Ecological Impact Assessment

Tidcombe Hall, Tiverton

Land Value Alliances

November 2023

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2301129_P893_EcIA_Final01	Final 01	29.11.23	Lauren Stothert BSc MCIEEM	Dr Matt Cowley MSc PhD CEnv MCIEEM

EAD Ecology
Armada House
Odhams Wharf
Topsham
Exeter
EX3 0PB
Tel: 01392 260420

Email: info@eadecology.co.uk
www.eadecology.co.uk

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Introduction and approach

EAD Ecology was commissioned by Land Value Alliances to undertake an Ecological Impact Assessment (EcIA) of a proposed residential development at Tidcombe Hall, Tiverton, Devon. This report documents the EcIA, which was undertaken in accordance with BS42020:2013 and Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines (2018). All work has been carried out by members of CIEEM in accordance with CIEEM's Code of Conduct and following standard published methods.

Baseline

Designated sites

The ecological baseline for the Site was derived through desk study and ecological Site surveys, including an Extended Phase 1 Habitat survey and hedgerow, invasive plant, reptile, badger, dormouse and bat surveys.

Designated sites

There are no European designated sites within 10km of the Site. Three nationally-designated statutory sites lie within 5km of the Site boundary. The nearest of these, Grand Western Canal Country Park Local Nature Reserve (LNR; also designated as a County Wildlife Site), occurs immediately adjacent to the northern boundary and is designated for its local wildlife abundance including otter and scarce chaser dragonfly. Tidcombe Lane Fen Site of Special Scientific Interest (SSSI) lies approximately 0.3km north of the Site. A further 15 non-statutory designated sites lie within 2km of the Site, comprising two CWS (in addition to Grand Western Canal CWS), one Other Site of Wildlife Interest (OSWI) and 12 Unconfirmed Wildlife Sites (UWS).

Habitats

The Site comprised two distinct areas; Tidcombe Hall and its grounds, and to the east of this, two agricultural fields. Tidcombe Hall itself was a large, derelict residential dwelling with several associated outbuildings. The grounds of Tidcombe Hall comprised unmanaged areas of poor semi-improved grassland, semi-natural broad-leaved woodland, and dense scrub. Hedgerows planted with non-native species, a garden pond and scattered trees were also present. To the east of Tidcombe Hall and its grounds were two arable fields bounded by species-rich and species-poor native hedgerows, associated with several shallow ditches and a short section of running water (stream).

Protected / notable species

The desk study and Site surveys identified the presence / likely presence of the following protected and notable species:

- English bluebell, which receives partial legal protection, and Primrose, which is a Devon BAP Species, were recorded within habitats on Site.
- Himalayan cotoneaster and rhododendron were present in the grounds of Tidcombe Hall, and yellow archangel was recorded within hedgerows in the east of the Site; these species are invasive plants listed on Schedule 9 of the WCA 1981 (as amended).
- Due to the lack of great crested newt records within 2km of the Site, and as the Site is located outside of the known range of the species, great crested newt is considered absent from Site. The Site provided suitable breeding and terrestrial habitat for common and widespread amphibians including common toad, a Priority Species.
- 'Good' populations of slow worm and grass snake were recorded within the Site; both are legally-protected, Priority Species. Suitable reptile habitat was restricted to the field margins and

unmanaged grassland within the ground of Tidcombe Hall, with the majority of the arable habitat within the Site unsuitable for reptiles.

- The Site provided nesting habitat for widespread birds, including declining species of conservation concern such as song thrush, dunnock, and bullfinch. Nesting jackdaw and swallow were recorded within buildings on Site. All birds and their nests, eggs and young are legally protected.
- Two outlier badger setts were recorded, and habitats within the Site provided suitable foraging habitat for badgers. Badgers and their setts are legally protected.
- Evidence of hazel dormouse was recorded and the species was assumed present in all native hedgerows, woodland and scrub. Hazel dormouse is a legally protected, Priority Species.
- Bat roosts were recorded within Tidcombe Hall and three adjacent outbuildings, including day roosts for low numbers of common pipistrelle, soprano pipistrelle, brown long-eared bat and lesser horseshoe bat in Tidcombe Hall and associated outbuildings, and a lesser horseshoe bat transitional roost in the underground parking garage beneath Tidcombe Hall. The underground parking space beneath Tidcombe Hall had 'Moderate' suitability for hibernating bats; surveys will be undertaken in winter 2023/2024, and submitted in an addendum report.
- Moderate levels of bat activity were recorded within the Site, and a minimum of ten species were recorded commuting / foraging. Activity was dominated by common and widespread pipistrelle species. The habitats in the north of the Site showed the highest levels of bat activity, with the habitat immediately adjacent to the Grand Western Canal regularly used by foraging bats.
- The Site provided suitable habitat for hedgehog and brown hare; both Priority Species.

Potential effects, avoidance, mitigation, compensation and enhancement

In the absence of mitigation, construction could lead to pollution affecting the water quality of the adjacent Grand Western Canal LNR/CWS and Tidcombe Lane Fen SSSI, which lies approximately 700m downstream. Implementation of a SuDS scheme would ensure that there would be no post-construction water quality effects on these sites. Potential impacts on Grand Western Canal Country Park from increased recreation are not predicted; it is considered that existing management could accommodate increased numbers of visitors arising from the development. No effects on any other designated sites are predicted.

Without mitigation, construction would result in the loss of arable, poor semi-improved grassland, hedgerow, scrub and tall ruderal. Retained habitats could also be affected through pollution and/or physical damage. Habitats impacts would reduce available habitat for protected and notable species during construction and there is the risk of direct impacts (i.e. killing or injury) to common amphibians, reptiles, nesting birds, roosting bats, badgers, hazel dormouse and hedgehogs. There would also be the potential for disturbance to commuting and foraging bats, hazel dormouse and badgers arising from lighting during and post-construction.

The proposed development proposes an integrated landscape and ecological design, including the creation of new wildlife habitats within the Site, comprising native scrub, hedgerow and tree planting, wildflower meadow, SUDs and associated wetland habitats. Retained hedgerows would be buffered from development by vegetated landscape corridors, which would maintain permeability and movement corridors through the Site for a range of species. An Ecological Constraints and Opportunities Plan has been produced to show the potential location of these habitats.

The development proposals have been assessed using the Biodiversity Metric (4.0); the illustrative proposals demonstrate that