minor	Absent	>13	Moderate	30%	0.73	Good
P2	A	200	Sometimes	Poor	5%	Absent	Absent	>13	Moderate	10%	0.67	Average
P3	A	<50	Annually	Poor	90%	Minor	Absent	>13	Moderate	10%	0.40	Poor
P4	A	<50	Annlyally	Poor	75%	Minor	Absent	>13	Moderate	0%	0.42	Poor
P5	A	50	Sometimes	Poor	80%	Minor	Possible	>13	Moderate	90%	0.55	Below Average
P6	A	<50	Annually	Poor	0%	Absent	Absent	>13	Moderate	0%	0.45	Poor
P7	A	50	Never	Moderate	50%	Minor	Possible	>13	Moderate	70%	0.70	Average

Water body ID	SI1 Location	SI2 Area	SI3 Permanence	SI4 Water Quality	SI5 Shade	SI6 Waterfowl	SI7 Fish	SI8 Density	SI9 Terrestrial Habitats	SI10 Macrophyte Cover	HSI Overall Score	HSI Suitability Category
P8	A	100	Rarely	Moderate	0%	Absent	Possible	>13	Moderate	50%	0.86	Excellent
P9	A	400	Rarely	Good	90%	Absent	Possible	>13	Good	90%	0.85	Excellent
P10	A	650	Sometimes	Poor	60%	Absent	Absent	>13	Moderate	20%	0.75	Good
P11	A	100	Annually	Poor	100%	Absent	Absent	>13	Poor	0%	0.41	Poor
P12	A	<50	Annually	Poor	5%	Absent	Absent	>13	Poor	0%	0.42	Poor
P13	A	550	Never	Poor	75%	Major	Possible	>13	Moderate	0%	0.44	Poor

eDNA Survey

3.4 The results of the eDNA surveys are presented in Table 4 and are illustrated in drawing G9731.02.012.

3.5 GCN were confirmed to be present by eDNA at three ponds (Ponds P5, P7 and P10) located within 500m of the site boundary.

3.6 A negative result for GCN eDNA was obtained for Pond P1 located within the site boundary. Negative results were also obtained for off-site ponds P3, P9, P12 and P13.

3.7 Ponds P4, P6 and P11, located within 500m of the site, were all dry at the time of the eDNA survey. Given that the survey was undertaken in April when periods of rainfall had occurred in the preceding weeks, it is considered highly unlikely that ponds P4, P6, or P11 would regularly hold sufficient water during the breeding season to support breeding GCN.

3.8 Pond P8 was not subject to eDNA survey as access to the pond could not be obtained. The presence of GCN within this pond therefore cannot be ruled out.

3.9 Ponds P2 was not subject to eDNA survey as it had been filled in at the time of survey.

Table 4: eDNA Survey Results

Waterbody ID	Survey Date	Surveyor	Score (/12)	GCN
P1	19th – 20th April 2023	David Miller Charlie Gannicott	0	N
P2	19th – 20th April 2023	Not surveyed – Pond had been filled in		

Waterbody ID	Survey Date	Surveyor	Score (/12)	GCN
P3	19th – 20th April 2023	David Miller Charlie Gannicott	0	N
P4	19th – 20th April 2023	Not surveyed – pond dry at time of survey		
P5	19th – 20th April 2023	David Miller Charlie Gannicott	12	Y
P6	19th – 20th April 2023	Not surveyed – pond dry at time of survey		
P7	26th May 2023	Ruth Woolston Charlie Gannicott	12	Y
P8	19th – 20th April 2023	Not surveyed – No access		
P9	19th – 20th April 2023	David Miller Charlie Gannicott	0	N
P10	19th – 20th April 2023	David Miller Charlie Gannicott	12	Y
P11	19th – 20th April 2023	Not surveyed – pond dry at time of survey		
P12	19th – 20th April 2023	David Miller Charlie Gannicott	0	N
P13	19th – 20th April 2023	David Miller Charlie Gannicott	0	N

4.0 Evaluation

Aquatic Habitats

4.1 A summary of the GCN survey results is provided in Table 5 below.

Table 5: Survey Results Summary

Waterbody ID	HSI Survey Result	eDNA Survey Result
P1	Good	GCN absent
P2	Average	Not surveyed - Pond filled in
P3	Poor	GCN absent
P4	Poor	Not surveyed – pond dry at time of survey
P5	Below Average	GCN present
P6	Poor	Not surveyed – pond dry at time of survey
P7	Average	GCN present
P8	Excellent	Not surveyed – No access
P9	Excellent	GCN absent
P10	Good	GCN present
P11	Poor	Not surveyed – pond dry at time of survey
P12	Poor	GCN absent
P13	Poor	GCN absent

Terrestrial Habitats

4.2 It is not possible to quantitatively score habitat quality, as this depends on the complexity, connectivity, and type of vegetation present between waterbodies, as well as the vegetation and water quality in the waterbodies themselves.

4.3 The terrestrial habitats within the site are mapped in Drawing G9731.02.007B Phase 1 Habitat Survey. Suitable terrestrial habitat for amphibians is located within the site, including hedgerows, scattered and dense scrub, tall ruderal vegetation, woodland and scattered trees. There is potential for GCN and common amphibians, including common toad (SPI), to range into suitable terrestrial habitats on site.

5.0 Conclusions and Further Requirements

Further Surveys

5.1 No further GCN surveys are recommended at the site.

5.2 GCN survey data are valid for a minimum of two seasons, potentially up to four seasons depending on the specific use of the data, local conditions and the potential impact predicted on GCN. When survey data become greater than two seasons old, advice should be sought from an appropriately experienced ecologist as to whether repeat surveys may be needed.

Potential Impacts and Mitigation Approach

5.3 No GCN are present within ponds on site or within 250m of the site boundary. Works over 250m from a GCN breeding pond are not considered licensable. Works between 250m and 500m of a GCN breeding pond, which is not separated from the site by a significant barrier to amphibian dispersal, should be conducted under a Precautionary Working Measures Method Statement (PWMS).

5.4 GCN are present within three ponds located within 500m of the scheme at Tardmarton Road, Bloxham. GCN are present within the following ponds:

- Pond P5, located 334m north east of the site;
- Pond P7, located 280m east of the site; and
- Pond P10, located 280m to the west of the site.

5.5 Ponds P5 and P7 are separated from the site by Tadmarton Road. Tadmarton Road is a minor road, with no kerb edges or street lighting. This road does not act as a major barrier to amphibian dispersal from ponds P5 and P7, but will provide a minor barrier to movement of amphibians. Pond P10 is not separated from the site by any barriers to amphibian dispersal.

5.6 A 250m and a 500m buffer has been applied to Ponds P5, P7 and P10, which were confirmed to support GCN. The buffer zones are displayed in drawing G9731.02.013. The drawing shows that the entire site boundary falls within the 250m to 500m buffer of the GCN breeding ponds.

5.7 Any clearance of suitable habitat for GCN on site should be done under a PWMS. Suitable habitat for GCN on site includes ponds, hedgerows, scattered and dense scrub, woodland, tall ruderal vegetation and scattered trees. The PWMS will minimise the risk of harm and injury to GCN and other common amphibians, including common toad (SPI), if present on site, under the works.

5.8 If GCN are found on site during site clearance under the PWMS, works must stop and a licence must be applied for. It this case, it will be possible to register the site under the Nature Space GCN District Level Licencing (DLL) Scheme. Works must then not continue until the licence has been granted.

Annex A: Legal and National Policy Context

Annex A: Legal and National Planning Context

Disclaimer: This is a guide to legislation and procedure relating to biodiversity in England. It is general guidance, and it does not give specific advice in relation to any site, species, or project. It represents an interpretation of legislation and procedure as of July 2023. Readers should note that legislation and procedure changes continually and is interpreted on a case-specific basis. Nothing in this Annex should be construed as an offer of advice or legal opinion.

All British amphibian species receive legal protection in the United Kingdom though the degree to which different species are protected varies.

Great crested newts (GCN) *Triturus cristatus* and natterjack toads *Epidalea calamita* and their habitats (aquatic and terrestrial) are afforded full protection by a combination of national legislation.

They are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended). The Wildlife and Countryside Act 1981 is the domestic implementation of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) which was amended by the Countryside and Rights of Way Act 2000.

In brief, this legislation makes it an offence to:

- deliberately capture, kill, disturb, or injure these species;
- damage or destroy a breeding or resting place of these species;
- deliberately or recklessly obstruct access to resting or sheltering places of these species (deliberately or by not taking enough care);
- possessing, selling, controlling, or transporting live or dead specimens of these species, or parts of them; or
- take eggs of these species.

This Act is the domestic implementation of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention). The Act has been amended by the Countryside and Rights of Way Act 2000 and by the Conservation of Habitats and Species Regulations 2017 (the 2017 Regulations), as amended.

The other more widespread British amphibians - common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Triturus vulgaris* and palmate newt *Triturus helveticus* - are not subject to such strict legal protection. These species are protected only against sale (Section 9(5) of the Wildlife and Countryside Act 1981).

In all cases, the legislation applies to all life stages including spawn, eggs, juveniles, and adults.

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 imposes a Duty upon public authorities to conserve biodiversity. Specifically, this Act states that '*Every 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*.' Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity

in England. The S41 list is used to guide decision-makers such as public bodies, including local and regional planning authorities, in implementing their 'biodiversity duty' imposed under Section 40.

Current amphibian species recorded on the list include GCN and common toad. Presence of S41 listed species, referred to as Species of Principal Importance (SPI) within influence of the Scheme may be considered by the planning authority as a material consideration, irrespective of the level of legal protection afforded to the SPI.

Annex B: Detailed Survey Table

Detailed Survey Table

Table A.1: Pond Descriptions

Waterbody ID	Grid ref (NGR)	Photo	Description
P1	SP 42016 35850		A large pond within the former quarry workings area of the site. The pond had earth and stone banks and base and linked to the wet ditch formed by the outflow pipe at the western edge of the quarry workings. The pond was immediately surrounded by dense scrub and trees. Bulrush *Typha latifolia* was present as emergent vegetation.
P2	SP 42079 35857	 	A moderate sized pond within the former quarry workings area of the site. The pond had earth and stone banks and base. The pond was immediately surrounded by tall ruderal vegetation and scattered scrub including willow *Salix* species, common ash *Fraxinus excelsior*, and dog rose *Rosa canina*. An island was present in the centre of the pond formed of earth and stone with scattered scrub evident at the time of survey. Bulrush was present as emergent vegetation. A photograph of the pond taken in January 2023 has been provided as well as a photograph of the area during the survey undertaken in April 2023 after the pond had been filled in.

Waterbody ID	Grid ref (NGR)	Photo	Description
P3	SP 42096 36377		A small pond located within a pastoral field. The pond was heavily shaded by surrounding willow trees with a large fallen willow within the water. Some scrub and shrubs were present on the bank. The water was turbid and appeared to have a high nutrient content due to run-off from surrounding farmland.
P4	SP 42251 36143		A small pond located within a pastoral field. The pond was dry at the time of survey. A hedgerow was present on one side and small trees and shrubs were scattered. The presence of common nettle *Urtica dioica* and docks *Rumex sp.* within the pond bed indicated a high nutrient content.
P5	SP 42441 36164		A small to medium sized pond in a fenced off area within a field. Willow scrub and young trees were present on the bank side. Rushes *Juncus sp.* were present as marginal vegetation. Bulrush was present as emergent vegetation. A dense blanket of algae covered the surface.
P6	SP 42389 36085		A former field pond. Very little evidence of the area being a pond was found at the time of survey. It was considered possible that the depression holds water during periods of high rainfall.

Waterbody ID	Grid ref (NGR)	Photo	Description
P7	SP 42373 35885		A small wildlife pond in the ground of a school, lined with a pond liner. Aquatic and emergent vegetation included pond sedge *Carex* species, water lily *Nymphaeaceae* species and water milfoil *Myriophyllum* species.
P8	SP 42297 35589		A large pond within the biodiversity mitigation area of the adjacent recent residential development, 'Woodlands'. The pond could only be viewed from a distance due to it being located within a secured area. The pond was surrounded by semi-improved grassland and appeared to be linked to the stream and woodland to the south by a drainage ditch. Emergent vegetation was abundant and included bulrush and common reed *Phragmites australis*.
P9	SP 41940 35397		A moderate sized pond within some woodland at the edge of fields that was fed by a stream at the northern end. Aquatic vegetation included submerged and emergent grasses, willowherbs *Epilobium sp.* and fool's watercress *Apium nodiflorum.*
P10	SP 41545 35876		A moderate sized pond at the edge of an arable field by a bare earth and stone farm track. The pond had an earth base and banks. The pond was surrounded by dense and scattered scrub, scattered trees, and tall ruderal vegetation, and had an island in the centre covered with willow trees and scrub. Bankside tall ruderal vegetation included rosebay willowherb *Chamaenerion angustifolium*, thistles *Cirsium sp.*, and common nettle. Bankside scrub and trees

Waterbody ID	Grid ref (NGR)	Photo	Description
			included ash, willow species, and brambles *Rubus fruticosus agg*. Bulrush was present as emergent vegetation.
P11	SP 41437 36140		A small pond in the centre of an arable field. The pond had an earth base and was heavily shaded by surrounding trees. The pond was dry at the time of survey. Bankside vegetation included semi-mature to mature willow trees, and tall ruderal vegetation including rosebay willowherb, common nettle, docks, and teasel *Dipsacus* species. No emergent or aquatic vegetation was present at the time of survey.
P12	SP 41724 36322		A very small pond at the edge of an arable field by Tadmarton Road. The pond contained very little water at the time of survey and no vegetation.
P13	SP 41919 36387		A moderate sized pond within an arable field with an island in the centre. The pond was surrounded by scrub and trees with common nettles, cuckoo flower *Cardamine pratensis*, and bluebells *Hyacinthoides sp.* present on the banks. No aquatic or macrophyte vegetation was identified.

Drawings

G9731.02.012 GCN Crested Newt eDNA Survey Results

G9731.02.013 GCN Positive Ponds with Buffer Zones

G9731.02.007B Phase 1 Habitat Survey

KEY

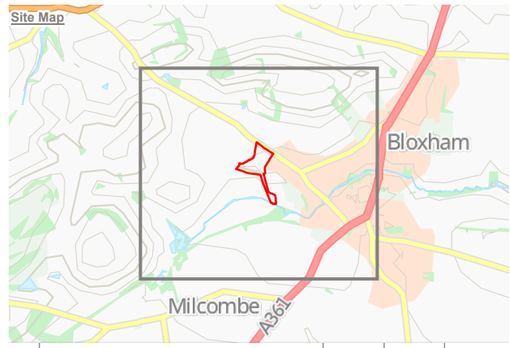
- Site boundary
- Site boundary - 500m buffer

Great Crested Newt eDNA Survey Results

- Pond with positive result
- Pond with negative result

Note:
The locations of habitats and habitat features are indicative.

Site Map



Rev	Description	Drawn	Approved	Date

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Project
Tadmarton Road, Bloxham

Title
Great Crested Newt eDNA Survey Results

Drawing Number
G9731.02.012

Drawn	Checked	Approved	Scale	Date
IJ	BJ	KM	1:6,500 @ A3	20/10/2023

KEY

Site boundary

Great Crested Newt eDNA Survey Results

Pond with positive result

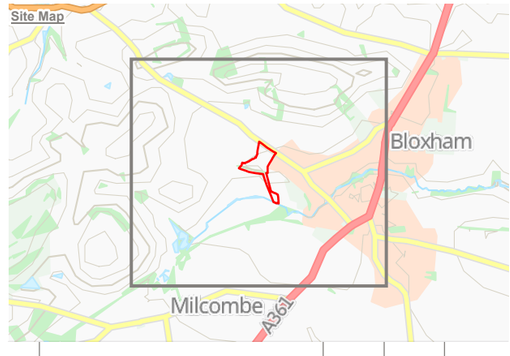
Pond with negative result

Great Crested Newt eDNA Positive Pond Buffers

Great Crested Newt eDNA Positive Pond - 250m buffer

Great Crested Newt eDNA Positive Pond - 500m buffer

Note:
The locations of habitats and habitat features are indicative.



Rev	Description	Drawn	Approved	Date

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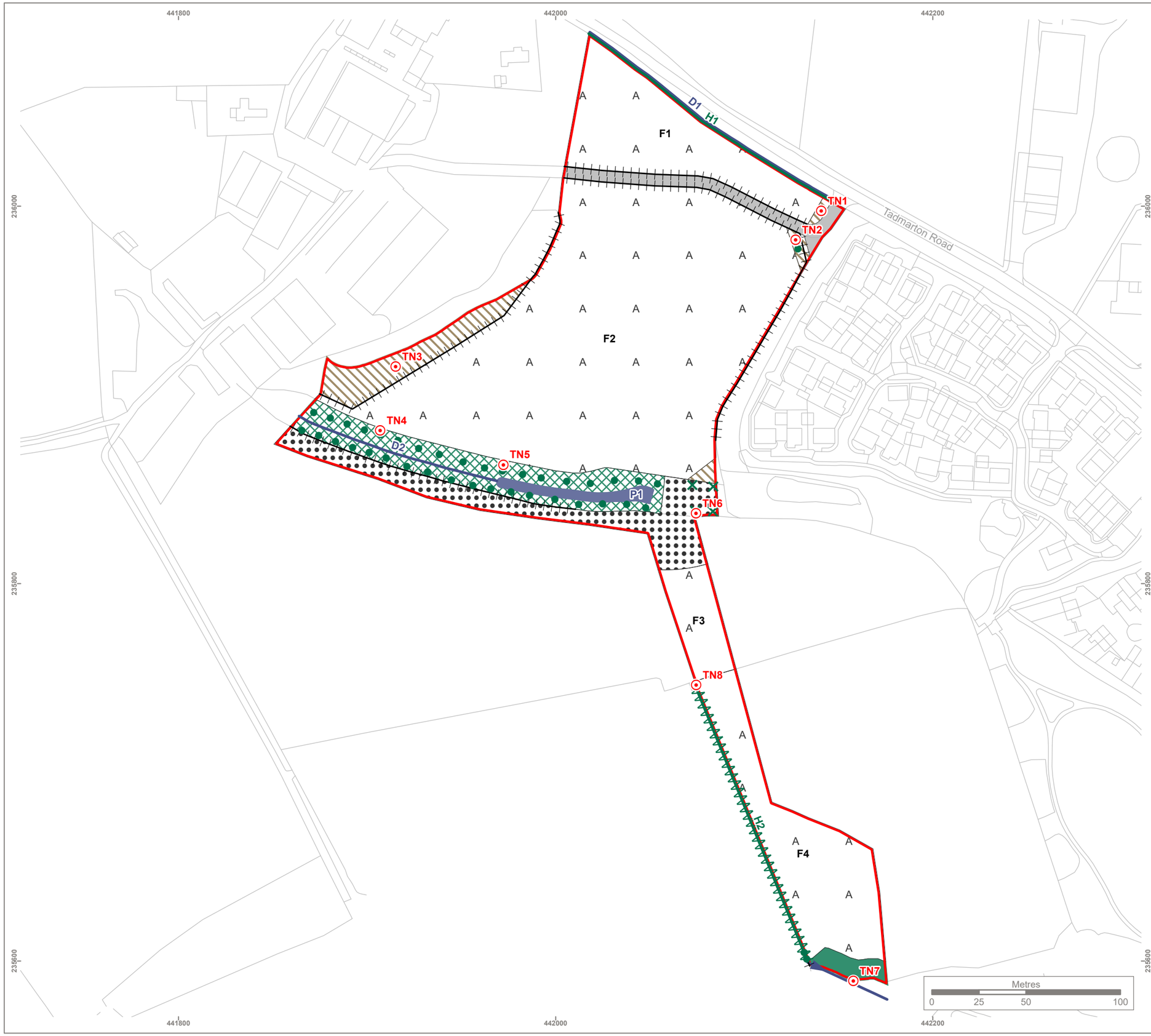
Project
Tadmarton Road, Bloxham

Title
Great Crested Newt Positive Ponds with Buffer Zones

Drawing Number
G9731.02.013

Drawn	Checked	Approved	Scale	Date
IJ	BJ	KM	1:7,000 @ A3	20/10/2023

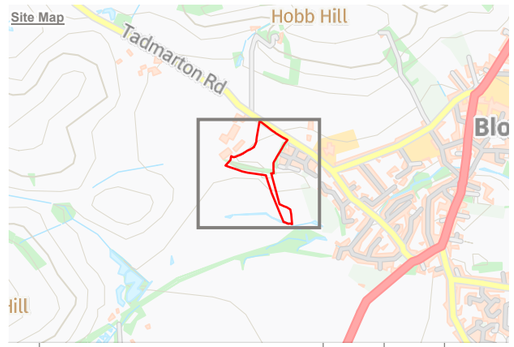


KEY

- Site boundary
- Target note
- Scattered scrub
- Scattered broad-leaved tree
- Standing water
- Running water
- Native species-rich intact hedge
- Species-poor intact hedge
- Fence
- Semi-natural broad-leaved woodland
- Dense/continuous scrub
- Tall ruderal
- Standing water
- Arable
- Bare ground
- Hardstanding

Note:
The locations of habitats and habitat features are indicative.

Site Map



Rev	Description	Drawn	Approved	Date
B	Updated habitats and target notes.	IJ	KM	07/11/2023
A	Updated site boundary and associated habitats.	SP	RW	26/04/2023

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Project
Tadmarton Road, Bloxham

Title
Phase 1 Habitat Survey

Drawing Number
G9731.02.007B

Drawn	Checked	Approved	Scale	Date
ET	MH	RW	1:2,000 @ A3	07/11/2023

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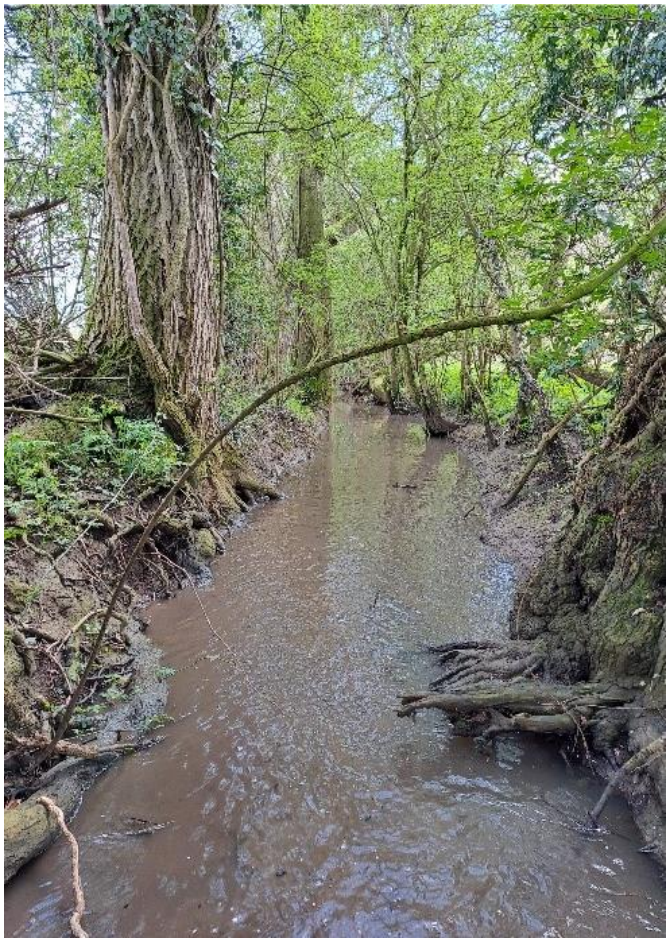
Appendix D: Bat Activity Survey Report (TEP Ref: 9731.02.008)



Tadmarton Road

Bloxham, Banbury

Protected Species Report: Bat Activity Report

Prepared For: Gladman Developments

Document Reference: 9731.02.008

Date: December 2023

Version: 2.0

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Project Name:	Tadmarton Road
Location:	Bloxham, Banbury
Document Title:	Bat Activity Report
Client:	Gladman Developments
Prepared by:	The Environment Partnership Ltd
Office:	Market Harborough
Document Ref:	9731.02.008

Document history and status:

Version	Date	Description of Issue	Author	Checked	Approved
1.0	Nov 2023	First issue	EM	JC	JC
2.0	Dec 2023	Issued following client's comments	MB	KM	KM

TEP is a is a Registered Practice of the Chartered Institute of Ecology and Environmental Management. The content of this document has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct and is compliant with British Standard BS42020:2013 Biodiversity Code of Practice for Planning and Development.

The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Tables

Drawings

G9731.02.015 Bat Transect Survey Visit 1 – 19th April 2023
G9731.02.016 Bat Transect Survey Visit 2 – 25th July 2023
G9731.02.017 Bat Transect Survey Visit 3 – 3rd October 2023
G9731.02.018 Bat Transect Route and Static Detector Locations

Executive Summary

Site Details	The site is located at Tadmarton Road, Bloxham, Banbury. The site application boundary measures 4.4ha. The anticipated footprint of the project elements, including construction and soft landscaping works, is estimated to be 4.4ha.
Proposals	It is understood an outline planning application will be submitted for the construction of up to 60 residential dwellings with provision for public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point.
Survey Details	Three activity transect surveys and automated static monitoring surveys were undertaken in April, July and October 2023 to determine the use of the site by commuting and foraging bats within the locality.
Summary	The site is of local value to commuting and foraging bats and habitat features provide connectivity between higher quality foraging habitat within the wide landscape.
Conclusions	Proposals indicate that direct impacts on habitats of importance for commuting and foraging bats are highly unlikely to occur. The proposed planting of an additional hedgerow, trees, and scrub will result in an overall gain in commuting and foraging habitat for bats within the site. In the absence of mitigation, indirect impacts caused by the introduction of artificial lighting into the north of the site may have a negative impact on commuting and foraging bats.
Recommendations	Where lighting is required within the proposed development during construction and post occupation, a Sensitive Lighting Scheme should be designed in line with the Institution of Lighting Professionals Guidance Note 08/23: Bats and Artificial Lighting at Night.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

1.0 Introduction

1.1 The Environment Partnership (TEP) was commissioned by Gladman Developments in January 2023 to undertake an Ecological Impact Assessment (EcIA) to determine the potential ecological impacts associated with a proposed residential development at land known as Tadmarton Road, Bloxham in Oxfordshire (hereafter referred to as the 'site').

1.2 This Bat Activity Survey Report has been produced to inform the EcIA, and the associated outline planning application for the site.

1.3 An Ecological Desk Study has also been produced to support this technical report, reported under separate cover (TEP Ref: 9731.02.001). This report should be read in conjunction with the Ecological Desk Study.

1.4 The Environment Partnership (TEP) have undertaken bat activity surveys, comprising activity transects and automated static monitoring at the site. This report has the following objectives:

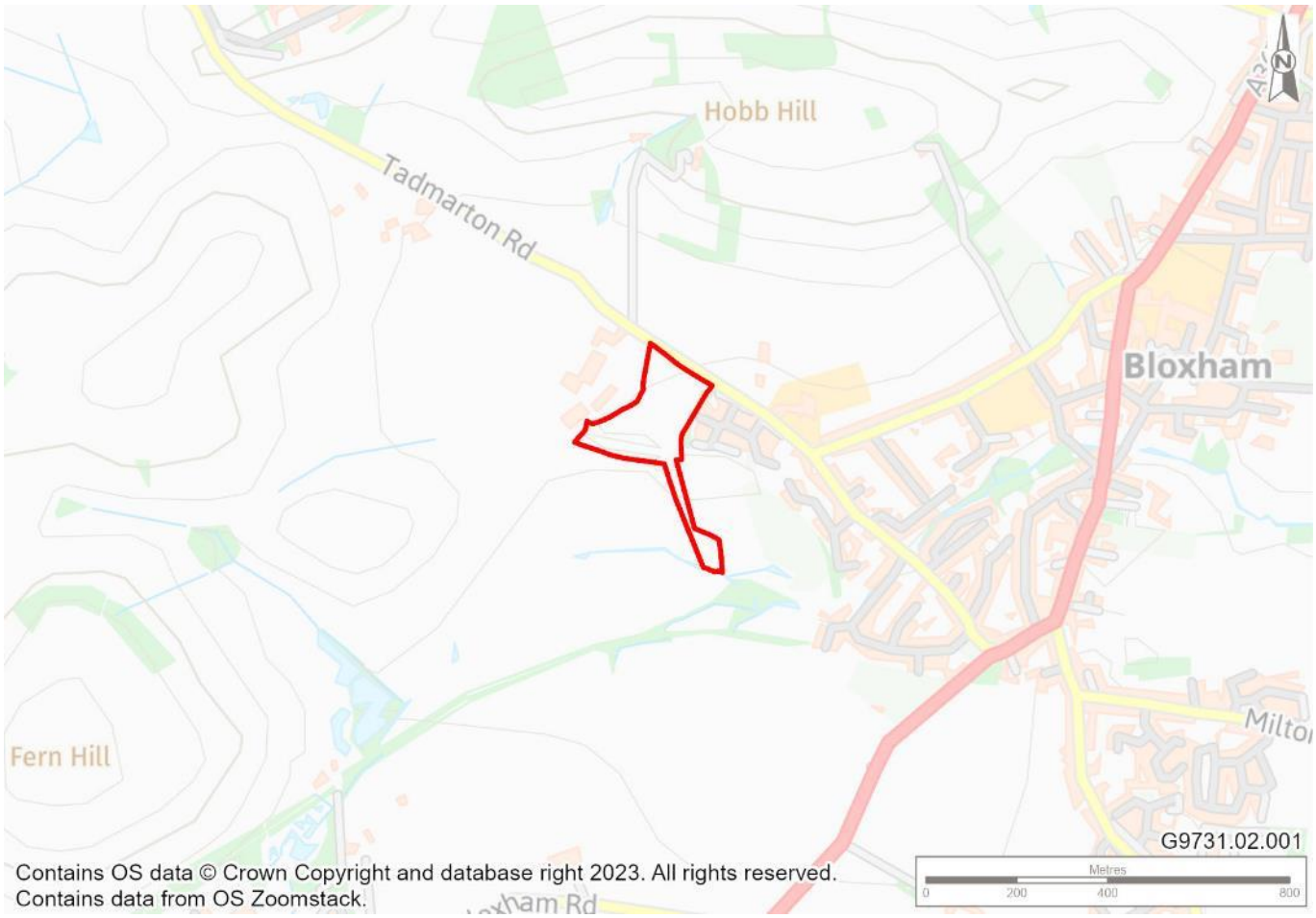
- give an overview of the habitats present within the site which could be used by bats for foraging and commuting;
- identify how bats use the site; and
- evaluate the value of the site for bats.

Site Location

1.5 The site is located to the southwest of Tadmarton Road at the northern edge of the village of Bloxham in Oxfordshire. The site is immediately bordered by agricultural fields to the south and west, with residential dwellings to the east. To the north-west exists a working farm and Tadmarton Road forms the site's north-eastern boundary. The location of the site is depicted in Figure 1. The approximate central grid reference of the site is SP 42117 36027.

1.6 The wider area is characterised by the town of Tadmarton to the east and north-east. Agricultural fields with associated hedgerows and scattered trees are located and extend to the north, east and south.

Figure 1: Site Location



Legislation

1.7 All bat species and their roosts are legally protected in the UK. All bats are listed as European Protected Species (EPS) in Conservation of Natural Habitats and of Wild Fauna and Flora, better known as the Habitats Directive. There is also protection for bats and roosts in England and Wales under the Wildlife & Countryside Act 1981 (as amended).

1.8 It is a criminal offence if any persons:

- deliberately capture, injure or kill a bat;
- intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; or
- intentionally or recklessly obstruct access to a bat roost.

2.0 Methods

2.1 The following bat surveys were undertaken in accordance with the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2016).

Ecological Desk Study

2.2 Bat records from within 2 km of the site were collated as part of the Ecological Desk Study completed in January 2023 (TEP Ref: 9731.02.001). Records included data provided by Thames Valley Environmental Records Centre (TVERC) and review of protected species licences granted by Natural England within the site locality.

Limitations

2.3 Records give a useful indication of the distribution of bat species in the locality that may use the habitat resources within or adjacent to the site for roosting, foraging, and commuting between connected habitats in the wider landscape. Absence of records cannot be taken to represent actual absence in the field.

Commuting and Foraging Habitat Assessment

2.4 An assessment was undertaken in April 2023 to assess the suitability of the site to support foraging and commuting bats. Habitats within the site were assessed for their suitability to support commuting and foraging bats and categorised in accordance with the criteria identified in the Bat Conservation Trust: Bat Surveys. Good Practice Guidelines (2016), and as shown in Table 1.

Table 1: Bat Commuting and Foraging Habitat Categories (BCT 2016)

Category	Description of Commuting and Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated i.e., not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water.

High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines or trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close to and connected to known roosts.

Activity Transect Surveys

2.5 The site was therefore assessed as having low foraging and commuting habitat suitability for bats during the survey undertaken in April 2023. Due to the low habitat suitability of the site for commuting and foraging bats, bat activity surveys were undertaken seasonally through the bat active season (April to October inclusive). A pre-determined walked transect route was surveyed during spring 2023 (April/May), summer 2023 (June/July) and autumn 2022 (September/October). The pre-determined transect route was designed to cover all features likely to be of value to foraging and commuting bats and to establish bat species assemblage and where bat dispersal behaviour may be more significantly impacted by the proposed development.

2.6 The pre-defined transect route walked on each survey is illustrated at the Bat Transect Route and Static Detector Locations Drawing G9731.02.018. The transects were completed by trained bat surveyors.

2.7 All three survey visits were dusk transects, commencing at sunset and continuing for at least two hours after. The route was reversed on alternate visits and the start and finish points varied during each visit, to reduce sampling bias. Dates, times, and weather conditions for each activity transect survey are summarised in Table 2.

Table 2: Survey conditions for activity transect surveys

Survey Date	Sunset Time	Survey Time	Temp (ºC)	Rain	Cloud[1]	Wind[2]
19.04.23	20:09	Start: 20:09	11	0	0	3
		End: 22:09	8	0	0	3

[1] Cloud cover is reported in oktas or eighths (i.e., 0 oktas represent the complete absence of cloud, 1 okta cloud cover of 1 eighth or less, and so on to 8 oktas which represents full cloud cover), with the additional convention that 9 oktas represents sky obscured by fog or mist.
[2] Wind strength is reported using the Beaufort Scale of Wind Force, this scale runs from 0 to 12, information on the conditions denoted by scores are as follows: 0 – Calm (vertical smoke); 1 - Light Air (slight smoke drift); 2 - Light Breeze (leaves gently rustle); 3 - Gentle Breeze (small twigs constantly move); 4 - Moderate Breeze (small branches begin to move) and 5 - Fresh breeze (small trees in leaf begin to sway).

25.07.23	21:05	Start: 21:05	15	0	2	1
		End: 23:05	11	0	1	1
03.10.23	18.42	Start: 18.42	16	0	2	2
		End: 20:42	14	0	2	2

2.8 The transect was walked at a slow steady pace. Surveyors carried a full spectrum detector (Elekon Batlogger M) supplemented by heterodyne detectors. Bat passes[3] were recorded, together with the maximum number of bats observed, the species identified, and any other contextual data such as flight direction, social calling and feeding buzzes.

2.9 Standardised methods of measuring and recording weather parameters were used e.g., cloud cover (oktas) and wind (Beaufort Scale). Surveys were scheduled during optimum weather conditions comprising dusk temperatures of ≥10°C and no rain or strong winds (>4 on the Beaufort Scale). Where sub-optimal weather conditions were recorded during surveys, surveyors noted whether bat activity was affected to determine whether surveys remained valid.

Limitations

2.10 The temperature was recorded to be above 10°C at the start of the first survey visit, and it fell to below 10°C by the end of the visit. There was also a gentle breeze throughout the survey. However, bats were observed foraging and commuting throughout the survey and activity levels did not appear to be affected by the weather conditions, therefore these conditions were not a constraint to the bat activity data.

Automated Static Monitoring

2.11 Automated static remote monitoring bat detectors (Anabat Express, set to night mode) were deployed at two fixed locations within the site, as described in Table 3 and illustrated in drawing G9731.02.018. The static locations were non-random (as micro-siting was determined by habitat and potential impacts) and the location was designed to:

- confirm the species assemblage using the habitats within the site;
- determine the relative activity and spatial distribution of bats across the site; and
- identify potential commuting/ dispersal corridors.

[3] A bat pass is defined as the number of bat calls in a continuous sequence; each sequence or pass is separated by 1 second or more in which no calls are recorded (Hundt, 2012).

2.12 Detectors were deployed seasonally from April 2023 to October 2023 for a minimum of five consecutive nights in suitable weather conditions. Detectors were deployed with standardised sensitivity settings. Further information regarding deployment locations, survey dates and survey conditions is provided in Table 3 and Table 4.

Table 3: Static detector location description

Location	Survey Dates	No. Nights Deployed	No. Nights Activity	Description of Location
A	22.04.23 - 27.04.23	5	4	Located on the northwestern boundary of the site, adjacent to Tadmarton Road. The static was deployed within the hedgerow with the microphone pointing south into the site. Approximate grid ref: SP 42070 36054
	10.07.23 - 15.07.23	5	5	
	26.09.23 - 01.10.23	5	1	
B	18.04.23 - 23.04.23	5	3	Located near the southern boundary of the site. The static was deployed in a tree withing the scrub bordering the arable field with the microphone pointing north into the site. Approximate grid ref: SP 41995 35866
	10.07.23 - 15.07.23	5	5	
	27.09.23 - 02.10.23	5	5	

Table 4: Weather conditions during recording periods

Static Location	Survey Date	Sunset Time	Sunrise Time	Activity Period (mins)	Sunset Temp (°C)	Midnight Temp (°C)	Sunrise Temp (°C)	Wind Speed (kmph)	Wind Direction	Rain (hrs)	Cloud	Moon Illuminance (%)
A	22/04/23	20:14	05:52	259	12.0	10.0	10.0	19.0	South	0	Overcast	6%
A	23/04/23	20:16	05:50	0	9.0	7.0	6.0	8.0	West	0	Scattered	12%
A	24/04/23	20:18	05:48	NO DATA	7.0	5.0	-2.0	8.0	North	0	Overcast	20%
A	25/04/23	20:19	05:46	0	10.0	3.0	6.0	11.0	East	0	Scattered	28%
A	26/04/23	20:21	05:44	173	10.0	7.0	5.0	12.0	East	0	Scattered	37%
B	18/04/23	20:07	06:00	37	10.0	9.0	6.0	17.0	Northeast	0	Overcast	4%

Static Location	Survey Date	Sunset Time	Sunrise Time	Activity Period (mins)	Sunset Temp (°C)	Midnight Temp (°C)	Sunrise Temp (°C)	Wind Speed (kmph)	Wind Direction	Rain (hrs)	Cloud	Moon Illuminance (%)
B	19/04/23	20:09	05:58	NO DATA	13.0	6.0	5.0	10.0	Northeast	0	Clear	1%
B	20/04/23	20:11	05:56	NO DATA	10.0	5.0	5.0	18.0	Northeast	0	Fog / Mizzle	0%
B	21/04/23	20:12	05:54	345	10.0	1.0	0.0	3.0	East	0	Fog / Mizzle	2%
B	22/04/23	20:14	05:52	52	12.0	10.0	10.0	19.0	South	0	Overcast	6%
A	10/07/23	21:23	04:58	180	19.0	17.0	17.0	20.0	South	4	Overcast	45%
A	11/07/23	21:22	04:59	300	18.0	15.0	12.0	9.0	South	0	Scattered	35%
A	12/07/23	21:22	05:00	240	16.0	14.0	12.0	11.0	Southwest	0	Scattered	25%
A	13/07/23	21:21	05:01	300	18.0	14.0	13.0	10.0	Southwest	0	Scattered	17%
A	14/07/23	21:20	05:03	420	18.0	16.0	14.0	7.0	North	1	Overcast	10%
B	10/07/23	21:23	04:58	120	19.0	17.0	17.0	20.0	South	4	Overcast	45%
B	11/07/23	21:22	04:59	360	18.0	15.0	12.0	9.0	South	0	Scattered	35%
B	12/07/23	21:22	05:00	420	16.0	14.0	12.0	11.0	Southwest	0	Scattered	25%
B	13/07/23	21:21	05:01	360	18.0	14.0	13.0	10.0	Southwest	0	Scattered	17%
B	14/07/23	21:20	05:03	420	18.0	16.0	14.0	7.0	North	1	Overcast	10%
A	26/09/23	18:55	06:59	NO DATA	19.0	13.0	12.0	9.0	South	0	Clear	88%
A	27/09/23	18:52	07:00	NO DATA	20.0	16.0	17.0	25.0	Southwest	0	Overcast	95%
A	28/09/23	18:50	07:02	NO DATA	18.0	17.0	15.0	15.0	West	3	Overcast	99%
A	29/09/23	18:48	07:04	780	15.0	11.0	10.0	6.0	South	0	Overcast	100 %

Static Location	Survey Date	Sunset Time	Sunrise Time	Activity Period (mins)	Sunset Temp (°C)	Midnight Temp (°C)	Sunrise Temp (°C)	Wind Speed (kmph)	Wind Direction	Rain (hrs)	Cloud	Moon Illuminance (%)
A	30/09/23	18:46	07:05	NO DATA	17.0	16.0	17.0	13.0	South	0	Overcast	98%
B	27/09/23	18:52	07:00	660	20.0	16.0	17.0	25.0	Southwest	0	Overcast	95%
B	28/09/23	18:50	07:02	60	18.0	17.0	15.0	15.0	West	3	Overcast	99%
B	29/09/23	18:48	07:04	660	15.0	11.0	10.0	6.0	South	0	Overcast	100 %
B	30/09/23	18:46	07:05	660	17.0	16.0	17.0	13.0	South	0	Overcast	98%
B	01/10/23	18:43	07:07	660	19.0	16.0	17.0	8.0	South	0	Scattered	94%

Limitations

2.13 During the spring survey visit (April 2023), there was no activity recorded on night 3 at Static Detector A and nights 2 and 3 at Static Detector B. During the autumn survey visit (October 2023), there was no activity recorded on nights 1, 2, 3 and 5 at Static Detector A. No errors were recorded on the static detector logs and therefore, it is assumed that bat activity was absent during these nights, rather than being detector malfunction. Similarly, during April, low bat activity was recorded on nights 2 and 4 at Static Detector A. No errors were recorded on the logs and the microphones had not malfunctioned, and therefore, it is assumed that bat activity was generally low during this night, rather than there being detector malfunction. Bat activity can be typically lower during spring and Autumn months due to more variable weather conditions and reduced prey abundance. Seasonality of lower bat activity levels were therefore taken into consideration in the context of habitat use within the site by bats in the locality.

2.14 Temperatures were low during spring survey visit (April 2023). Temperatures were ≥10°C at the start of the monitoring periods but would fall below this during the night. Several of these nights correspond to periods of low or no activity recorded.

2.15 Wind speed was high during some of the automated static monitoring periods. This was recorded as gusts rather than continuous wind and no noticeable difference in bat activity was recorded during these periods. The effect of wind speed on bat activity varies

depending on the topography of the landscape.. High wind speeds recorded during the autumn survey visit likely had an effect on bat activity at Location A as the microphone was positioned on the southern aspect of the hedgerow and the wind was predominantly southern.

2.16 Moon illuminance was high during the summer survey visit (July 2023) which can have a negative impact on bat activity.. Cloud cover during this period however reduced the impact of high moon illuminance and it is unlikely that this had a significant effect on the results.

2.17 Foliage growth in trees throughout the survey period was overcome by the use of a microphone extension cable, enabling deployment of the microphone at the edge of the canopy to avoid noise and deflection of echolocation from bats.

Data Analysis and Species Identification

2.18 Bat sound data recorded during the activity transect surveys and automated static monitoring were analysed by suitably trained and experienced TEP ecologists.

2.19 Activity transect survey data was automatically geo-referenced and digitally mapped using GIS. Each species is colour coded and flight directions are provided where behaviour was observed.

2.20 For the purposes of presentation, data has been transformed to calculate Bat Activity Indices (BAI). For the majority of datasets and statistical analysis the BAI represents bat registrations per hour (brh), to account for different night lengths throughout the recording period.

2.21 BAIs quantify the amount of use bats make of an area i.e., activity levels, not abundance. Consistency has been achieved throughout the static monitoring periods in regard to detector model, sensitivity and calibration, position and orientation and also subsequent sonogram analysis. High confidence can therefore be placed in the relative activity levels presented.

Limitations

2.22 Bats vary their calls dependent on the habitats they fly in and on their activity (commuting, foraging, social interaction, etc.). It is not always possible to identify bat calls to species level owing to the overlap of call parameters between some species and/or poor-quality recordings (e.g., brief, and distant passes). In these cases, it is accepted that species are identified to genus level or group level (e.g., *Myotis* species, and *Nyctalus/Eptesicus*)

(Russ, 2012[4]). Where call parameters are inconclusive the species has been labelled as 'unidentified'. This ensures the dataset is interpreted accurately and transparently.

2.23 The detectability of some bat species, such as *Plecotus* sp. is lower than that of, for example, *Nyctalus* sp. and *Pipistrellus* sp. The echolocation calls of *Plecotus* sp. are comparatively more difficult to detect with bat detectors, and their particular hunting strategies take them into less open habitats, where survey transect routes may not venture. Careful interpretation has been applied when comparing survey results across species to account for this limitation.

2.24 *Myotis* species have overlapping call characteristics and it is therefore not possible to identify these bats to species level with good confidence. *Myotis* data represent a small proportion of the activity recorded and therefore for the purposes of meaningful data presentation, *Myotis* species have been grouped. Where possible, individual *Myotis* species are identified.

2.25 Large bats (noctule *Nyctalus noctula*, serotine *Eptesicus serotinus* and Leisler's *Nyctalus leisleri*) have been grouped as big bat species (*Nyctalus/Eptesicus*) for the purposes of meaningful data presentation, due to the low numbers recorded.

Evaluation Method

2.26 For the purposes of this assessment and of assigning value to bats, the guidance set out in Reason and Wray 2023[5] has been followed.

2.27 This guidance includes a framework for identifying the importance of bats in the landscapes through the evaluation of bat roosts and an assessment of the site assemblage. Applying this framework, bat roosts can be valued according to regionally specific species rarity (Table 5) and roost status (Table 6).

Table 5: Species rarity in South-eastern England (adapted from Reason and Wray 2023)

Rarity	Species
Widespread	Common pipistrelle *Pipistrellus pipistrellus* Soprano pipistrelle *Pipistrellus pygmaeus* Brown long-eared *Plecotus auratus*
Widespread in many geographies, but not as abundant in all	Daubenton's *Myotis daubentonii* Natterer's *Myotis nattereri*

[4] Russ, J. (ed.), (2012). British Bat Calls: A Guide to Species Identification. Pelargic Publishing, Exeter.

[5] Reason, P.F. and Wray, S. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

Rarity	Species
	Noctule *Nyctalus noctula*
Rarer or restricted distribution	Whiskered *Myotis mystacinus* Brandt's *Myotis brandti* Leisler's *Nyctalus leisleri* Serotine *Eptesicus serotinus* Nathusius' pipistrelle *Pipistrellus nathusii* Alcathoe *Myotis alcathoe*
Rarest Annex II species and very rare	Lesser horseshoe *Rhinolophus hipposideros* Greater horseshoe *Rhinolophus ferrumequinum* Bechstein's *Myotis bechsteinii* Barbastelle *Barbastella barbastellus* Grey long-eared *Plecotus austriacus*

Table 6: Geographic scale of importance of roosts

Conservation status / distribution	Roost Type: Feeding perches; night roosts; Individual or very small occasional/ transitional/ opportunistic roosts	Roost Type: Non-breeding day roosts (small numbers of species)	Roost Type: Mating sites (excluding individual trees and larger swarming sites); small numbers of hibernating bats	Roost Type:	Conservation status / distribution	Roost Type: Feeding perches; night roosts; Individual or very small occasional/ transitional/ opportunistic roosts	Roost Type: Non-breeding day roosts (small numbers of species)
Widespread all geographies	Site	Site	Site	Site/Local	District/County	District/County	Unlikely to exceed District unless colonies are atypically large; importance increased for assemblages.
Widespread in many geographies, but not as	Site	Site	Site, dependent on local distribution	District	District/County importance dependent on size and local distribution;	County/ Regional importance dependent on size,	Unlikely to exceed County unless colonies are

Conservation status / distribution	Roost Type: Feeding perches; night roosts; Individual or very small occasional/ transitional/ opportunistic roosts	Roost Type: Non-breeding day roosts (small numbers of species)	Roost Type: Mating sites (excluding individual trees and larger swarming sites); small numbers of hibernating bats	Roost Type:	Conservation status / distribution	Roost Type: Feeding perches; night roosts; Individual or very small occasional/ transitional/ opportunistic roosts	Roost Type: Non-breeding day roosts (small numbers of species)
abundant in all					increased value for assemblages.	importance increased for larger sites that serve larger numbers/ species.	atypically large; importance increased for assemblages.
Rarer or restricted distribution	Site (very well used night roosts may be of District importance for some species)	Site/Local/ District, dependent on local distribution	Site/Local/ District, dependent on local distribution	District	District/County importance dependent on size and local distribution; increased value for assemblages.	County/ Regional importance dependent on size, importance increased for larger sites that serve larger numbers/ species.	County/ Regional importance dependent on size and local distribution; increased value for assemblages.
Rarest Annex II species and very rare	Site (very well used night roosts may be of District importance for some species)	Site/Local/ District, dependent on local distribution	Site/Local/ District, dependent on local distribution	District	County/ Regional importance dependent on size and local distribution; increased value for assemblages.	County/ Regional importance dependent on size, importance increased for larger sites that serve larger numbers/ species.	County/ Regional importance dependent on size and local distribution; increased value for assemblages.

2.28 Reason and Wray (2023) identifies a numerical scoring system which can be applied to a species assemblage using a site for commuting and foraging (Table 7).

Table 7: Assessing the importance of a bat assemblage in South-eastern England

Rarity Category (Score)	Species	Score Multiplier
Widespread all geographies (1)	Common pipistrelle *Pipistrellus pipistrellus* Soprano pipistrelle *Pipistrellus pygmaeus* Brown long-eared *Plecotus auratus*	Score 3
Widespread in many geographies, but not as abundant in all (2)	Daubenton's *Myotis daubentonii* Natterer's *Myotis nattereri* Noctule *Nyctalus noctula*	Score 10
Rarer or restricted distribution (3)	Whiskered *Myotis mystacinus* Brandt's *Myotis brandti* Leisler's *Nyctalus leisleri* Serotine *Eptesicus serotinus* Nathusius' pipistrelle *Pipistrellus nathusii* Alcathoe *Myotis alcathoe*	Score 12
Rarest Annex II species and very rare (4)	Lesser horseshoe *Rhinolophus hipposideros* Greater horseshoe *Rhinolophus ferrumequinum* Bechstein's *Myotis bechsteinii* Barbastelle *Barbastella barbastellus* Grey long-eared *Plecotus austriacus*	Score 20
Thresholds	Maximum possible	45
County importance threshold: 45%	County	20
Regional importance threshold: 55%	Regional	25
National importance threshold: 70%	National	32

3.0 Results

Ecological Desk Study

3.1 The Ecological Desk Study identified records of the following bat species within 2 km of the site:

- Brown long-eared bat *Plecotus auratus* (EPS, WCA5, SPI);
- Common pipistrelle *Pipistrellus pipistrellus* (EPS, WCA5);
- Myotis bat *Myotis sp.* (EPS, WCA5, SPI);
- Noctule *Nyctalus noctula* (EPS, WCA5, SPI); and
- Soprano pipistrelle *Pipistrellus pygmaeus* (EPS, WCA5, SPI).

3.2 The MAGIC Map data identified four locations where a Natural England European Protected Species (EPS) Mitigation Licence for bat roosts have been in place within 2 km of the site. The licences granted the destruction of a resting place for common pipistrelle, soprano pipistrelle, brown long-eared and whiskered bats *Myotis mystacinus*. All identified licences are expired.

Commuting and Foraging Habitat Assessment

3.3 The site predominantly consists of arable habitat with some limited areas of scattered scrub, scattered broad-leaved trees, hedgerows, wet ditches, and tall ruderal habitat around the field boundaries. Whilst the majority of the site includes open, arable habitat supporting limited prey availability for bats, the site has some higher quality foraging and commuting habitat, namely the hedgerows, pond, and ditches. The site has indirect connectivity to an area of woodland to the south and nearby rivers to the south and east which are likely to provide bats with higher quality foraging and commuting habitat within the wider landscape. The site was assessed as having low suitability for foraging and commuting bats.

Activity Transect Surveys

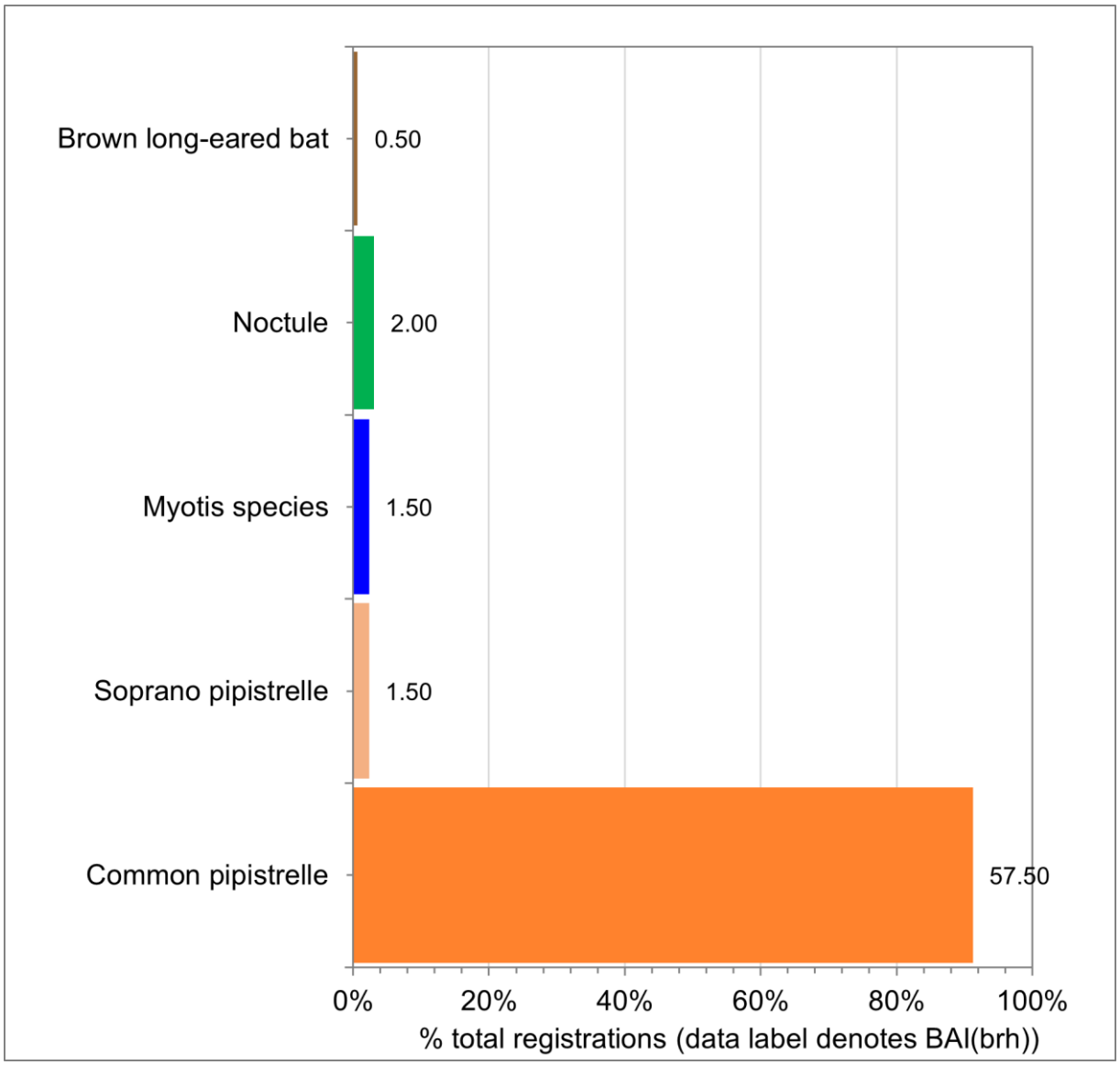
3.4 The results of the activity transect surveys are illustrated on the Bat Transect Survey Results Drawings G9731.02.015, G9731.02.016 and G9731.02.017.

Species Assemblage

3.5 Figure 2 illustrates the species assemblage recorded during the seasonal activity transect surveys with BAI (average bats per hour) also shown. An assemblage of at least five species was recorded during the activity transect surveys; common pipistrelles produced around 90% of the calls. The remaining percentage was made up of a small number of

Myotis, soprano pipistrelles, noctule, and brown long-eared passes. In total, 126 bat passes were recorded across all three activity transect surveys.

Figure 2: Species assemblage across seasonal activity transect surveys



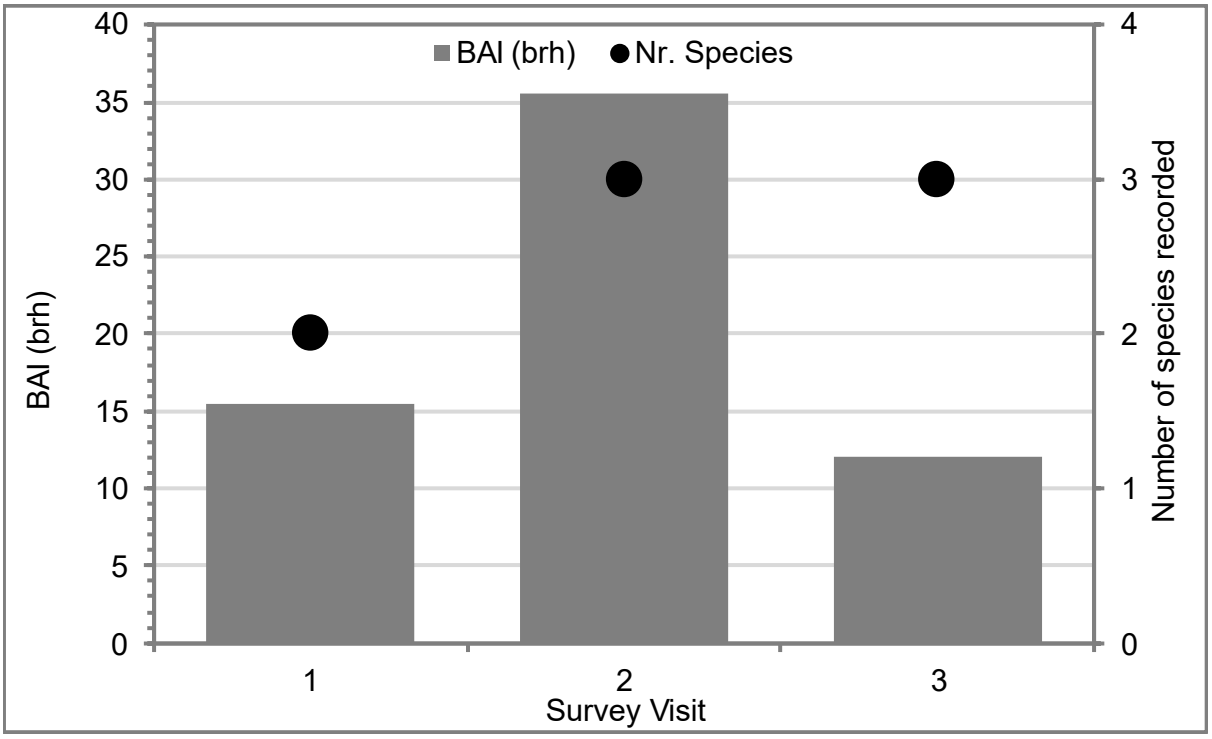
Spatial Trends

3.6 Bats were recorded mostly in the western and southwest boundaries of the site, associated with the tall ruderal, scrub, scattered broad-leaved trees and riparian habitats. Other 'hotspot' areas included the small area of broad-leaved woodland in the southeast and the northern boundary along Tadmarton road, where there are fences and a hedgerow. The results indicate that the scattered trees and hedgerows on site as well as the wetland areas to the south and west of the site are important features for commuting and foraging bats within the locality.

Seasonal Trends

3.7 Figure 3 illustrates the species assemblage BAI and species diversity by seasonal visit. There is not a significant variation in the bat assemblage BAI between survey visits (χ^2 = 0.288) suggesting that the importance of the site for the local bat population varies through the seasons. However, more bat activity was recorded during the summer (July 2023) survey visit than in autumn (October 2023) and spring (April 2023).

Figure 3: Species assemblage by visit



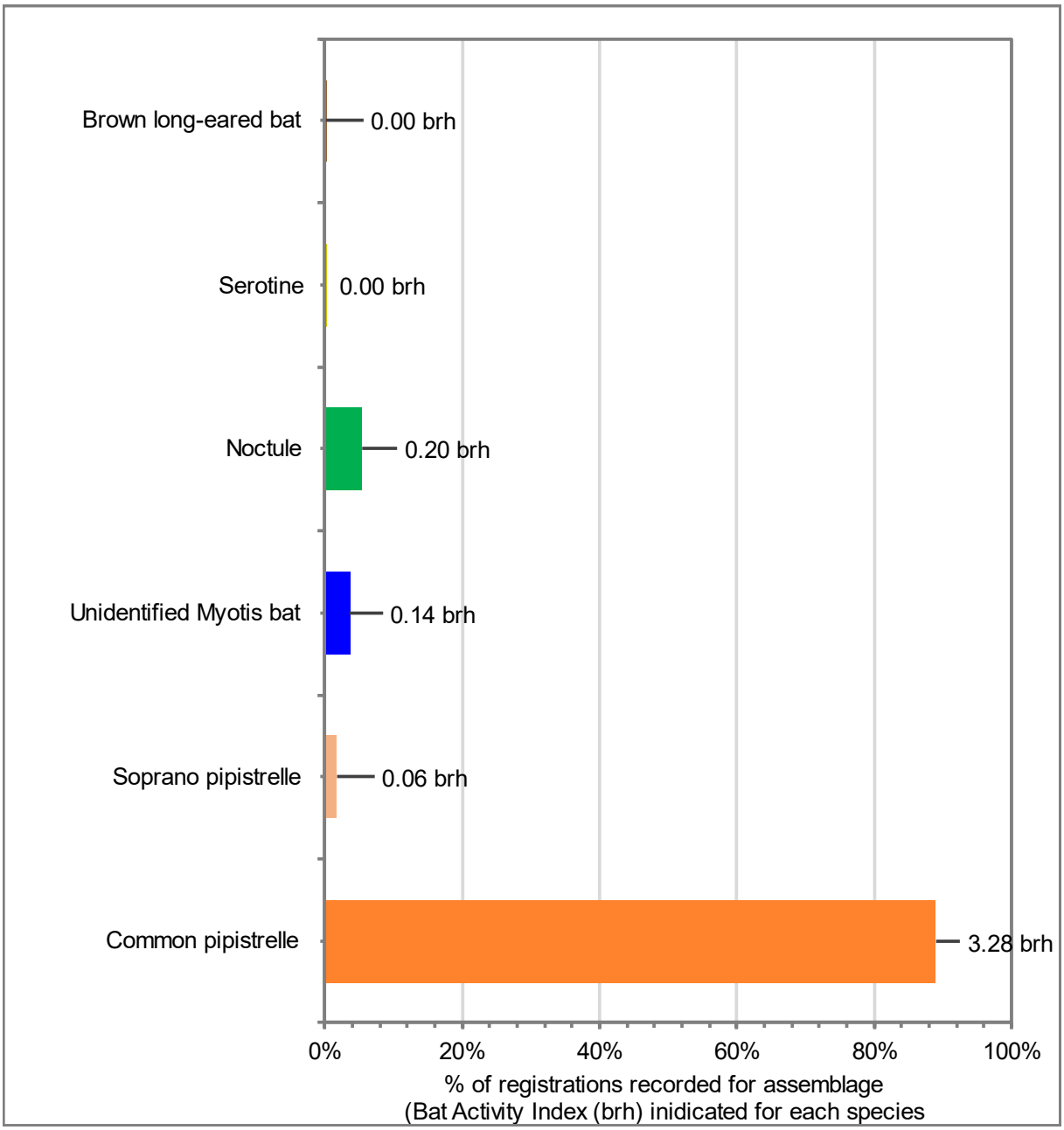
Automated Static Monitoring

Species Assemblage

3.8 Figure 4 illustrates the overall bat assemblage recorded from data analysed. A total of 1200 bat registrations were recorded across all automated static monitoring periods. An assemblage of at least six species was recorded, similar to that recorded during the activity transect surveys, common and soprano pipistrelles; *Myotis* species, noctule, and brown long-eared with the addition of serotine.

3.9 It should be noted that the accuracy of call diagnostics for *Myotis* species is variable within the data and for the purposes of interrogating activity data beyond this stage of confirming assemblage composition, *Myotis* species have been grouped.

Figure 4: Species assemblage recorded - mean representation across all automated static monitoring periods



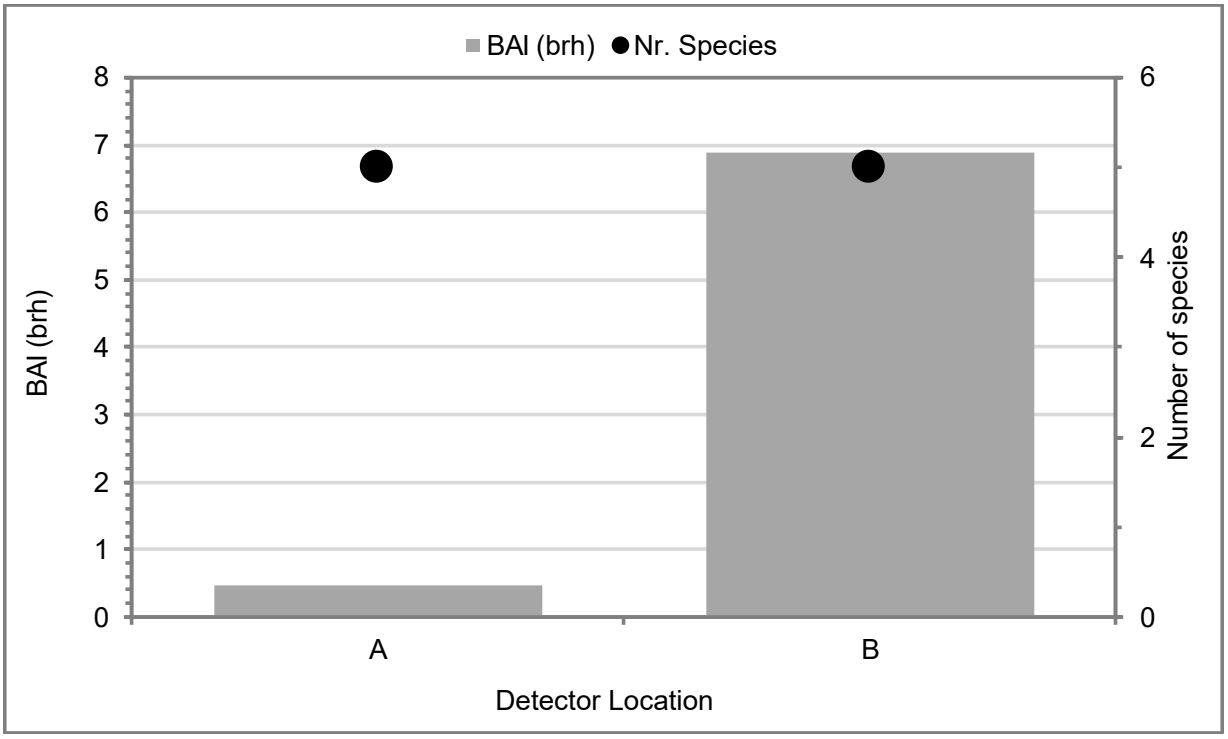
Spatial Trends

3.10 Figure 5 shows the species assemblage BAI and species diversity by location. BAI at Static Detector A (0.47) was considerably lower than at Static Detector B (6.88).

3.11 The most commonly occurring species were recorded at both Static Detector A and B, and five species were recorded at location A and B. Static Detector A sampled arable grassland and hedgerows whereas Static Detector B sampled arable grassland,

scattered trees, and scrub habitat. The results of this indicate that the scrub and scattered trees on site are important for commuting and foraging bats.

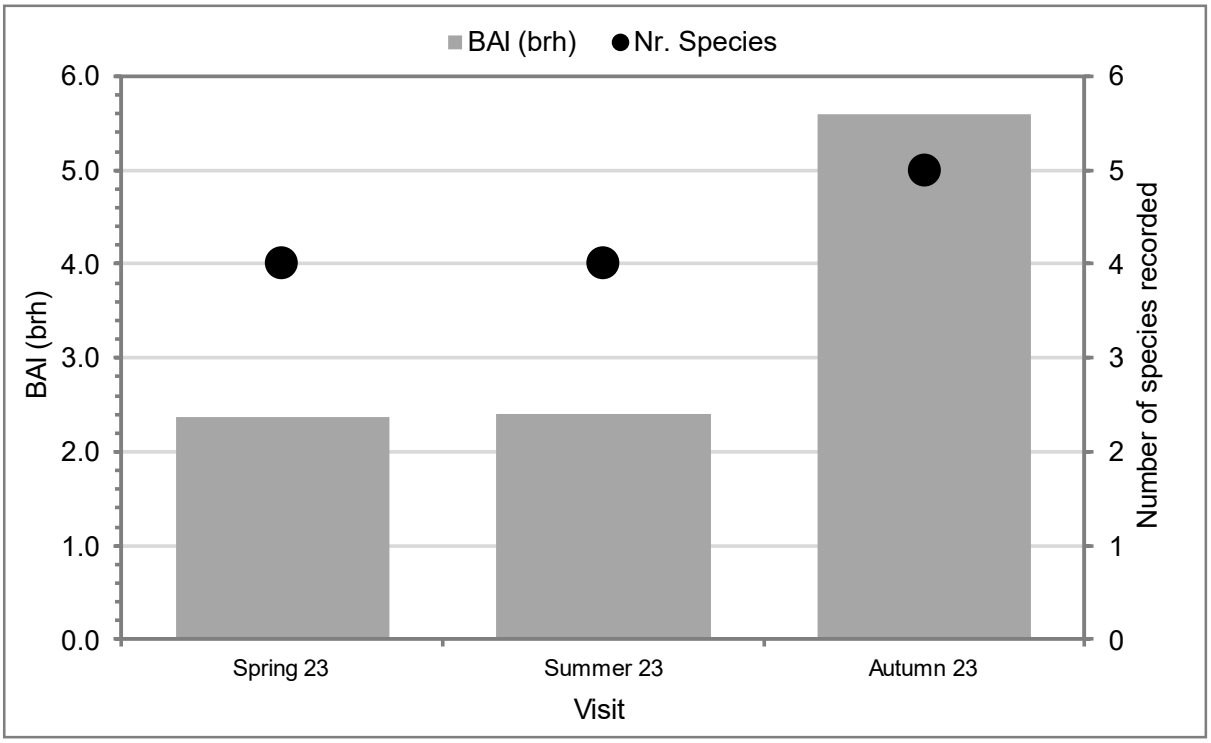
Figure 5: Species assemblage by location



Seasonal Trends

3.12 Figure 6 illustrates the species assemblage BAI and species diversity by survey visit. There is variation in the bat species activity BAI between survey visits, with the autumn (October 2023) survey visit recording a much higher BAI (5.60) than those visits in the spring (April 2023) (2.37) and summer (July 2023) (2.39). Lower activity levels recorded during the spring survey visit may be accounted for due to the less optimal weather conditions.

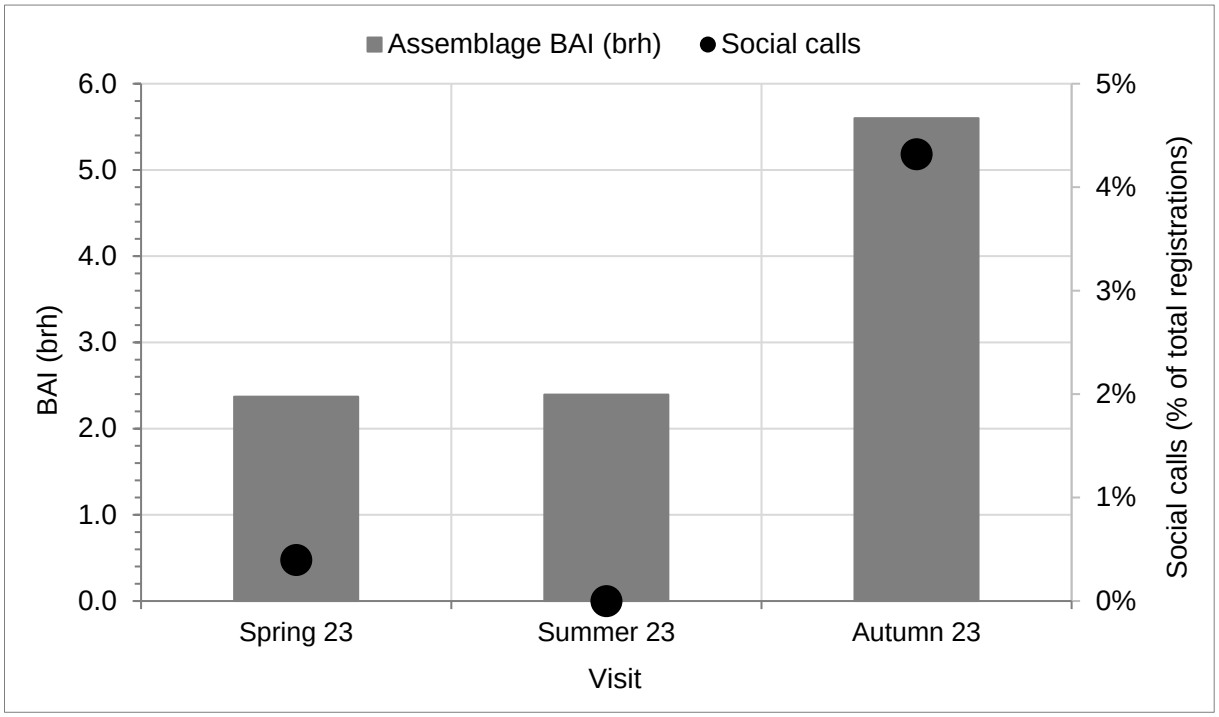
Figure 6: Species assemblage by visit



Social Calls

3.13 Figure 7 illustrates the species assemblage BAI and social calling by visit. Proportionally, very few social calls were recorded across the automated static monitoring survey visits. Of the 1200 total registrations across all surveys, 33 of these were recorded social calls. These were recorded during the autumn (October 2023) and spring (April 2023) survey visits. During the autumn survey visit 4% of the overall calls were social calls and in the spring survey visit, less than 1% of the overall calls were social calls.

Figure 7: Social calls by survey visit



4.0 Evaluation

4.1 The site comprises predominantly arable grassland with some areas of dense continuous scrub and scattered broad-leaved trees in the south and native hedgerows forming some field boundaries in the north and south. The dense scrub, scattered trees, and river corridor on the southern boundary provide foraging and commuting habitat for bats.

4.2 A precautionary approach has been undertaken with regards to Myotis species that were not identified to species level (Table 8).

4.3 The evaluation shown in Table 8 shows that the site supports a bat assemblage of less than County level importance. The assemblage is considered to be of no more than Local importance.

Table 8: Evaluation of the site for commuting bats

Conservation status / distribution (Score)	Species recorded	Score
Widespread (1)	Common pipistrelle Soprano pipistrelle Brown long-eared bat	1 x 3 = 3
Widespread in many geographies, but not as abundant in all (2)	Myotis species (2 species assumed) Noctule	3 x 2 = 6
Rarer or restricted distribution (3)	Serotine Myotis species (2 species assumed)	3 x 3 = 9
Rarest Annex II species and very rare (4)	N/a	N/a
TOTAL (Importance)	**18 (Less than County Importance)**	

5.0 Conclusions

5.1 At least six species were confirmed as present within the site which have been categorised by distribution and rarity (Reason and Wray, 2023):

Widespread species

- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

Species widespread in many geographies, but not as abundant in all

- Noctule
- Myotis species

Rarer species or those with a restricted distribution

- Serotine
- Myotis species

5.2 The site was assessed as supporting a bat assemblage of no more than Local importance. Results indicate that the river corridor in the south of the site supports significantly higher numbers of bats and a greater species diversity.

5.3 Proposals indicate that direct impacts on habitats of importance for commuting and foraging bats are highly unlikely to occur. The proposed planting of an additional hedgerow, trees, and scrub will result in an overall gain in commuting and foraging habitat for bats within the site. Furthermore, indirect impacts on the river corridor in the south of the site will be temporary during the installation of drainage and a significant buffer will be left between the residential development and the river corridor.

5.4 In the absence of mitigation, indirect impacts caused by the introduction of artificial lighting into the north of the site may have a negative impact on commuting and foraging bats.

6.0 Recommendations

6.1 Recommendations are based on surveys and conclusions to date and have been based on the Development Framework Plan (Drawing Ref: D9731.002D).

6.2 Artificial lighting can prevent bats from using commuting routes and using roosts due to disturbance. Artificial lighting can also cause congregation of prey under lighting therefore reducing availability for more light sensitive species such as *Myotis* species and brown long-eared.

6.3 Where lighting is required within the proposed development during construction and post occupation, a Sensitive Lighting Scheme should be designed in line with the Institution of Lighting Professionals Guidance Note 08/23: Bats and Artificial Lighting at Night[6].

6.4 The Sensitive Lighting Strategy should aim to minimise light spill onto from the site on to retained potential bat roosting, and suitable foraging and commuting habitat. The Sensitive Lighting Strategy will benefit bats and other nocturnal and crepuscular species. The Sensitive Lighting Strategy will address four key design principles:

- Use of unnecessary lighting will be avoided;
- Spatial spread of lighting – The horizontal and vertical spread of artificial light will be minimised and take into account both primary and reflected light sources. Directional lighting can be achieved through the use of LED bulbs and by angle and orientation of beam. Use of a cowl, louvre or other light shield could also be implemented if required;
- Variable lighting regime – Timers will be used to ensure that overall illumination is reduced during core night-time hours and
- Intensity and colour of lighting – Light intensity will be as low as possible whilst meeting the objectives of the intended function. Light sources selected will emit zero ultra-violet light wherever possible.

[6] Bat Conservation Trust and Institution of Lighting Professionals (2023) Bats and Artificial Lighting at Night. Guidance Note 08/23.

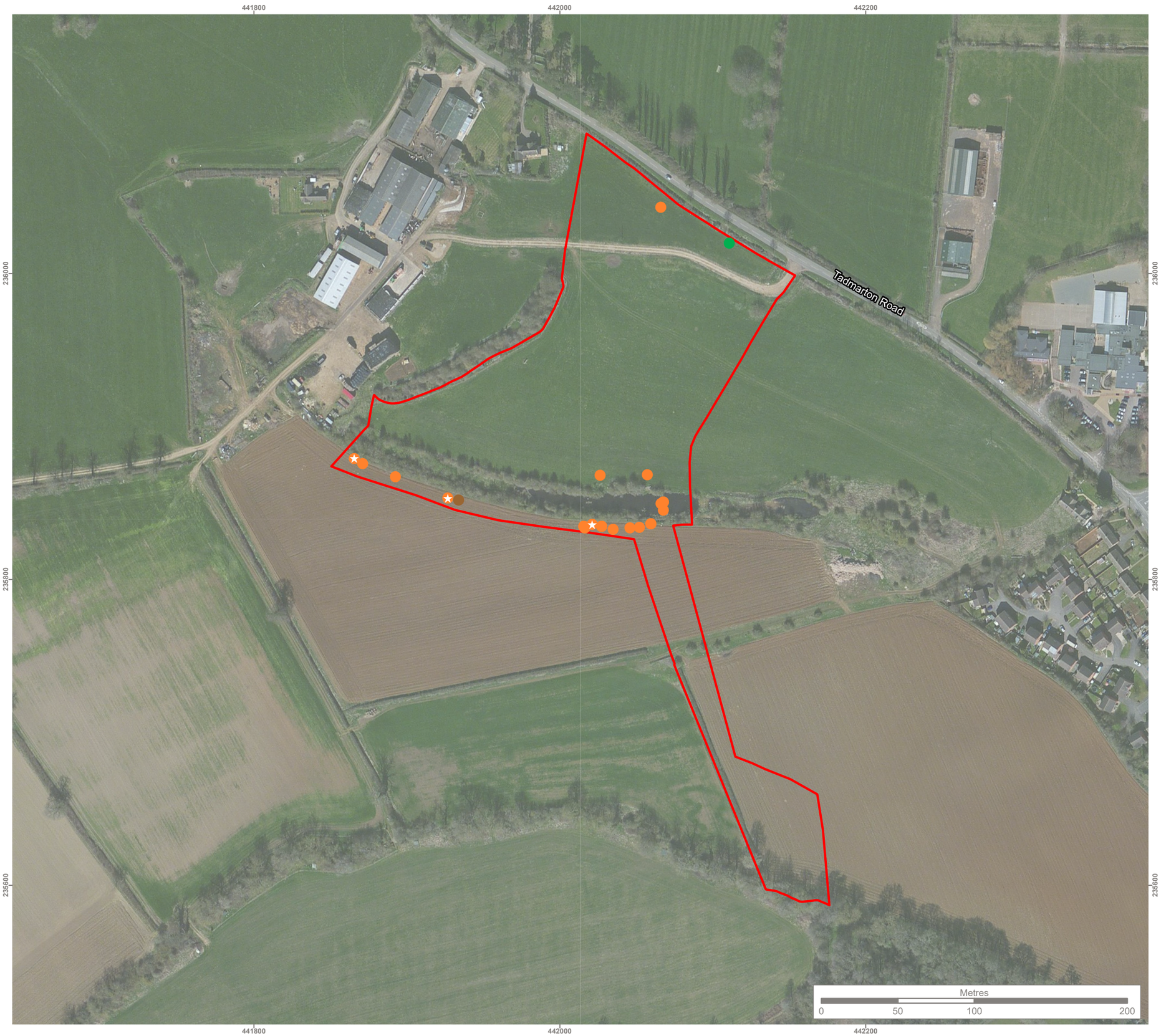
Drawings

G9731.02.015 Bat Transect Results Visit 1 – 19th April 2023

G9731.02.016 Bat Transect Results Visit 2 – 25th July 2023

G9731.02.017 Bat Transect Results Visit 3 – 3rd October 2023

G9731.02.018 Bat Transect Route and Static Detector Locations

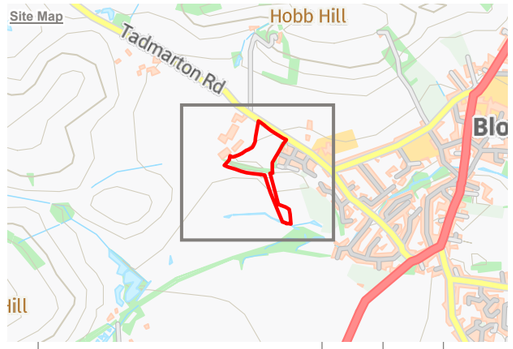


KEY

- Site boundary
- Common pipistrelle
- Common pipistrelle feeding buzz
- Brown long-eared bat
- Noctule

Note:
Multiple bat records in the same location may obscure some results from displaying on the map.

Site Map



Rev	Description	Drawn	Approved	Date

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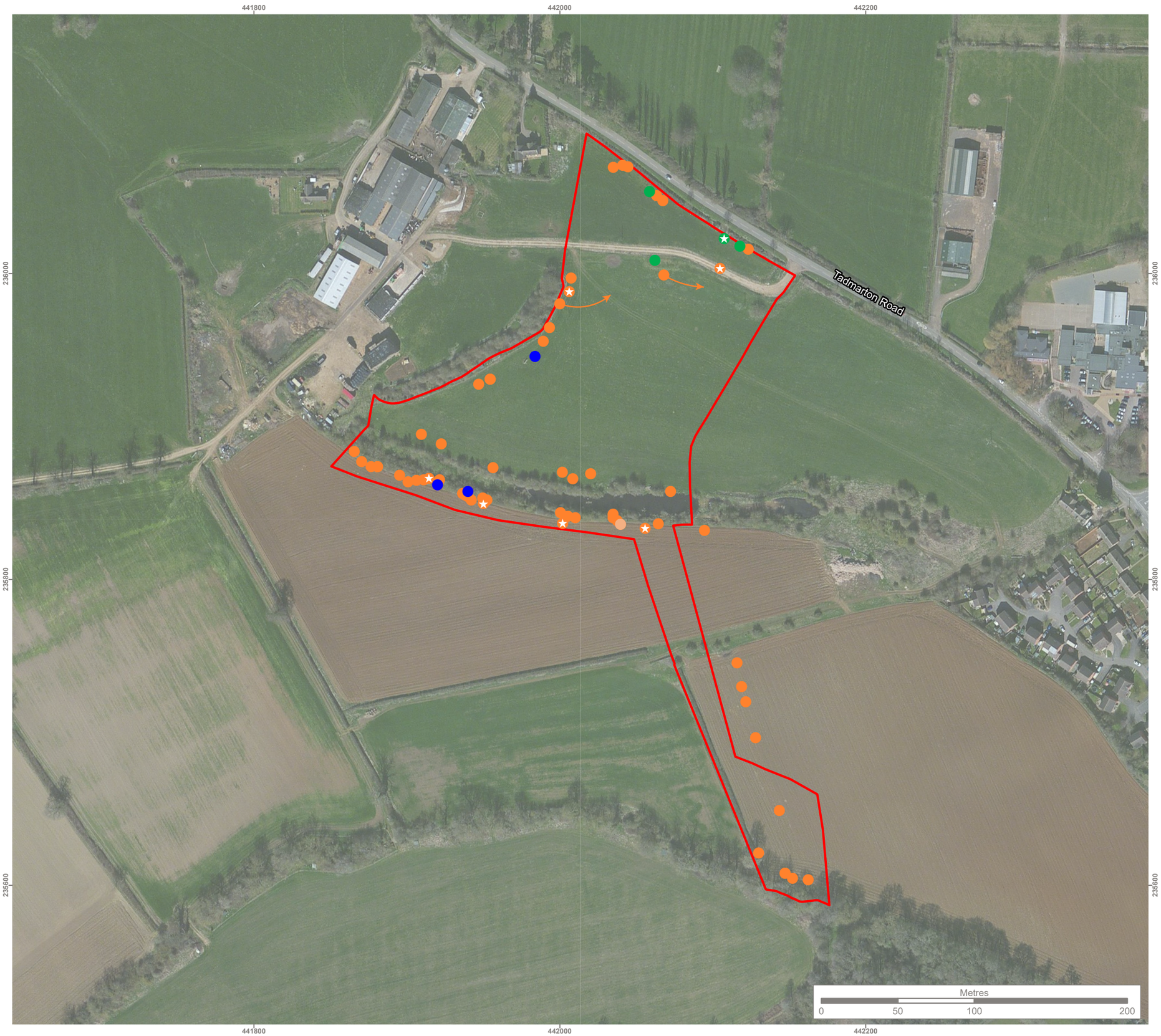
Project
Tadmarton Road, Bloxham

Title
Bat Transect Survey
Visit 1 - 19th April 2023

Drawing Number
G9731.02.015

Drawn	Checked	Approved	Scale	Date
OH	AR	EM	1:2,500 @ A3	03/11/2023

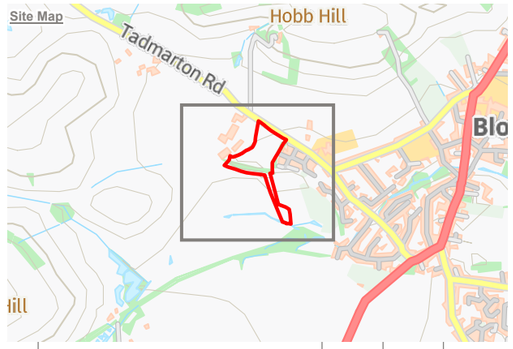


KEY

- Site boundary
- Common pipistrelle
- Common pipistrelle feeding buzz
- Soprano pipistrelle
- Myotis species
- Noctule
- Noctule feeding buzz
- Bat flightline (colour denotes bat species)

Note:
Multiple bat records in the same location may obscure some results from displaying on the map.

Site Map



Rev	Description	Drawn	Approved	Date

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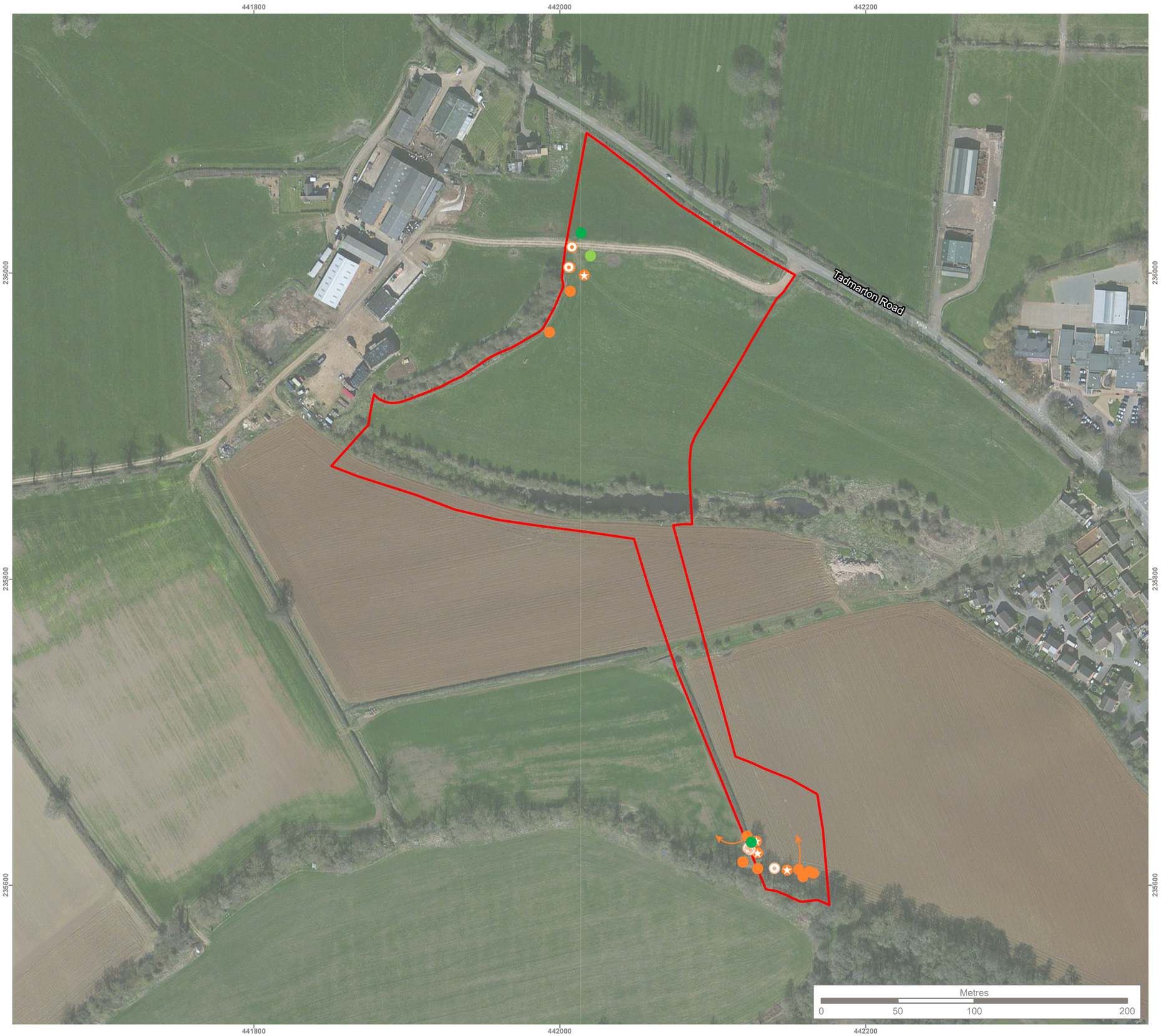
Project
Tadmarton Road, Bloxham

Title
Bat Transect Survey
Visit 2 - 25th July 2023

Drawing Number
G9731.02.016

Drawn	Checked	Approved	Scale	Date
OH	AR	EM	1:2,500 @ A3	03/11/2023

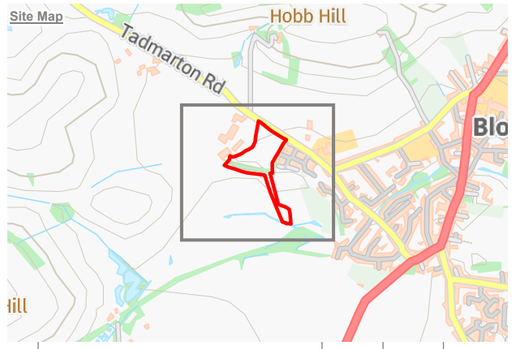


KEY

- Site boundary
- Common pipistrelle
- Common pipistrelle social call
- Common pipistrelle feeding buzz
- Soprano pipistrelle social call
- Noctule
- Leisler's bat
- Bat flightline (colour denotes bat species)

Note:
Multiple bat records in the same location may obscure some results from displaying on the map.

Site Map



Rev	Description	Drawn	Approved	Date

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Project
Tadmarton Road, Bloxham

Title
Bat Transect Survey
Visit 3 - 3rd October 2023

Drawing Number
G9731.02.017

Drawn	Checked	Approved	Scale	Date
OH	AR	EM	1:2,500 @ A3	03/11/2023

441800 442000 442200

236000 235800 235600

A

B

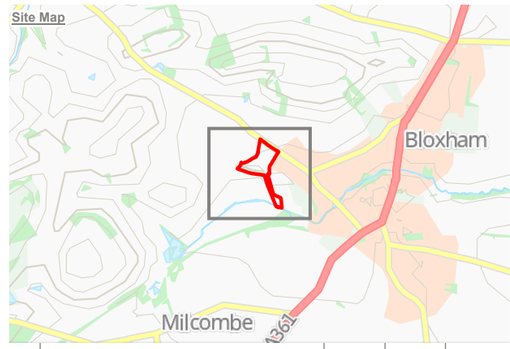
Tadmarton Road

Metres
0 50 100 200

KEY

- Site boundary
- Static detector
- Transect route

Site Map



Rev	Description	Drawn	Approved	Date

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Project
Tadmarton Road, Bloxham

Title
Bat Transect Route and Static Detector Locations

Drawing Number
G9731.02.018

Drawn	Checked	Approved	Scale	Date
AR	SP	KM	1:2,500 @ A3	03/11/2023

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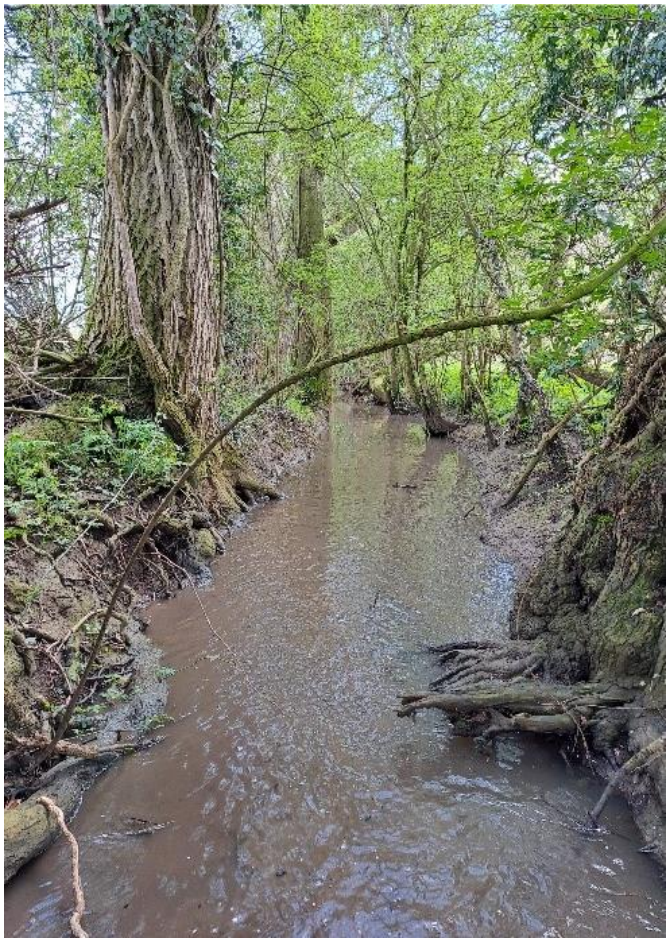
Appendix E: Breeding Bird Survey Report (TEP Ref: 9731.02.007)



Tadmarton Road

Bloxham, Banbury

Protected Species Report: Breeding Bird Report

Prepared For: Gladman Developments

Document Reference: 9731.02.007

Date: December 2023

Version: 2.0

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Project Name:	Tadmarton Road
Location:	Bloxham, Banbury
Document Title:	Breeding Bird Report
Client:	Gladman Developments
Prepared by:	The Environment Partnership Ltd
Office:	Market Harborough
Document Ref:	9731.02.007

Document history and status:

Version	Date	Description of Issue	Author	Checked	Approved
1.0	Nov 2023	First issue	CG & MHS	MW	MW
2.0	Dec 2023	Issued following client's comments	MB	KM	KM

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The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Tables

Annexes

Appendix A: Desktop Data

Drawings

G9731.02.009 Breeding Bird Visit 1 21.04.2023

G9731.02.010 Breeding Bird Visit 2 31.05.2023

G9731.02.011 Breeding Bird Visit 3 26.06.2023

Executive Summary

Site Details	The proposed site is located to the south of Tadmarton Road at the edge of the village of Bloxham in Oxfordshire. The site application boundary measures approximately 4.4ha. Habitats present within the site comprise arable fields, semi-improved grassland, semi-natural broad-leaved woodland, native hedgerows, scattered trees, scrub, two water bodies, wet ditches, a stream, tall ruderal vegetation, bare ground, and hardstanding.
Survey Details	Three breeding bird surveys were undertaken early morning from April – June. The site plus a 100m buffer was walked using a transect survey method.
Breeding Bird Species	37 bird species were recorded within the site boundary and 100m survey buffer during the 2023 breeding bird survey; 23 species were recorded within the site itself. No species were confirmed to be breeding within the site. Four species were confirmed to be breeding within the 100m buffer. Ten species were probable breeding species within the site and 100m buffer; four species were probable breeding species within the site. There were 19 species recorded as possible breeders on site, some of these possible breeding species were then assessed to be probable or confirmed to be breeding within the buffer.
Summary	The site is of local significance for breeding birds. This is based on an assessment of numbers of confirmed, probable and possible breeding bird species within the site, as well as the abundance and species richness of notable bird species present. Most species recorded were associated with the dense/continuous scrub onsite.
Recommendations	If removal of any mature trees is necessary, specific surveys should be undertaken for both barn owl and red kite. Surveys for barn owl should also be undertaken outside of the traditional breeding season March-August. Prior to any construction works commencing at the southern end of the site during the red kite breeding season (March to August) a red kite nesting survey should be carried out. This should include checking the woodland for any signs of nesting red kite within at least 300m of the development. Before the removal of any mature tree or any other tree containing cavities, a thorough check should be carried out by a suitably qualified ecologist to determine if any nesting barn owl are present. Barn owls may nest at any time of year, so this mitigation applies all year round.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

1.0 Introduction

1.1 TEP were commissioned in March 2023 by Gladman Developments to carry out breeding bird surveys (BBS) at Tadmarton Road, Bloxham, Banbury. The surveys are required to inform an Ecological Impact Assessment (EcIA) in support of a planning application for residential development.

1.2 The objectives of this report are to:

- Detail the methods and results of the breeding bird survey visits undertaken;
- Assess the number of pairs of probable and confirmed breeding species;
- Identify features of value within or near to the site for breeding birds;
- Value the site as a whole for breeding birds; and
- Provide generic advice on the protection of birds during habitat clearance.

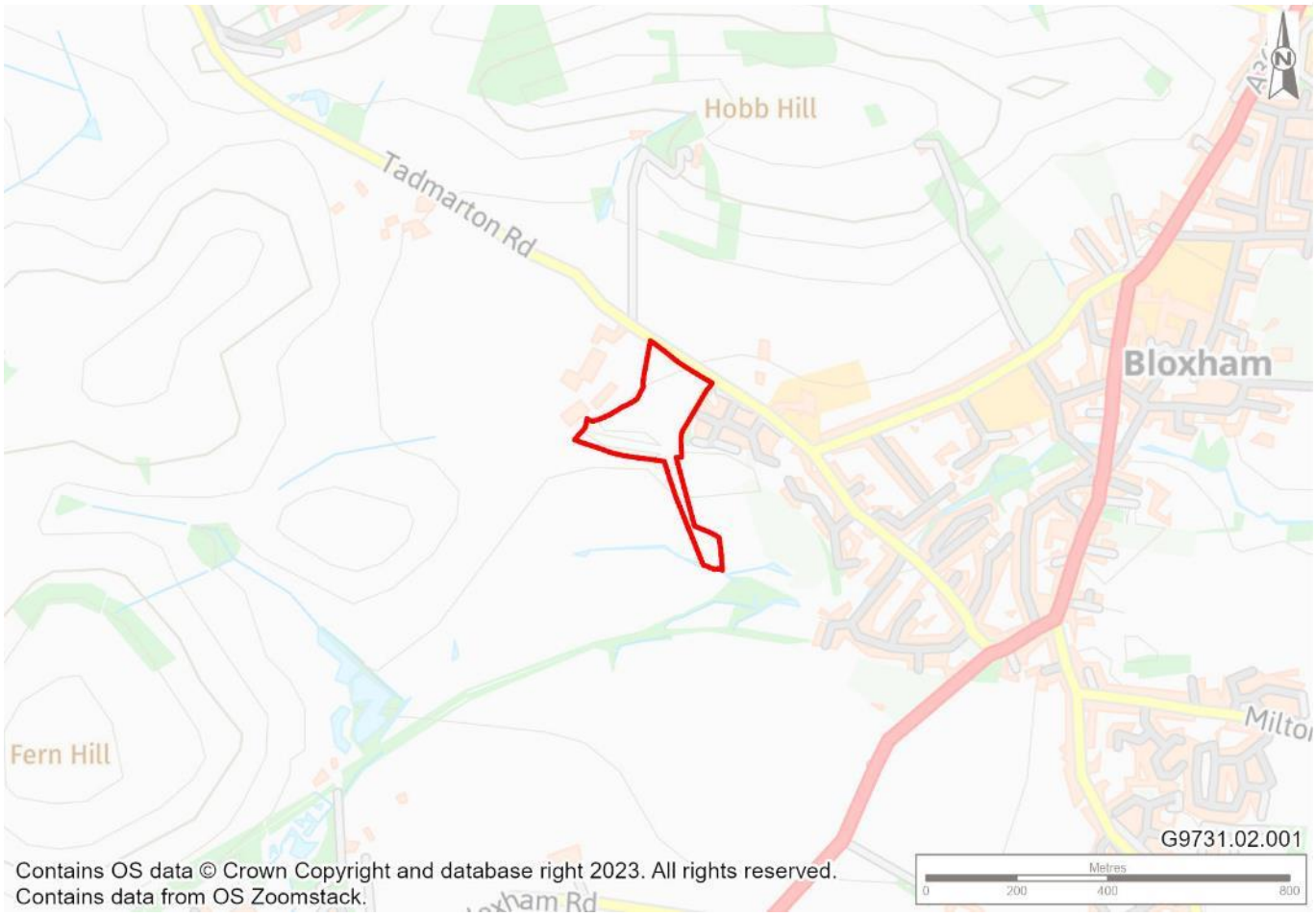
Site Location

1.3 The site is located at Tadmarton Road, Bloxham, Banbury. The location of the site is depicted by the red line shown in Figure 1. The approximate central grid reference of the site is SP 42049 35945.

1.4 The site is dominated by two arable fields comprising temporary grassland ley. Hedgerows are present along Tadmarton Road on the northern boundary and along a field boundary, and a short section of stream within semi-natural broadleaved woodland grazes the southern site boundary. Former quarry workings bisect the site encompassing a small section of running water, a large pond, dense scrub, and scattered trees. Wet ditches, tall ruderal vegetation, and scattered scrub habitats were also found within the site.

1.5 Tadmarton Road forms the north-eastern site boundary, a working farm is located directly to the north-west of the site, and the eastern boundary abuts a new housing development and associated public open space beyond which lies the village of Bloxham. Rural land under agricultural use extends in all other directions.

Figure 1: Site location



Legislation

1.6 Desktop records of protected and notable bird species recorded within 2km of the site were obtained from Thames Valley Environmental Records Centre (TVERC) (see Appendix A for the full list). Bird species classed as notable are those listed on any of the following:

- Schedule 1 of the Wildlife and Countryside Act 1981, as amended (WCA1);
- Species of principal importance under Section 41 of the Natural Environment and Communities Act 2006 (S41); and
- Red and Amber listed Bird of Conservation Concern (BoCC) species (Stanbury et al. 2021) (BRd/ BAm).

2.0 Methods

2.1 The breeding bird survey was carried out applying methods based on the standard breeding bird survey and common bird census methods developed by the British Trust for Ornithology (BTO)[1].

2.2 Visits were carried out in the early morning period. Three evenly spaced visits were undertaken from late April to June 2023.

2.3 The new Breeding Bird Survey guidelines[2] published in January 2022 state that a breeding bird survey should have six survey visits as a default unless clear justification can be provided to deviate from this approach. This is to ensure that all parts of the breeding bird survey season are adequately covered. TEP utilise a BBS Scoping Matrix on projects to determine whether fewer or a greater number of survey visits are justified to provide an adequate baseline. A range of factors are considered such as size of site, quality of bird habitat, proximity of designated sites for birds and predicted extent of habitat loss.

2.4 The survey guidance is currently non-mandatory but is being adopted by a number of national organisations and Local Planning Authorities.

2.5 Three survey visits were considered sufficient at Tadmarton Road following review of desk study ornithology data for the site and given the relatively small site area.

2.6 Bird species and activity patterns were recorded and mapped using standard BTO symbology.

2.7 Bird species within the 100m surrounding the site boundary were also recorded during the survey, as a proportion of the bird's foraging or nesting habitat is likely to be within the site.

Limitations

2.8 All habitats within the site and within a 100m buffer of the site were fully accessible to survey and the survey was undertaken within the appropriate seasonal window. There were no limitations to the survey.

[1] Gilbert, G., Gibbons, D.W. and Evans, J., 1998. Bird Monitoring Methods: a manual of techniques for key UK species.

[2] Bird Survey & Assessment Steering Group. 2022. Bird Survey Guidelines for assessing ecological impacts, v.0.1.6. https://birdsurveyguidelines.org [16/08/2022].

3.0 Results

Table 1: 2023 Breeding Bird Survey Details

Visit number	Date(s)	Weather	Seasonal Constraints	Survey Period(s)
1	21st April 2023	5°C, light breeze, light rain increasing to moderate rain, cloudy	None	06:10-07:55
2	31st May 2023	9°C, light breeze, no rain, cloudy	None	04:55-06:58
3	26th June 2023	12°C, light, breeze, no rain, cloudy	None	05:35-07:23

Table 2: Counts of birds recorded during the 2023 breeding bird survey, including conservation and likely breeding status

Species	S/SBU	Visit 1	Visit 2	Visit 3	Conservation Status	Likely Breeding Status
Blackbird	S		1	2		Pr (1)
	SBU	1	4	5		Pr (3)
Blackcap	S			1		Po
	SBU		1	1		Po
Blue Tit	S	2	1			Po
	SBU	7	4	9		C (1) Pr (2)
Buzzard	S					N
	SBU		1	1		Po
Carrion Crow	S					N
	SBU		1	1		Po
Chaffinch	S	1				Po
	SBU	2	1	2		Pr (1)
Chiffchaff	S					Po
	SBU	2	1			Pr (1)

Collared Dove	S		1			Po
	SBU		5	4		Po
Dunnock	S	3	1	1	BAm, S41	Pr (1)
	SBU	4	1	7		Pr (2)
Feral Pigeon	S	1				N
	SBU	12	3	2		Po
Goldcrest	S					N
	SBU			2		Po
Goldfinch	S	2	1	2		Po
	SBU	5	1	4		Po
Great Spotted Woodpecker	S					N
	SBU			1		Pr (1)
Great Tit	S		1			Po
	SBU	3	2			C (1)
Grey Wagtail	S				BAm	N
	SBU			Juvenile		N
House Sparrow	S				BRd, S41	Po
	SBU		2	6		C (1 colony)
Jackdaw	S		13			N

	SBU	30	24	71		Po
Kestrel	S				BAm	N
	SBU	1	1			Po
Linnet	S	3			BRd, S41	Po
	SBU	6				Po
Long-tailed Tit	S	2				Po
	SBU	2		1		Po
Magpie	S		2			Po
	SBU		3			Po
Mallard	S		6		BAm	Po
	SBU	3	6	4		Po
Moorhen	S		1		BAm	Po
	SBU		1			Po
Pied Wagtail	S					Po
	SBU		2	2		C (1)
Pheasant	S	4	2			Po
	SBU	12	6			Po
Red-legged Partridge	S		1			Po
	SBU		2			Po

Red Kite	S				WCA1	N
	SBU			1		Po
Robin	S	1		2		Pr (1)
	SBU	1		4		Pr (1)
Rook	S		25		BAm	N
	SBU	15	129	72		N
Song Thrush	S				BAm, S41, LBAP	N
	SBU		1	2		Pr (1)
Sparrowhawk	S				BAm	N
	SBU			1		Po
Starling	S			25	BRd, S41	N
	SBU	2	7	35		Po
Stock Dove	S	1	2	2	BAm	Po
	SBU	1	2	2		Po
Swallow	S					N
	SBU			2		Po
Whitethroat	S				BAm	Po
	SBU		1	3		Pr (1)
Woodpigeon	S	4			BAm	Po

	SBU	7	10	10		Pr (3)
Wren	S		2	1	BAm	Pr (1)
	SBU	3	7	8		Pr (5)
Total Species	**S**	**11**	**15**	**8**		
	SBU	**20**	**28**	**28**		

S: Site; SBU: Site including 100m buffer

Status Key: WCA1 = Schedule 1, S41 = Section 41; BRd = BoCC Red List; BAm = BoCC Amber List; LBAP = Local Biodiversity Action Plan.

Likely Breeding Status Key: C = confirmed breeding, Pr = probable breeding, Po = possible breeding, N = not breeding.

Results Summary

Desk Study

3.1 Records of 51 notable species were returned within 2km of the site.

3.2 Within the records returned were 11 WCA1 species. However, of the WCA1 records of redwing *Turdus iliacus* and fieldfare *Turdus pilaris* were returned which do not breed in southern England. There is also no suitable breeding habitat on site for: black redstart *Phoenicurus ochruros*, crossbill *Loxia curvirostra*, hen harrier *Circus cyaneus*, peregrine *Falco peregrinus* and merlin *Falco columbarius*.

3.3 There may be suitable habitat (though note not optimal) for the WCA1 species: kingfisher *Alcedo atthis*, red kite *Milvus milvus*, barn owl *Tyto alba* and hobby *Falco subbuteo*.

3.4 The largest numbers of records returned were for kestrel *Falco tinnunculus* (167 records), red kite (233 records), sparrowhawk *Accipiter nisus* (132 records), and swift *Apus apus* (173 records). The exact location of the nearest record to the site was not provided.

3.5 The absence of records does not show an absence of any notable species.

Breeding Bird Survey Results

Site and 100m Buffer

3.6 37 bird species were recorded within the site boundary and 100m survey buffer during the 2023 breeding bird survey; 23 species were recorded within the site itself.

3.7 No species were confirmed to be breeding within the site. Four species were confirmed to be breeding within the 100m buffer. Of these four species, house sparrow (1 colony) was the only notable species recorded.

3.8 Ten species were probable breeding species within the site and 100m buffer with four species being probable breeding species within the site itself. Of those species, the following notable species were recorded:

- On-site
  - Dunnock (1 pair)
  - Wren (1pair)
- Buffer
  - Dunnock (1 pair)

- Woodpigeon (3 pairs)
- Song thrush (1 pair)
- Wren (4 pairs)
- Whitethroat (1 pair)

3.9 There were 19 species recorded as possible breeders within the site and 100m buffer. This included the following notable species: linnet *Linaria cannabina*, mallard *Anas platyrhynchos*, moorhen *Gallinula chloropus*, stock dove *Columba oenas*, kestrel (a possible nest was located in the buffer to the east of the site), red kite, sparrowhawk and starling *Sturnus vulgaris*.

3.10 No ground nesting birds, including skylark *Alauda arvensis*, lapwing *Vanellus vanellus* and meadow pipit *Anthus pratensis* were recorded during the surveys.

Incidental & Other Notable Records

3.11 On a bat transect survey on the 19th April 2023, a barn owl was noted to be hunting. It was recorded flying within the 100m buffer to the south-west of the site and the 100m buffer south of the residential area at the east of the site.

3.12 A rookery is located within the broad-leaved woodland that extends into and beyond the 100m buffer to the south of the site. The rookery itself is not within 100m of the site. Rooks were recorded within the site buffer; it is likely that at least some individuals were using the rookery to breed.

4.0 Discussion

4.1 A total of 48 bird species were recorded within the site boundary and 100m survey buffer during the 2023 breeding bird survey.

Fuller Method

4.2 Fuller (1980)[3] devised a method of classifying the ornithological interest of sites for conservation based on three site attributes: population size, rarity and diversity.

4.3 No significant breeding bird concentrations (i.e. 1% or more of the national breeding population) or nationally rare breeding bird species (i.e. between 1 and 1,000 breeding pairs) were recorded during the survey.

4.4 The total number of confirmed, probable and possible breeding bird species recorded within a site indicates its significance. Table 3 shows the breeding species richness criteria devised by Fuller.

Table 3: Significance of the total number of breeding species recorded at a site (Fuller, 1980)

Local	County	Regional	National
25-49	50-69	70-84	85+

4.5 Based on the above criteria, the 38 confirmed, probable and possible breeding bird species recorded within the site and 100m buffer indicate that the site, including the site buffer, is of local significance for breeding birds.

Ground Nesting Birds

4.6 All of the site within the redline boundary and the majority of the wider breeding bird survey area is located within four fields which have the following areas working from north to south: 0.9 hectares, 2.2 hectares, 4.2 hectares and 2.6 hectares. Skylark is the most common ground nesting bird associated with agricultural land and this species was not recorded anywhere within the survey area during 2023. Neither were the ground nesting bird species meadow pipit or lapwing recorded within the survey area in 2023.

[3] Fuller, R.J., 1980. A method for assessing the ornithological interest of sites for conservation. Biological Conservation, 17(3), pp.229-239.

4.7 Skylark is a species of open country with bare ground and intermittent shorter vegetation, habitat often provided in arable farmland and rough pastures. Skylark often nests in larger open fields of a minimum of 5ha and fields of a minimum 10ha if bounded by trees or hedgerows (Winspear and Davies, 2005[4]). Skylark will not typically nest within 50 metres of hedges, pylons, trees or bushes that may provide perches for avian predators. The fields at Tadmarton Road are bounded by tall hedgerows or woodland and are not large enough to attract nesting skylark. The areas of field which make up the majority of the land within the actual redline boundary are intensively managed and not optimal for nesting skylark. Therefore overall, it is concluded that the land at the site has low potential to support ground nesting birds.

Overall Assessment

4.8 An all-encompassing assessment of the value of the site must be based on all the following factors (Table 4). This table considers only the site alone. It is concluded that the site is of local significance for breeding birds.

4.9 Within the site alone, 23 species were confirmed, probable or possible breeding bird species.

Table 4: Assessment of the value of the site for breeding birds based on the 2023 Breeding Bird Survey

Evaluation Factor	Result
Result of the Fuller species richness assessment (including confirmed, probable and possible breeders)	23 species - below local significance
Proportion of species that were confirmed or probable breeders compared to possible breeders	Confirmed/probable breeders – 4 species (17%) Possible breeders – 19 species (83%) The number of possible breeders greatly proportionately exceeds the combined number of confirmed or probable breeders.
The extent and quality of nesting habitat	Most important habitats for breeding birds within the site – dense scrub, small area of semi-natural broadleaved woodland, intact hedgerows, scattered broad leaved trees and waterbodies. Habitat connectivity - the south of the site is connected to a larger area of broad-leaved woodland and an unnamed running water body. Other comments on habitat – Large areas of the site were dominated by arable land which provided few nesting opportunities.

[4] Management Guide to Birds of Lowland Farmland (RSPB Management Guides) by R Winspear, G Davies (2005).

Evaluation Factor	Result
Range of BoCC species recorded	Number of BoCC species recorded within the site and survey buffer (confirmed, probable or possible breeders only) – 13 Number of BoCC species recorded within the site alone (confirmed, probable or possible breeders only) – 9
Abundance of BoCC species	There are no BoCC species considered to be important contributors to site value based on abundance. The abundance of BoCC species was generally low, except for rook recorded within the buffer, these were primarily using the area to feed.
Presence of Schedule 1 species	A red kite was recorded flying over the 100m buffer on Visit 3. A barn owl was recorded to be foraging within the buffer on a bat transect survey but was not judged to be breeding within the site.

Individual Species Assessment

Table 5: Notable species recorded within the site and 100m buffer: WCA1 species & confirmed or probable breeders

Species	Number of Pairs	Habitats Associated with Species	Site Specific Context
WCA1 Species			
Barn Owl (WCA1)	Non-breeding	Nest within holes in trees, undisturbed buildings such as barns and outbuildings and within nest boxes if suitable. The home range of barn owls within the breeding season is typically up to 1km from the nest[5]. The preferred hunting habitat of barn owls within the UK is rough grassland. They will also hunt over crops and hay meadows and within and around farm buildings[6].	Recorded hunting over field margins at edge of arable fields within the buffer to the east and south west of the site. There were no trees within the site that supported large enough cavities to support nesting owls. Offsite mature trees were however noted along the stream to the west which may support features suitable for nesting owls.
Red Kite (WCA1)	Site: Non-breeding Buffer: possible	Nest within woodland, which may be an extensive area or limited to a shelter belt or small clump of mature trees. The nest is typically 3-30m from the ground. In the midlands pedunculate oak is preferred, however, a range of species may be used, Scottish birds prefer Scots pine.	Recorded once flying over the 100m buffer at the north of the site. There are no mature trees large enough on site to support nesting red kite, the woodland to the south of the site is mature enough to support the species. The presence of the rookery to the northeast of this woodland suggests red kite nesting in this specific area is unlikely[1], though the rest of the woodland remains suitable.

[5] *Barn Owl home range - The Barn Owl Trust*

[6] *Barn Owl hunting and feeding - The Barn Owl Trust*

		Forage over open ground, such as livestock and rough grazing area[7].	
Other BoCC species			
Dunnock (BAm, S41)	Site: 1 probable pair Buffer: 1 probable pair	Nest close to the ground in vegetation understory, bramble and scrub, but will also nest in hedgerows and residential gardens and are found in a wide variety of habitats. They typically have two possibly three broods each year.	The hedgerows and dense scrub provide nesting opportunities within the site for this species.
House Sparrow (BRd, S41)	Buffer: 1 confirmed colony	Commonly nest in buildings, utilising holes and overhanging features, they will also readily use nest boxes. Also nest within thick hedges, scrub and conifers.	The colony was recorded using the farm buildings within the 100m buffer north west of the site.
Song Thrush (BAm, S41)	Buffer: 1 probable pair	Nest in trees and mature hedges. Typically they have two to three broods every year.	Not recorded within the site, but the scrub with scattered trees and hedgerows within the site provide nesting opportunities. The probable pair was likely nesting in one of the trees within the hedgerow along the north of Tadmarton Road.
Whitethroat (BAm)	Buffer: 1 probable pair	Nest in low scrub, rough grassland, low growing bushes and similar vegetation in a well-hidden nest 30-50cm off the ground.	Not recorded within the site, but the hedgerows and dense scrub provide nesting opportunities within the site for this species.
Woodpigeon (BAm)	Buffer: 3 probable pairs	Found in a variety of habitats including parks and gardens, building a loose twiggy nest in trees and hedgerows.	Although only a possible breeding species within the site, the hedgerows, dense scrub and broad-leaved trees provide nesting opportunities within the site for this species.
Wren (BAm)	Site: 1 probable pair	Nest in almost any location but display a preference to well-developed under-storeys	The hedgerows, dense scrub and broad-leaved trees provide nesting opportunities within the site for this species.

[7] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) Raptors: A Field Guide for Surveys and Monitoring. Available at: *Raptors 2014 revise.pdf (raptormonitoring.org)*

	Buffer: 4 probable pairs	such as brambles, bracken or locations such as crevices or holes in tree trunks.	

5.0 Recommendations

5.1 All wild birds and their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended). It is recommended that all tree, vegetation and built structure clearance across site avoids the core breeding bird season, March to August inclusive; although bird nesting can take place outside this period. If clearance works are necessary during the core breeding bird season, or at any time when bird nesting is suspected, a nesting bird check of the affected area by an ecologist is required immediately prior to the clearance works taking place. Extensive clearance of potential bird nesting habitat is not always practical and development programmes should take this constraint into account.

5.2 Prior to any construction works commencing at the southern end of the site during the red kite breeding season (March to August) a red kite nesting survey should be carried out. This should include checking the woodland for any signs of nesting red kite within at least 300m of the development. Should any nesting red kite be found, measures will need to be implemented to prevent disturbance to this species from the development while they are nesting to avoid an offence being committed under Schedule 1 of the Wildlife and Countryside Act 1981. The protection against disturbance also applies to dependant young of any Schedule 1 species such as red kite.

5.3 Before the removal of any mature tree or any other tree containing cavities, a thorough check should be carried out by a suitably qualified ecologist to determine if any nesting barn owl are present. Barn owls may nest at any time of year, so this mitigation applies all year round. The tree can only be removed when the ecologist has determined that barn owl are not currently nesting at that location. If there is any uncertainty, then further examination of the cavity may be necessary by a licenced barn owl ecologist. Suitable offsite trees within 100m of any construction works should also be checked for nesting barn owl to ensure this WCA1 species is not disturbed during nesting. If barn owl are found to be nesting offsite, a suitable disturbance buffer will need to be established around the nest until nesting is confirmed to have ended.

Appendix A: Desktop Data

Table 6: Summary of pre-existing bird records returned by TVERC within 2km

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Birds			
Barn owl	WCA1	10	Within 2km
Black redstart	WCA1	1	Within 2km
Black headed-gull	BAm	3	Within 2km
Bullfinch	SPI, BAm	16	Within 2km
Common gull	BAm	1	Within 2km
Crossbill	WCA1	2	Within 2km
Cuckoo	SPI, BRd	1	Within 2km
Dunnock	SPI, BAm	9	Within 2km
Fieldfare	WCA1	13	Within 2km
Greenfinch	BRd	12	Within 2km
Grey partridge	SPI, BRd	5	Within 2km
Grey wagtail	BAm	28	Within 2km
Hawfinch	SPI, BRd	2	Within 2km
Hen harrier	WCA1, SPI, BRd	2	Within 2km
Hobby	WCA1	11	Within 2km
House martin	BRd	2	Within 2km
House sparrow	SPI, BRd	7	Within 2km
Kestrel	BAm	167	Within 2km
Kingfisher	WCA1	4	Within 2km
Lapwing	SPI, BRd	7	Within 2km
Lesser black-backed gull	BAm	2	Within 2km
Lesser redpoll	SPI	10	Within 2km
Linnet	SPI	24	Within 2km
Marsh tit	SPI, BRd	26	Within 2km

Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Meadow pipit	BAm	1	Within 2km
Merlin	WCA1, BRd	1	Within 2km
Mistle thrush	BRd	3	Within 2km
Peregrine	WCA1	1	Within 2km
Red kite	WCA1	233	Within 2km
Redstart	BAm	3	Within 2km
Redwing	WCA1, BAm	14	Within 2km
Reed bunting	SPI, BAm	14	Within 2km
Ring ouzel	SPI, BRd	3	Within 2km
Rook	BAm	2	Within 2km
Sedge warbler	BAm	1	Within 2km
Skylark	SPI, BRd	4	Within 2km
Snipe	BAm	5	Within 2km
Song thrush	SPI, BAm	9	Within 2km
Sparrowhawk	BAm	132	Within 2km
Spotted flycatcher	SPI, BRd	2	Within 2km
Swift	BRd	173	Within 2km
Tawny owl	BAm	34	Within 2km
Tree pipit	SPI, BRd	3	Within 2km
Whinchat	BRd	1	Within 2km
Whitethroat	BAm	14	Within 2km
Willow warbler	BAm	12	Within 2km
Woodcock	BRd	26	Within 2km
Woodpigeon	BAm	4	Within 2km
Wren	BAm	7	Within 2km
Yellow wagtail	SPI, BRd	1	Within 2km

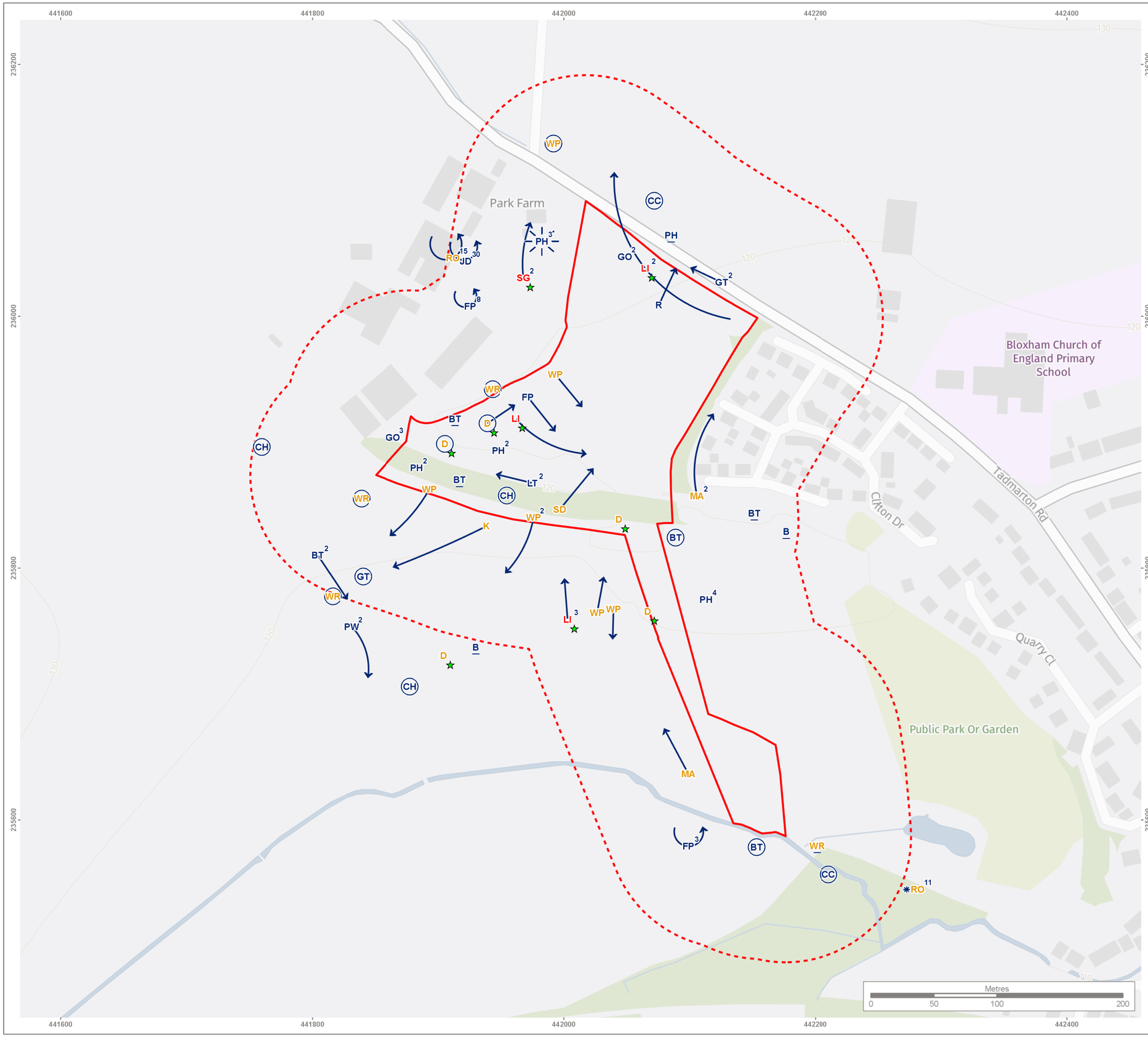
Name of Species	Relevant Legislation / Status (as assigned by TVERC)	Number of records	Nearest record relevance
Yellowhammer	SPI, BRd	3	Within 2km

Drawings

Drawing G9731.02.009 Breeding Bird Visit 1 21.04.2023

Drawing G9731.02.010 Breeding Bird Visit 2 31.05.2023

Drawing G9731.02.011 Breeding Bird Visit 26.06.2023



KEY

- Site boundary
- Site boundary - 100m buffer
- Section 41 species
- Aggressive encounter between two birds
- Bird calling
- Bird in song
- Nest occupied with eggs/brood
- Directional flight line

Species Codes

B	Blackbird
BT	Blue tit
CC	Chiffchaff
CH	Chaffinch
D	Dunnock
FP	Feral pigeon
GO	Goldfinch
GT	Great tit
JD	Jackdaw
K	Kestrel
LI	Linnet
LT	Long-tailed tit
MA	Mallard
PH	Pheasant
PW	Pied wagtail
R	Robin
RO	Rook
SD	Stock dove
SG	Starling
WP	Woodpigeon
WR	Wren

Note:

Red Red List Species **Amber** Amber List Species

Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

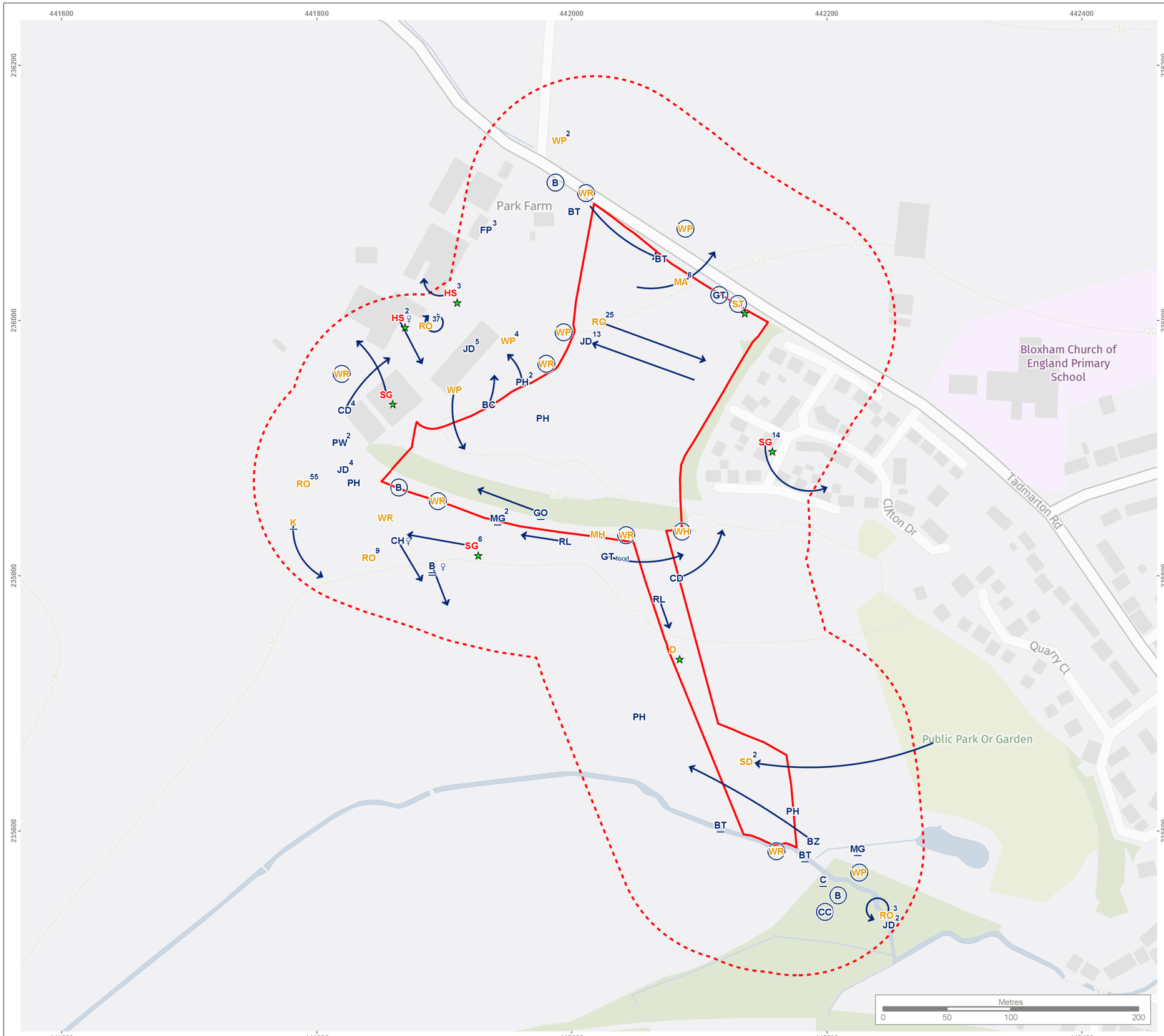
401 Faraday Street, Birchwood Park, Warrington, WA3 6GA
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Tadmarton Road, Bloxham

Title
Breeding Bird Survey
Visit 1 - 21st April 2023

Drawing Number
G9731.02.009

Drawn	Checked	Approved	Scale	Date
OH	AP	MHS	1:3,000 @ A3	15/08/2023



KEY

- Site boundary
- Site boundary - 100m buffer
- ★ Section 41 species
- ♀ Female
- ♂♀ Pair (male and female)
- = Bird repeatedly giving alarm-calls/other vocalisations
- — Bird calling
- food Bird carrying food
- ○ Bird in song
- ✱ Nest occupied with eggs/brood
- → Directional flight line

Species Codes

B	Blackbird
BC	Blackcap
BT	Blue tit
BZ	Buzzard
C	Carrion crow
CC	Chiffchaff
CD	Collard dove
CH	Chaffinch
D	Dunnock
FP	Feral pigeon
GO	Goldfinch
GT	Great tit
HS	House sparrow
JD	Jackdaw
K	Kestrel
MA	Mallard
MG	Magpie
MH	Moorhen
PH	Pheasant
PW	Pied wagtail
RL	Red-legged partridge
RO	Rook
SD	Stock dove
SG	Starling
ST	Song thrush
WH	Whitethroat
WP	Woodpigeon
WR	Wren

Note:

Red Red List Species **Amber** Amber List Species

Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

401 Faraday Street, Birchwood Park, Warrington, WA3 6GA
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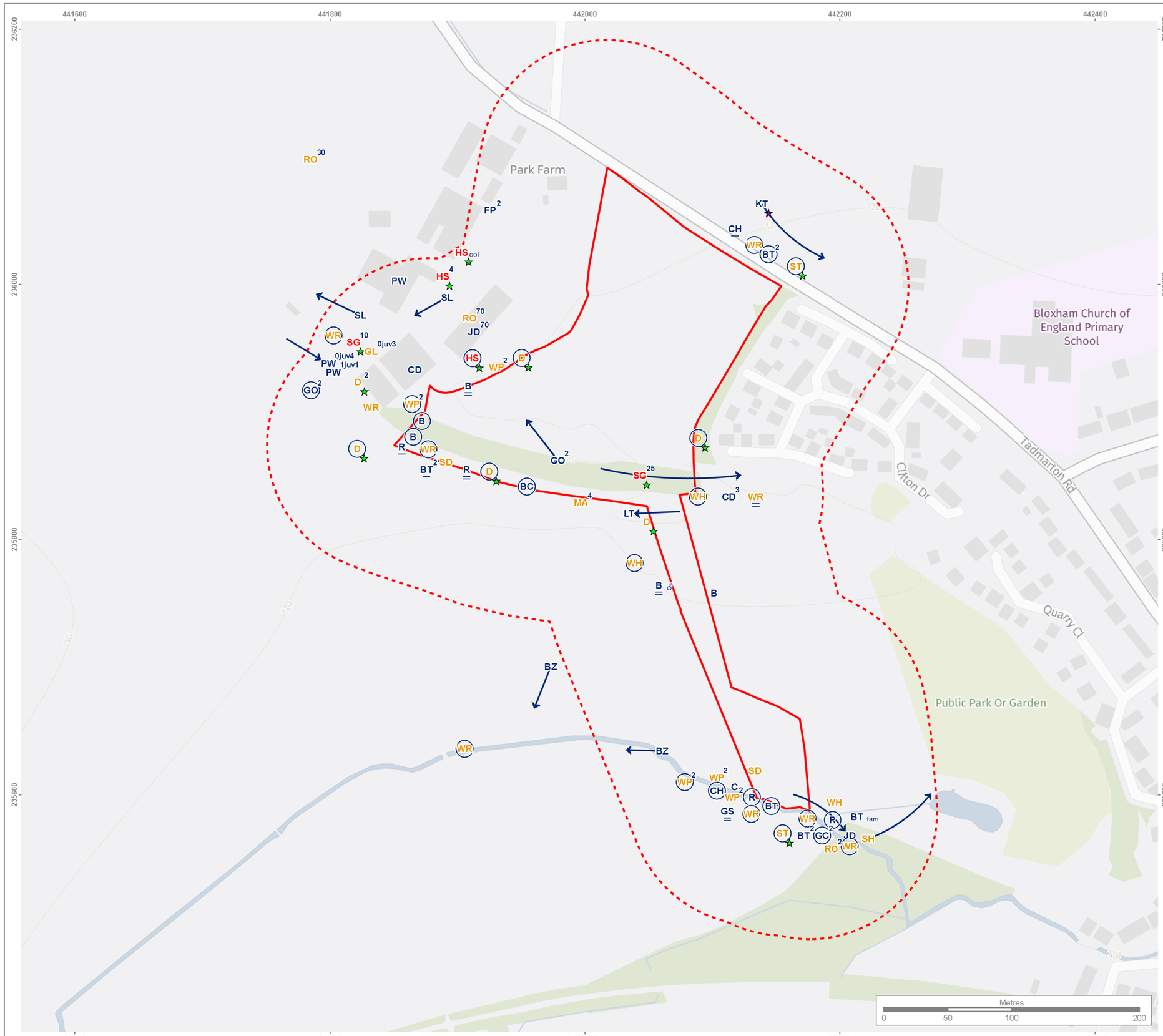
Project
Tadmarton Road, Bloxham

Title
Breeding Bird Survey
Visit 2 - 31st May 2023

Drawing Number
G9731.02.010

Drawn	Checked	Approved	Scale	Date
OH	AP	MHS	1:3,000 @ A3	15/08/2023



KEY

- Site boundary
- Site boundary - 100m buffer
- Section 41 species
- Schedule 1 species
- ♂ Male
- col Colony of birds
- fam Family group of birds
- = Bird repeatedly giving alarm-calls/other vocalisations
- — Bird calling
- ○ Bird in song
- → Directional flight line

Species Codes

B	Blackbird
BC	Blackcap
BT	Blue tit
BZ	Buzzard
C	Carrion crow
CD	Collard dove
CH	Chaffinch
D	Dunnock
FP	Feral pigeon
GC	Goldcrest
GL	Grey wagtail
GO	Goldfinch
GS	Great spotted woodpecker
HS	House sparrow
JD	Jackdaw
KT	Red kite
LT	Long-tailed tit
MA	Mallard
PW	Pied wagtail
R	Robin
RO	Rook
SD	Stock dove
SG	Starling
SH	Sparrowhawk
SL	Swallow
ST	Song thrush
WH	Whitethroat
WP	Woodpigeon
WR	Wren

Note:

Red Red List Species **Amber** Amber List Species

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

401 Faraday Street, Birchwood Park, Warrington, WA3 6GA
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Project
Tadmarton Road, Bloxham

Title
Breeding Bird Survey
Visit 3 - 26th June 2023

Drawing Number
G9731.02.011

Drawn	Checked	Approved	Scale	Date
OH	AP	MHS	1:3,000 @ A3	13/09/2023

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Appendix F: Otter and Water Vole Survey Report (TEP Ref: 9731.02.006)

Tadmarton Road

Bloxham, Banbury

Protected Species Report: Otter and Water Vole

Prepared For: Gladman Developments

Document Reference: 9731.02.006

November 2023

Version 1.0

TEP
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Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Project Name:	Tadmarton Road
Location:	Bloxham, Banbury
Document Title:	Protected Species Report: Otter and Water Vole
Client:	Gladman Developments
Year of Surveys:	2023
Prepared by:	The Environment Partnership Ltd
Office:	Market Harborough
Document Ref:	9731.02.006

Document history and status:

Version	Date	Description of Issue	Author	Checked	Approved
1.0	Nov 2023	First issue	KM	LG	LG

TEP is a is a Registered Practice of the Chartered Institute of Ecology and Environmental Management. The content of this document has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct and is compliant with British Standard BS42020:2013 Biodiversity Code of Practice for Planning and Development.

The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Executive Summary

Site Details	The site is located at Tadmarton Road, Bloxham, Banbury. The site application boundary measures 4.4ha. The anticipated footprint of the project elements, including construction and soft landscaping works, is estimated to be 4.4ha.
Proposals	It is understood an outline planning application will be submitted for the construction of up to 60 residential dwellings with provision for public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point.
Survey Details	Two survey visits were undertaken, on 28th April 2023 and 10th July 2023 to confirm the likely presence or absence of otter and water vole. Ditches D1 and D1, and Stream S1 were subject to survey.
Summary	Ditches D1, D2 and Stream S1 were assessed to be suitable for otter. An otter footprint was found at Stream S1, indicating that otter utilise the stream, likely for foraging and commuting. No evidence of otter was found at Ditches D1 or D2. Ditch D1 and Stream S1 were assessed to be suitable for water vole. No evidence of water vole was found at either watercourse.
Conclusions	No evidence of water vole and no otter holts were found at any watercourse. There are no implications to the development works in relation to otter and water vole. Further surveys will be required if works have not commenced within 12 months of this report.
Recommendations	As otter are known to be present within the area, a pre-construction check of all watercourses on site for otter is recommended prior to the commencement of development works. The survey will re-affirm the absence of holts within influencing distance of the works. Further water vole surveys will be required if works have not commenced within 12 months of the initial surveys.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

Contents

Page

Figures

Appendices

Appendix A: Survey Design

Appendix B: Habitat Suitability Assessment

Drawings

Drawing 1: G9731.02.014 Otter and Water Vole Survey Results

1.0 Introduction

1.1 The Environment Partnership (TEP) was commissioned by Gladman Developments in January 2023 to undertake an Ecological Impact Assessment (EcIA) in support of a planning application for residential development at Tadmarton Road, Bloxham, Banbury (hereafter referred to as 'the site').

1.2 An Ecological Desk Study has been produced to support the EcIA, reported under a separate cover (TEP Ref: 9731.02.001). The EcIA report should read in conjunction with the Desk Study.

1.3 Otter *Lutra lutra* and water vole *Arvicola amphibious* surveys were completed as part of a suite of ecology services to inform the EcIA. Watercourses included for survey were identified as potentially suitable for otter and water voles during the Phase 1 habitat survey conducted in January 2023.

1.4 This technical report includes details of the methods employed and any limitations of the surveys undertaken. Results are provided with supporting maps, together with an evaluation of the ecological features within the site.

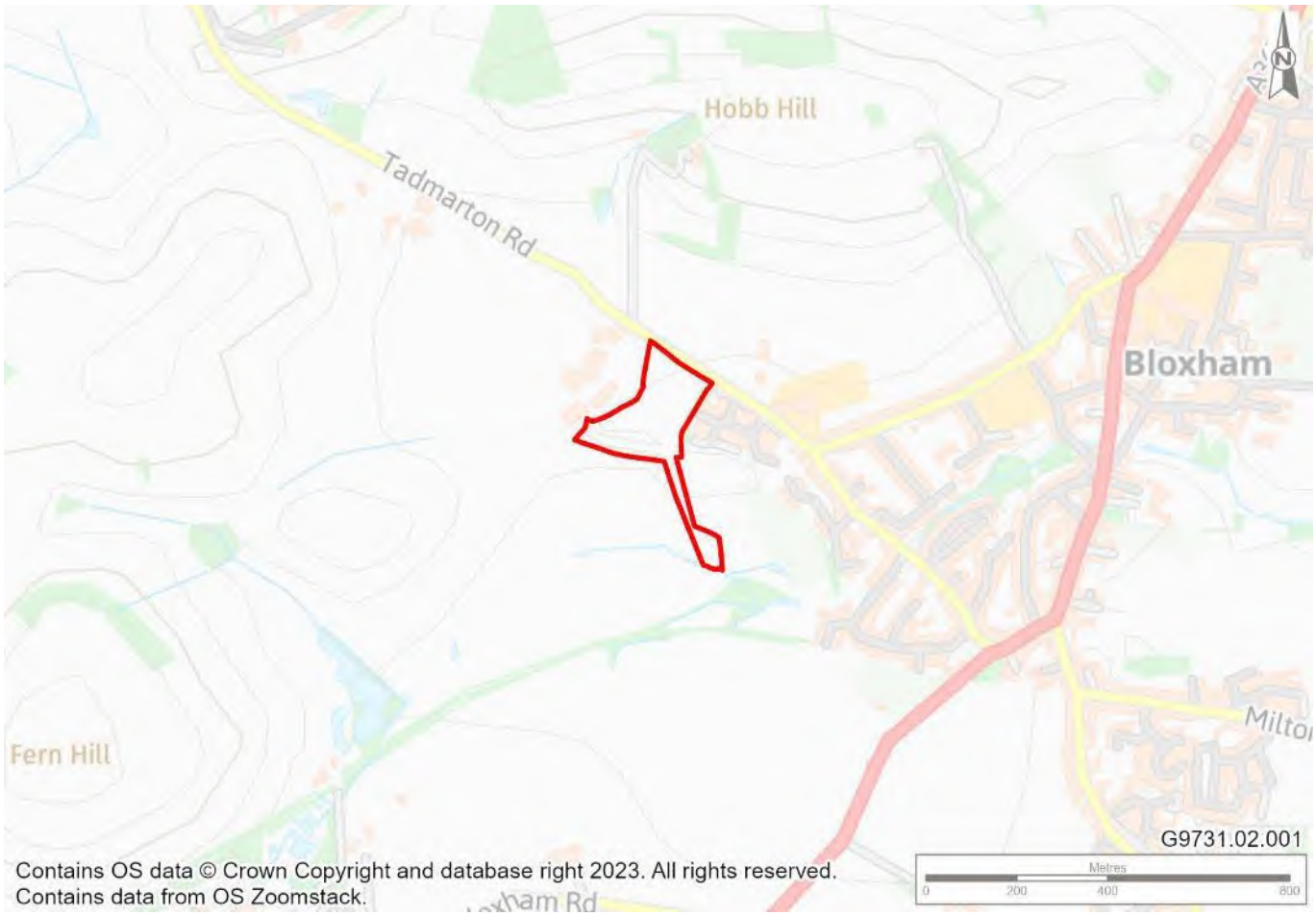
Site Location

1.5 The site is located at Tadmarton Road, Bloxham, Banbury. The location of the site is depicted by the red line shown in Figure 1. The approximate central grid reference of the site is SP 42049 35945.

1.6 The site is dominated by two arable fields comprising temporary grassland ley. Hedgerows are present along Tadmarton Road on the northern boundary and along a field boundary, and a short section of stream within semi-natural broadleaved woodland grazes the southern site boundary. Former quarry workings bisect the site encompassing a small section of running water, a large pond, dense scrub, and scattered trees. Wet ditches, tall ruderal vegetation, and scattered scrub habitats were also found within the site.

1.7 Tadmarton Road forms the north-eastern site boundary, a working farm is located directly to the north-west of the site, and the eastern boundary abuts a new housing development and associated public open space beyond which lies the village of Bloxham. Rural land under agricultural use extends in all other directions.

Figure 1: Site location



Legislation

Otter

1.8 The Eurasian otter is the only native UK otter species. It's fully protected as a European protected species (EPS) and is also protected under sections 9 and 11 of the Wildlife and Countryside Act 1981 (as amended), together with amending legislation, lists the following as offences.

- Capture, kill, disturb or injure otters (on purpose or by not taking enough care)
- Damage or destroy a breeding or resting place (deliberately or by not taking enough care)
- Obstruct access to their resting or sheltering places (deliberately or by not taking enough care)
- Possess, sell, control or transport live or dead otters, or parts of otters

Water Vole

1.9 In England and Wales water voles are listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended), receiving full protection since 2008. The WCA 1981, together with amending legislation, lists the following as offences:

- Section 9(1) - Intentionally kill, injure or take any wild animal included in Schedule 5;
- Section 9(2) - possess or control any live or dead wild animal included in Schedule 5 or any part or derivative of such an animal (other than for exemptions provided under Section 9(3);
- Section 9(4) Intentionally or recklessly
  - damage or destroy any structure or place which any wild animal included in Schedule 5 uses shelter or protection;
  - disturbs any wild animal included in Schedule 5 while it is occupying a structure place which it uses for shelter or protection; or
  - obstructs access to any structure or place which any wild animal included in Schedule 5 uses shelter or protection.

1.10 The Environment Act (EA) 2021 amends the licensing regime under Section 16 of the WCA 1981 (as amended) to enable licences to be granted (in England only) for reasons of overriding public interest. This new purpose will enable those involved in development activities to apply for a derogation under the WCA for domestically protected species. Further, the amendments introduced by the EA 2021 at Section 16(3) requires that licensed may only be granted (in England) where:

- there is no other satisfactory solution, and
- the grant of the licence is not detrimental to the survival of any population of the species of animal or plant to which the licence relates.

1.11 In summary, a water vole licence for development is available, but will only be issued subject to an accompanying method statement confirming that water vole disturbance is the only satisfactory option and that mitigation measures will ensure the population of water voles can be sustained.

2.0 Methods

Desktop Study

2.1 In line with current best practice (CIEEM, 2016[1], 2017b[2]), information regarding designated sites, notable habitats and existing protected and notable species records of the past decade, within a 2km minimum radius of the site was collated and reviewed to inform this ecological assessment. Further details are presented in the Ecological Desk Study (TEP Ref 9731.02.001).

2.2 The desk study identified records of otter within 2km of the site. The desk study did not identify any records of water vole. Further details are presented in the Ecological Desk Study report.

Field Survey

2.3 The otter and water vole surveys were undertaken by a suitably qualified ecologist, accompanied by a health and safety assistant.

2.4 Surveys were undertaken at Ditch D1 located along the northern site boundary, Ditch D2 located along the southern site boundary, and Stream S1 located along the southern site boundary. The locations of the features are shown on drawing G9731.02.014. The surveys of the ditches and stream included all sections within and immediately adjacent to the site, and sections up to 100m upstream and downstream of the site. All sections of the watercourses were accessible to survey.

2.5 The standard methods, as outlined within the latest guidance by Dean et al. (2016)[3] and Strachan et al. (2011)[4] were followed to complete a thorough search for evidence that would indicate the presence of water vole and other riparian mammals both on the site and locally. This evidence may include:

- Burrows;
- Feeding remains;

[1] CIEEM (2016) Guidelines for Accessing and Using Biodiversity Data. Chartered Institute of Ecology & Environmental Management

[2] CIEEM (2017b) Guidelines for Preliminary Ecological Appraisal, 2nd Edition. Chartered Institute of Ecology & Environmental Management

[3] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

[4] Strachan, R., Moorhouse, T. & Gelling, M. (2011) Water vole conservation handbook (3rd Ed.). Wildlife Conservation Research Unit, Oxford.

- Droppings;
- Footprints; and
- Incidental evidence of other riparian mammals (including otter and North American mink *Neovison vison*).

2.6 Field signs for otter include spraints (droppings), footprints, feeding remains and laying up areas (couches) on the immediate banksides. Other signs include potential dens or holts within exposed tree roots on riparian banks and within woodlands adjacent to and within 30m of the watercourse.

2.7 Two surveys were undertaken to determine presence or likely absence of otter and water vole. Surveys were undertaken on 28th April 2023 and 10th July 2023.

2.8 The survey included the banks and in-channel of the watercourses to assess for signs of otter and water vole. Suitable habitat for otter holt creation e.g. trees and woodland, was also surveyed where located up to 30m from a watercourse.

2.9 The water vole survey was designed taking into account the proposed development and The Water Vole Mitigation Handbook 2016[4]. Appendix A presents further details.

Limitations

2.10 All watercourses were accessed as far as possible. Where the surveyors could not survey from within the ditch due to dense vegetation, bankside observations were made.

Assumptions

2.11 Information provided by third parties, including publicly available information, is assumed to be correct at the time of publication.

3.0 Results

Desktop Study

3.1 The desk study (TEP Ref: 9731.02.001) identified two records of otter within 2km of the site, the nearest record is located approximately 200m from the site boundary. The desk study did not identify any records of water vole.

Field Survey

Habitat Description

Ditch D1

3.2 Ditch D1 is associated with a hedgerow, adjacent to Tadmarton Road, and is located outside but adjacent to the site boundary (Figure 2). The ditch has shallow, earth banks, approximately 1.5m in height. The channel is approximately 1m in width. The ditch supports only limited in-channel vegetation, including ground-ivy *Glechoma hederacea* and great willowherb *Epilobium hirsutum*. Bankside vegetation includes grasses, cleavers *Galium aparine* and nettle *Urtica dioica* on the northern side, with hedgerow species on the southern side. Water levels were variable during the surveys. The maximum depth of the water was 10 cm on 28th April 2023, although some sections contained more limited water and some sections were dry. The ditch was dry across its length on 10th July 2023.

Figure 2: Ditch D1

Ditch D2

3.3 Ditch D2 is located within the former quarry workings on site (Figure 3). It is fed by an outflow pipe and is surrounded by dense scrub and trees. The ditch has a soft earth base, and the channel was approximately 2m in width. There are no banks. The water depth was a maximum of 5 cm on 28th April 2023. The ditch supports no in-channel vegetation, and bankside vegetation is limited to only nettles. The ditch is heavily shaded by willow *Salix* species, hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus agg*.

Figure 3: Ditch D2

Stream S1

3.4 Stream S1 flows along the southern site boundary, flowing west to east (Figure 4). The stream is lined with semi-mature to mature trees and woodland. The channel is approximately 2 – 3 m in width. The channel supports steep, earth banks, up to 1m in height. The ditch does not support any in-channel vegetation. Bankside vegetation includes ground-ivy, meadow sweet *Filipendula ulmaria*, cleavers, nettles, grasses, lesser celandine *Ficaria verna* and cow parsley *Anthriscus sylvestris*. The ditch is heavily shaded by hawthorn. The water was typically 50 cm deep on 28th April 2023, going to a maximum depth of 1 m in places. The water was generally 50 cm deep on 10th July 2023.

Figure 4: Stream S1

Habitat Suitability for Otter and Water Vole

3.5 Full results of the habitat suitability of all the watercourses and ditches subject to survey are provided in the Appendix B.

3.6 Ditch D1 has potential to support foraging otter. The earth banks are shallow and therefore are of low suitability for water vole burrow creation. Food plants for water vole are present. The ditch supported water in some sections during the first survey undertaken on 28th April 2023. The ditch contained water up to 10 cm deep adjacent to the site boundary. Water was more limited within the west of the ditch approaching the farm access. The ditch was completely dry to the east of the site boundary. Given the presence of water within some of the ditch, the ditch was assessed as having suitability for water vole during the first survey. However, during the second survey the ditch was dry and therefore not suitable for water vole at that time.

3.7 Ditch D2 has potential to support foraging otter. The ditch was assessed to be unsuitable for water vole. This is because there are no banks, and therefore no opportunities for water vole burrow creation. In addition, there was no aquatic vegetation and limited bankside vegetation to provide a food source for water vole.

3.8 Stream S1 has potential to support foraging otter. The woodland and trees along the banks also provide opportunities for otter holt creation. The earth banks are steep and are therefore suitable for water vole burrow creation. Limited food plants are present. The

ditch contained water ranging from 50 cm to 1 m in depth. The ditch was assessed as having suitability for water vole.

Field Signs

3.9 Field signs of otter and water vole identified during the surveys are provided below:

- Survey Visit 1 – 28th April 2023:
  - Ditch D1 – No field signs of otter or water vole
  - Stream S1 –
    - No field signs of water vole
    - Otter footprints identified on the woodland side of the stream (NGR: SP 42285 35518) (Figure 5).
- Survey Visit 2 – 10th July 2023:
  - Ditch D1 – No field signs of otter or water vole
  - Stream S1 – No field signs of otter or water vole.

3.10 Incidental evidence of badger, deer and rat was recorded within stream S1 during the surveys. This included mammal paths, deer and badger prints and claw marks, and a rat burrow. Mammal paths were also identified at Ditch D1.

Figure 5: Otter print

Summary

Otter

3.11 Ditches D1, D2 and Stream S1 were identified to be suitable for otter.

3.12 Evidence of otter was found at Stream S1, which comprised an otter footprint. No evidence of otter was found at D1 or D2.

3.13 No otter holts, resting places, or couches were identified along any watercourse or amongst suitable habitat including woodland or trees within 30m of a watercourse.

Water Vole

3.14 Ditch D1 and Stream S1 were identified to be suitable for water vole. No evidence of water vole was found during the survey visits conducted on 28th April 2023 and 10th July 2023.

Other Mammals

3.15 Signs of activity by other mammals including badger, deer and rat were identified at Ditch D1 and Stream S1.

4.0 Evaluation and Recommendations

4.1 The survey consisted of two separate site visits, conducted on 28th April 2023 and 10th July 2023. This enabled adequate coverage of all ditches and streams within and adjacent to the site to confirm the likely presence or absence of otter and water vole.

4.2 The second survey was conducted at the beginning of July. During this period, water vole activity would be at its highest. As no signs of water vole were found in any ditch or stream during the two surveys, it is highly unlikely that water vole are present within the water courses. There are therefore no implications to the development proposals in relation to water vole.

4.3 As no otter holts, couches or resting places were found during the surveys, there are no implications to the development proposals in relation to otter. However, an otter footprint was identified at Stream S1, indicating that otter do utilise the stream, likely for commuting and foraging purposes.

4.4 As otter are known to be present within the area, a pre-construction check of all watercourses on site for otter is recommended prior to the commencement of development works. The survey will re-affirm the absence of holts within influencing distance of the works.

4.5 Given that water voles are dynamic species and that the ditches and stream provide suitable habitat, it is recommended that a repeat of the survey should be undertaken if, after 12 months from the date of the initial surveys, no works have occurred.

Appendix A: Survey Design

Survey Design

(The Water Vole Mitigation Handbook, Box 1, Page 9)

1. Type of works: Very small-scale works affecting up to 15m of watercourse	
Example project	Construction of an outfall, bridge repair works, or installation of pipes up to 15m long within a narrow field drains (where these do not form part of a larger development)
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas plus 100m upstream and downstream. A comprehensive desk study exercise will not necessary be required.
Additional information (if water voles present)	Micro-mapping of the habitat and burrow locations to allow design to minimise impacts (when relevant). Further data may be needed to ensure that there is sufficient alternative habitat available to displace water voles into. This may be obtained through desktop study or a habitat assessment combined with 'spot checks' for water voles over a wider area (1-2km upstream and downstream of the works.

2. Type of works: Works temporarily affecting up to 50m of watercourse	
Example project	Pipeline crossing a watercourse
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 200m upstream and downstream of the works. A comprehensive desktop study exercise will not necessarily be required.
Additional information (if water voles present)	Micro-mapping of the habitat and burrow locations to allow design to minimise impacts (when relevant). Further data may be needed to ensure that there is sufficient alternative habitat available to displace water voles into. This may be obtained through desktop study or a habitat assessment combined with 'spot checks' for water voles over a wider area (1-2km upstream and downstream of the works.

3. Type of works: Works temporarily affecting more than 50m of watercourse	
Example project	Watercourse re-profiling or repair/reinstatement of bank stabilisation structures
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus at least 200m upstream and downstream of the works. For works affecting more than 500m of watercourse, the study area should increase to 500m upstream and downstream of the works. A comprehensive desk study exercise will not necessarily be required, but would be advisable for works affecting ≥ 250m of watercourse.
Additional information (if water voles present)	Desk study – Site and up to 2-5km around it (or a habitat assessment combined with 'spot checks' for water voles) to inform the approach to mitigation and the assessment of fragmentation effects. The study area should be proportionate to the length of habitat affected.

4. Type of works: Works with permanent impacts affecting 15-50m of watercourse	
Example project	Bank side revetment works
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 100-200m upstream and downstream of the works (proportionate to the length of watercourse affected). Desk study – site and up to 2km around it (or a habitat assessment combined with 'spot checks' for water voles).
Additional information (if water voles present)	Sufficient information is likely to have been provided by the 'presence/likely absence' surveys.

5. Type of works: Works with permanent impacts affecting more that 50m of watercourse OR Works requiring permanent culverting of watercourse	
Example project	Bank side revetment works OR Highway schemes or some residential/mixed-use developments
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus 200-500m upstream and downstream of the works (proportionate to the likely fragmentation effects). Desk study – site and up to 2-5km around it, or a habitat assessment combined with 'spot checks' for water voles.
Additional information (if water voles present)	The study area for the desk study (or habitat assessment combined with 'spot checks' for water voles) may need to be increased to inform the approach to mitigation.

6. Type of works: Very large scale works	
Example project	Coastal re-alignment projects (where there are reasonable grounds to expect the presence of water voles)
To confirm presence or likely absence of water voles	Field survey – footprint of the works, including temporary work areas, plus approximately 1km around it. Desk study – site and up to 10km around it (or a habitat assessment combined with 'spot checks' for water voles.
Additional information (if water voles present)	The study area for the desk study (or habitat assessment combined with 'spot checks' for water voles) may need to be increased to inform the approach to mitigation.

Field sign surveys - one site visit or two?

The Water Vole Mitigation Handbook (Page 15)

The water vole is a mobile species that responds to habitat changes over the course of the breeding season: a single visit can therefore be insufficient to confirm likely absence in many cases. In addition, where water voles are present, survey data based on two visits will allow a more robust assessment of the impacts of the project, particularly where water voles use different parts of a site during different parts of the breeding season. This can also be important in determining the most appropriate approach to mitigation. These guidelines therefore recommend that two field survey visits are routinely undertaken. However, it is recognised that the second visit may not be required in some cases, and it may therefore be possible to make a case for an assessment based on one visit. Examples of scenarios where a single visit (before submitting a planning application) may be sufficient as follows:

1. Water vole presence is confirmed during the first survey visit.

A second visit may not be needed where the assessment of effects on water voles can be made on a precautionary basis (i.e. water voles are present throughout the site at the maximum density that the habitat could support), and the approach to mitigating incidental mortality (displacement, relocation by trapping, off-site translocation, etc.) can be determined from the first visit alone.

The assessment of the quality of the habitat, and therefore the likely maximum density of water voles, will need to consider changes to the habitat in different parts of the breeding season as a result of natural processes (e.g. changes to water level) and management activities. This can be a difficult assessment to make for many sites.

2. Water vole presence is not confirmed during the first survey visit.

A second visit may not be needed where the habitat is of very low suitability for water voles and there is a very low likelihood that water voles are present in the surrounding area - up to 2km from the area of the proposed works, or less where significant barriers to water vole dispersal are present.

The assessment of the suitability of the habitats will need to consider changes to the habitat in different parts of the breeding season as a result of natural processes and management activities. This can be a difficult assessment to make for many sites. It will be difficult to make a robust case for not undertaking a second survey where access to surrounding areas is limited or impossible. A second visit may also not be needed where the assessment of effects on water voles can be made on a precautionary basis (as per point 1 above).

In all cases, a second visit would be advisable prior to commencing works.

Appendix B: Habitat Suitability Assessment

Watercourse D1	Description
Bank Profile	Shallow sloping banks, up to 1.5m high.
Bank Substrate	Soft earth
Water Depth	Approx 5 – 10 cm
Fluctuations	Water fluctuates. During the first survey limited water was present within the west of the ditch by the farm. The ditch was completely dry to the east of the site. The ditch was completely dry across it's length during the second survey.
Shading	0%
Bank Vegetation	Grasses, cleavers *Galium aparine* and nettles *Urtica dioica* on northern side. Hedgerow species on southern side.
In-channel Vegetation	Ground-ivy *Glechoma hederacea*, greater willowherb *Epilobium hirsutum*.
Management	Culvert over farm access
Constraints	None
Suitability	Suitable for water vole when it contained water.

Watercourse D2	Description
Bank Profile	No banks, water mainly running through open space.
Bank Substrate	Soft earth, silt
Water Depth	Approx 5 cm
Fluctuations	Yes
Shading	80% shading by willow *Salix* species, hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus agg*.
Bank Vegetation	Nettle *Urtica dioica*
In-channel Vegetation	Absent
Management	Outlet from farm at western end

Watercourse D2	Description
Constraints	None
Suitability	Not suitable for water vole – no vegetation, shaded, no profile to ditch, only limited water.

Watercourse S1	Description
Bank Profile	Steep banks, up to 1m high. Meanders through woodland.
Bank Substrate	Soft earth, silt
Water Depth	Generally, 50 cm. Up to 1 m in places.
Fluctuations	Yes. Water levels had dropped to 50 cm by the second survey.
Shading	80% shading by hawthorn.
Bank Vegetation	Nettle, ground-ivy, meadowsweet, cleavers, grasses, lesser celandine *Ficaria verna*, cow parsley *Anthriscus sylvestris*, lords and ladies *Arum maculatum*.
In-channel Vegetation	Absent
Management	None
Constraints	None
Suitability	Confirmed presence of otter. Suitable for water vole.

Drawings

Drawing: G9731.02.014 Otter and Water Vole Survey Results

KEY

- Site boundary
- Survey extent

Watercourse

- Standing water
- Running water

Otter Survey Results

- Prints

Note:
The locations of habitats and habitat features are indicative.

Site Map

Rev	Description	Drawn	Approved	Date

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Project
Tadmarton Road, Bloxham

Title
Otter and Water Vole Survey Results

Drawing Number
G9731.02.014

Drawn	Checked	Approved	Scale	Date
IJ	BJ/SP	KM	1:3,000 @ A3	07/11/2023

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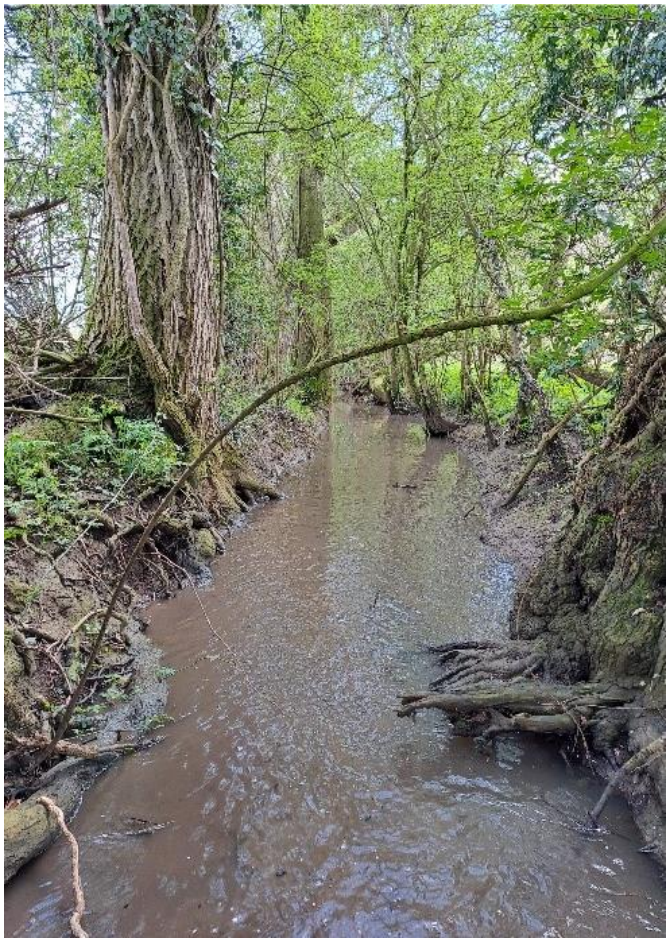
Appendix E: White-clawed Crayfish Survey Report (TEP Ref: 9731.02.009)



Tadmarton Road

Bloxham, Banbury

Protected Species Report: White-clawed Crayfish

Prepared For: Gladman Developments

Document Reference: 9731.02.009

Date: November 2023

Version: 1.0

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Project Name:	Tadmarton Road
Location:	Bloxham, Banbury
Document Title:	Protected Species Report: White-clawed Crayfish
Client:	Gladman Developments
Prepared by:	The Environment Partnership Ltd
Office:	Market Harborough
Document Ref:	9731.02.009

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1.0	Nov 2023	Final issue	MB	KM/BW	AE

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The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

Page

Figures

Annexes

Drawings

Executive Summary

Introduction	The site is located to the south-west of Tadmarton Road, Bloxham, Banbury. The site application boundary measures approximately 4.4ha and is centred on national grid reference SP 42049 35945.
Proposals	Proposals include the construction of 60 residential dwellings with associated hard and soft landscaping.
Survey Details	Two survey visits were undertaken on 10th July and 8th September 2023 to confirm the likely presence or absence of white-clawed crayfish. The stream to the south of the site was subject to survey.
Summary	The stream was assessed as providing suitable habitat for white-clawed crayfish. No evidence of white-clawed crayfish was recorded during the survey. Environmental DNA (eDNA) sampling confirmed white-clawed crayfish to be absent from the stream. Signal crayfish were recorded during the survey.
Conclusions	No evidence of white-clawed crayfish was recorded within the stream; therefore, no further action is required in relation to this species. Signal crayfish are listed under Schedule 9 of the Wildlife and Countryside Act 1981. An Invasive Species Method Statement will be required to ensure legislation compliance.

This Executive Summary is not a substitute for the full report. Refer to the full text of this report for further detail.

1.0 Introduction

1.1 TEP were commissioned by Gladman Developments to undertake a white-clawed crayfish *Austropotamobius pallipes* survey within watercourses on and adjacent to land south-west of Tadmarton Road, Bloxham, Banbury (hereafter referred to as 'the site'). The survey forms part of the ecology evaluation to support an outline planning application for residential development.

1.2 White-clawed crayfish surveys were completed as part of a suite of ecology services to inform the Ecological Impact Assessment (EcIA) (TEP Ref: 9731.02.010). Watercourses included for survey were identified as potentially suitable for white-clawed crayfish during the Phase 1 habitat survey conducted in January 2023.

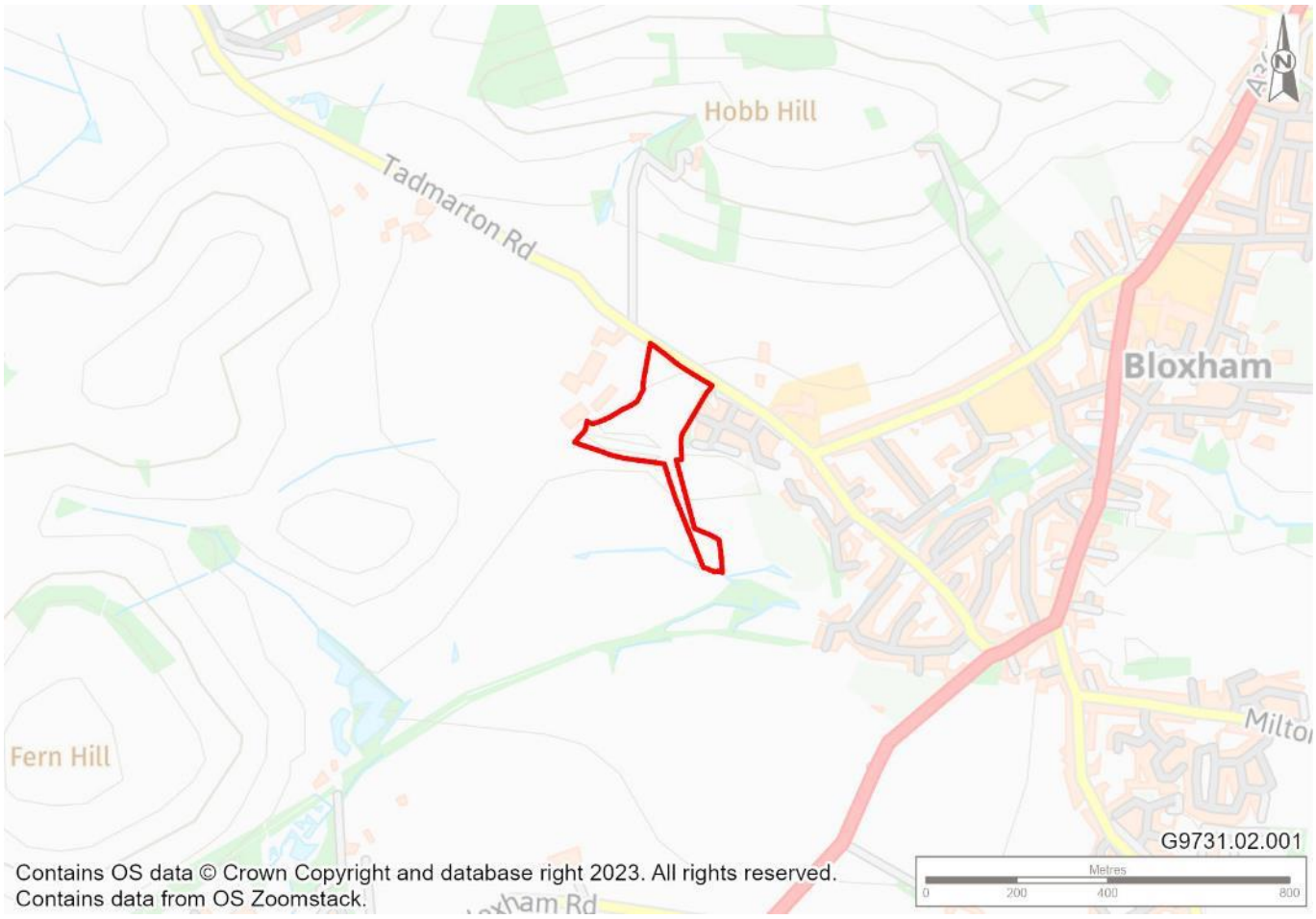
Site Location

1.3 The site is located at Tadmarton Road, Bloxham, Banbury. The location of the site is depicted by the red line shown in Figure 1. The site boundary measures approximately 4.4ha and is central grid reference of the site is SP 42049 35945.

1.4 The site is dominated by two arable fields comprising temporary grassland ley. Hedgerows are present along Tadmarton Road on the northern boundary and along a field boundary, and a short section of stream within semi-natural broadleaved woodland grazes the southern site boundary. Former quarry workings bisect the site encompassing a small section of running water, a large pond, dense scrub, and scattered trees. Wet ditches, tall ruderal vegetation, and scattered scrub habitats were also found within the site.

1.5 Tadmarton Road forms the north-eastern site boundary, a working farm is located directly to the north-west of the site, and the eastern boundary abuts a new housing development and associated public open space beyond which lies the village of Bloxham. Rural land under agricultural use extends in all other directions.

Figure 1: Site Location



Proposals

1.6 It is understood an outline planning application will be submitted for the erection of up to 60 residential dwellings, with public open space, landscaping, a sustainable drainage system (SuDS) and a vehicular access point. All matters are reserved except means for access.

Legislation

1.7 White-clawed crayfish is the only native UK freshwater crayfish species. It is fully protected as a European protected species (EPS) listed under Annex II and V of the EU Habitats Directive and Appendix II of the Bern Convention. It is also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Survey Design and Scope

1.8 The white-clawed crayfish survey is designed to establish the current status of white-clawed crayfish in the survey area and to evaluate the importance of the survey area for the species.

1.9 The stream running along the southern site boundary was assessed as providing suitable habitat for white-clawed crayfish and was therefore subject to survey. The survey area extended approximately 200m in length.

1.10 The wet ditches within the site were assessed as being unsuitable for white-clawed crayfish due to the organic matter content and pollution via run-off from the pheasant compounds, and were therefore scoped out of the survey.

2.0 Methods

Desk Study

2.1 In line with current best practice (CIEEM, 2016[1], 2017b[2]), information regarding designated sites, notable habitats and existing protected and notable species records of the past decade, within a 2km minimum radius of the site was collated and reviewed to inform this ecological assessment. Further details are presented in the Ecological Desk Study (TEP Ref 9731.02.001).

Field Survey

2.2 The white-clawed crayfish survey was undertaken by a suitably qualified Ecologist, who holds a white-clawed crayfish licence, accompanied by a health and safety assistant on 10th July 2023. A 200m stretch of the stream was surveyed, starting downstream to the east of the site. Further confirmation of survey competency can be provided upon request.

2.3 Walking upstream, ecologists assessed the suitability of the stream to support white-clawed crayfish. This involved recording physical characteristics of the watercourse (such as channel width and depth, substrate, bank profile and flow types) and the vegetation structure within the channel and along the banks. Features offering suitable refuge habitat such as undercut banks, submerged tree roots, cobbles and dams were recorded and inspected for white-clawed crayfish.

2.4 Invertebrate species were also recorded in order to further ascertain the suitability of the stream for white-clawed crayfish and to provide an indication of water quality levels.

2.5 Manual search surveys, including stone turning, and netting were undertaken in line with current best practice guidance (Peay, 2003)[3]. Stones were systematically turned with a net held in the water column, downstream, to trap any white-clawed crayfish that may be using the feature.

Environmental DNA (eDNA)

2.6 Environmental DNA (eDNA) sampling was undertaken of the stream at the southern end of the site on 8th September 2023.

[1] CIEEM (2016) Guidelines for Accessing and Using Biodiversity Data. Chartered Institute of Ecology & Environmental Management

[2] CIEEM (2017b) Guidelines for Preliminary Ecological Appraisal, 2nd Edition. Chartered Institute of Ecology & Environmental Management

[3] Peay, S. (2003). Monitoring the White-clawed Crayfish: Conserving Natura 2000 Rivers, Ecology Series No. 1

2.7 Sample collection was undertaken by a suitably qualified Ecologist, accompanied by a health and safety assistant. Sample kits and analysis were provided by SureScreen Scientifics. In summary the sampling protocol is as follows:

- 20 samples were taken from the river perimeter. The location of the samples were spaced as evenly as possible. In rivers, samples were taken against the flow of the stream, working upstream in a diagonal pattern where possible.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks) to avoid any disruption of sediment.
- The water sample was taken from the middle of the water column (at least 10cm from the bottom where possible).
- Once 20 samples were collected, the bag was closed securely and shaken to mix the water sample. 50ml water samples were passed into and through the filter until a minimum of 250ml of water had passed through the filter. Preservative solution was added into the filter unit to prevent sample degradation during transport and caps were fitted to both ends of the filter unit.
- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the syringe or filter unit on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the syringing stages of the method.

Chain of Custody

2.8 On receipt from SureScreen Scientifics, the sampling kit was registered on a central database using the unique bar code. Immediately prior to survey, sampling kit was issued to the surveyor with an individual Sample Form using the unique bar code as identification. The Site name and date of issue was also recorded on this form (and on the central database). Once in the field and at the watercourse, the surveyor confirmed that the appropriate field survey sheet was being completed by checking the bar code on the box and double checking the corresponding bar code on the sample tube. The surveyor then filled in the date of survey and the watercourse ID number (as well as other information relating to survey conditions) on the Sample Form.

2.9 On returning to the office the Sample Form was signed to confirm who received the sample and checked them into the fridge, and the temperature of the fridge. The watercourse ID on the form was checked against a Site map to confirm which watercourse had been sampled and this map was stored with the Sample Form. All this information was also recorded on the central database. The sample preserving tube was stored in a fridge until the morning of collection by the courier. The Sample Form and the central database were updated to confirm the date of collection by the courier.

2.10 A unique bar code was used by SureScreen Scientifics to report results. All results were recorded in the central database by one member of staff and cross checked by a second member of staff before issuing to the project leader for review.

2.11 The recommended period for carrying out white-clawed crayfish surveys is May to October (inclusive). The optimum time is from July to September, once the crayfish have released their young. Both surveys were carried out during the optimum survey period.

Assumptions

2.12 Information provided by third parties, including publicly available information, is assumed to be correct at the time of publication.

3.0 Results

Desk Study

3.1 The desk study (TEP Ref: 9731.02.001) did not return any records of white-clawed crayfish within 2km of the site.

Field Survey

3.2 The stream flows along the southern site boundary, flowing west to east. The stream is lined with semi-mature to mature trees and woodland. The channel is approximately 2-3m wide and support steep, earth banks up to 1m in height (Figure 2). The stream does not support any in-channel vegetation. Bankside vegetation includes ground-ivy *Glechoma hederacea*, meadow sweet *Filipendula ulmaria*, cleavers, nettles, grasses, lesser celandine *Ficaria verna* and cow parsley *Anthriscus sylvestris*. The stream is heavily shaded by common hawthorn *Crataegus monogyna*. The water was typically deeper than 50 cm, reaching up to 1m in places.

Figure 2: Stream

3.3 Moderate invertebrate numbers and diversity were noted. The following species were recorded during the survey:

- *Baetidae* mayfly
- Blackfly *Simuliidae sp.*
- Bloodworm *Glycera sp.*
- *Ephemeridae* mayfly
- Freshwater shrimp *Gammarus sp*
- Leech *Glossiphonia sp.*

- Lesser water boatman *Corixa punctata*
- Common water boatman *Notonecta sp.*
- Water slater *Asellus aquaticus*

3.4 The stream supported suitable refugia for white-clawed crayfish including tree root systems, boulders, undercut banks, stone walls (Figure 3) and natural dams made from accumulated debris (Figure 4).

Figure 3: Suitable white-clawed crayfish habitat - Stone wall

Figure 4: Suitable white-clawed crayfish habitat - Natural dam

3.5 No evidence of white-clawed crayfish was identified during the manual search survey, including during the stone turning and netting.

3.6 A signal crayfish *Pacifastacus leniusculus* was recorded during the surveys. Signal crayfish are an invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

3.7 The eDNA results for the stream confirmed white-clawed crayfish to be absent from the stream. Detailed results are provided at Appendix A.

4.0 Conclusions

4.1 A habitat assessment, manual search survey, including stone turning and netting, and eDNA sampling have been undertaken on the stream within the site, which was highlighted within the Phase 1 habitat survey as having potential for white-clawed crayfish.

4.2 No evidence of the species was recorded during the manual search survey.

4.3 The eDNA analysis also confirmed white-clawed crayfish to be absent from the stream.

4.4 Signal crayfish *Pacifastacus leniusculus* were recorded in the stream during the survey. There is potential for signal crayfish to also be present within the ditches on site, which also provide suitable habitat for this species. Signal crayfish are listed under Schedule 9 of the Wildlife and Countryside Act 1981 and it is an offence to facilitate the spread of them into the wild. An Invasive Species Method Statement will be required to ensure legislation compliance. The method statement will include the following:

- A buffer zone should be applied of at least 7m from the edge of all streams and ditches. Fencing should be used to mark out the buffer zone.
- A toolbox talk should be delivered to all contractors.
- Anything going within the 7m buffer, including machinery and footwear, should be thoroughly decontaminated before and after, following strict biosecurity protocols to minimise the risk of the spread of crayfish plague.
- Any drainage works within a watercourse or 7m buffer should be supervised by an Ecological Clerk of Works (ECoW) to dispatch any signal crayfish encountered.

4.5 The results of the survey concluded that white-clawed crayfish are absent from site and are therefore not a constraint in respect to the development. No further action is required in respect to white-clawed crayfish.

Appendix A: SureScreen Scientifics eDNA Results

SureScreen Scientifics

Folio No: E19240
Report No: 1
Purchase Order: PO 34981
Client: TEP LTD
Contact: Kate Morley

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA SAMPLES FOR THE DETECTION OF CRAYFISH SPECIES AND CRAYFISH PLAGUE

SUMMARY

All organisms continuously release small amounts of environmental DNA (eDNA) into their habitat. By collecting and analysing this eDNA from water samples from lakes, ponds or rivers we can detect the presence or absence of crayfish species including: the white-clawed crayfish (Austropotamobius pallipes), signal crayfish (*Pacifastacus leniusculus*), the marbled crayfish (*Procambarus virginalis*) and the crayfish plague (*Aphanomyces astaci*).

RESULTS

Date sample received at Laboratory: 21/09/2023
Date Reported: 03/10/2023
Matters Affecting Results: None

Lab Sample ID.	Site Name	O/S Reference	Species	Result	SIC	DC	IC	Positive Replicates
FK1628	Tadmarton Road	SP 42252 35493	*White-Clawed Crayfish*	Negative	Pass	Pass	Pass	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chelsea Warner **Approved by:** Lauryn Jewkes

METHODOLOGY

The analysis is conducted in two phases. The sample first goes through an extraction process where the filter is incubated in order to obtain any DNA within the sample. The extracted sample is then tested via real time PCR (also called q-PCR) for each of the selected target species. This process uses species-specific molecular markers (known as primers) to amplify a select part of the DNA, allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines amplification and detection of target DNA into a single step. With qPCR, fluorescent dyes specific to the target sequence are used to label targeted PCR products during thermal cycling. The accumulation of fluorescent signals during this reaction is measured for fast and objective data analysis. The primers used in this process are specific to a part of mitochondrial DNA only found in each individual species. Separate primers are used for each of the species: white-clawed crayfish, signal crayfish and crayfish plague, ensuring no DNA from any other species present in the water is amplified.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security. These methods have been extensively tested since 2015 in a number of different environments, habitats, conditions and ecological situations in order to successfully enable the full application of eDNA for the detection of crayfish species and the crayfish plague.

RESULTS INTERPRETATION

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

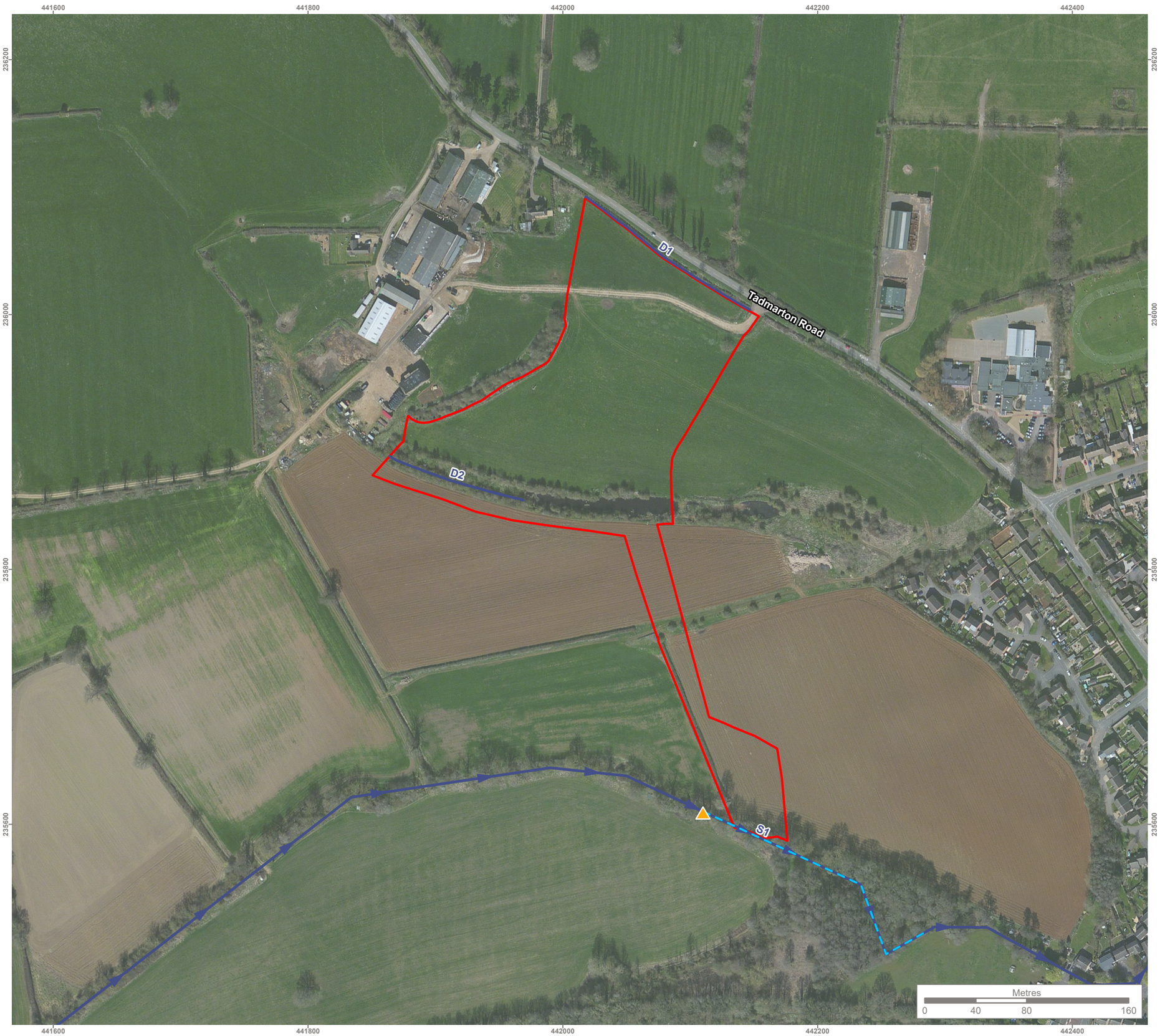
DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample, between the date it was made to the date of analysis. Degradation of the spiked DNA marker may indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of eDNA** [Positive/Negative/Inconclusive]
Positive: DNA was identified within the sample, indicative of species presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for species presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative species presence.
Negative: eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of species absence, however, does not exclude the potential for species presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for species presence or absence.

Drawings

G9731.02.020 White Clawed Crayfish Survey Results



KEY

- Site boundary
- Survey extent

Watercourse

- Standing water
- Running water

White Clawed Crayfish Survey Results

- Signal crayfish sighting

Note:
The locations of habitats and habitat features are indicative.

Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP
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Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Tadmarton Road, Bloxham

Title
White Clawed Crayfish Survey Results

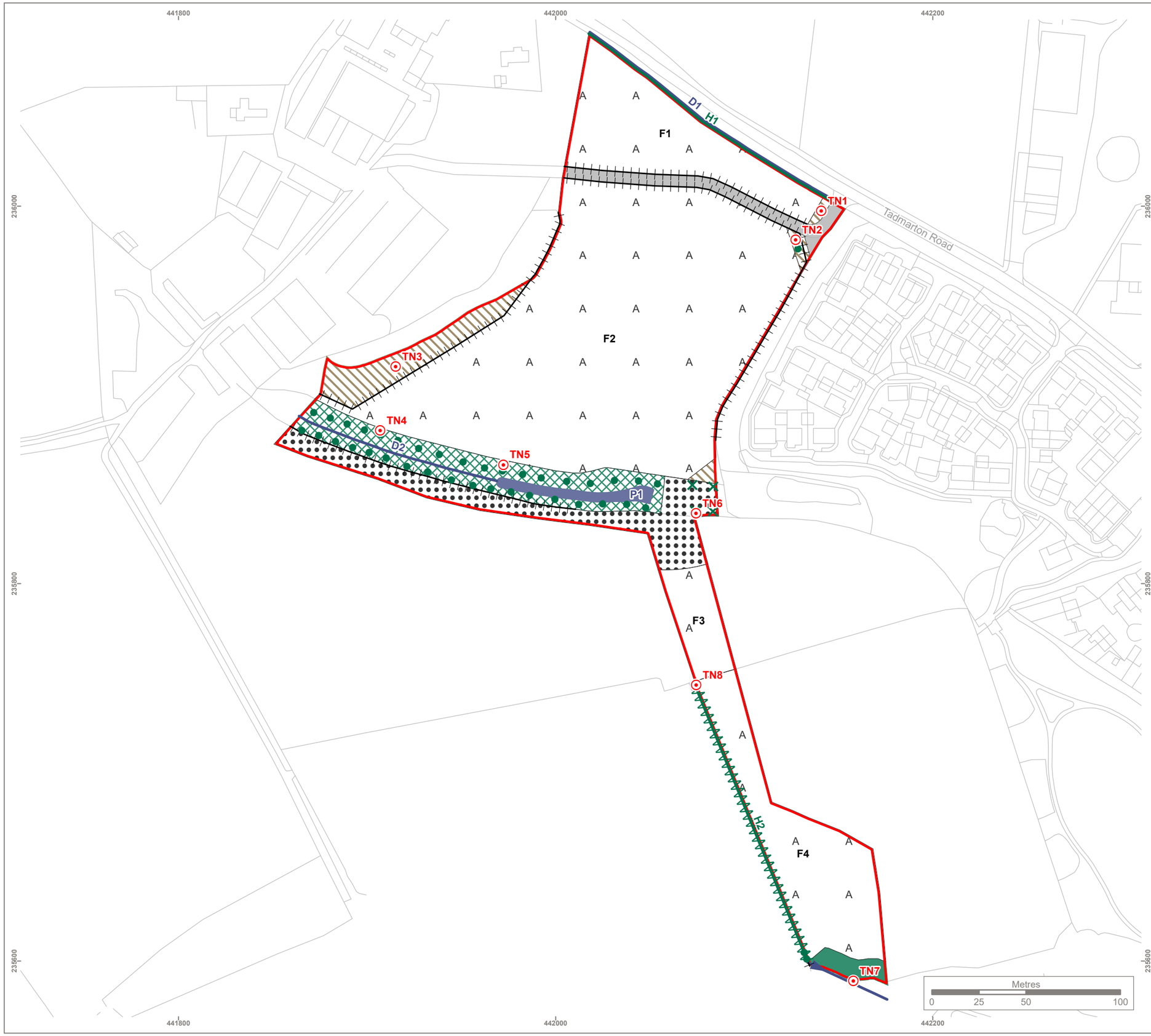
Drawing Number
G9731.02.020

Drawn	Checked	Approved	Scale	Date
IJ	SP	KM	1:3,000 @ A3	07/11/2023

HEAD OFFICE WARRINGTON	MARKET HARBOROUGH	GATESHEAD	LONDON	CORNWALL
01925 844004 tep@tep.uk.com	01858 383120 mh@tep.uk.com	0191 605 3340 gateshead@tep.uk.com	020 3096 6050 london@tep.uk.com	01326 240081 cornwall@tep.uk.com

Drawings

G9731.02.007B Phase 1 Habitat Survey

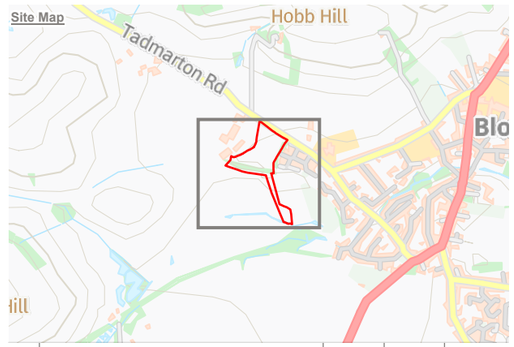


KEY

- Site boundary
- Target note
- Scattered scrub
- Scattered broad-leaved tree
- Standing water
- Running water
- Native species-rich intact hedge
- Species-poor intact hedge
- Fence
- Semi-natural broad-leaved woodland
- Dense/continuous scrub
- Tall ruderal
- Standing water
- Arable
- Bare ground
- Hardstanding

Note:
The locations of habitats and habitat features are indicative.

Site Map



Rev	Description	Drawn	Approved	Date
B	Updated habitats and target notes.	IJ	KM	07/11/2023
A	Updated site boundary and associated habitats.	SP	RW	26/04/2023

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Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Tadmarton Road, Bloxham

Title
Phase 1 Habitat Survey

Drawing Number
G9731.02.007B

Drawn	Checked	Approved	Scale	Date
ET	MH	RW	1:2,000 @ A3	07/11/2023

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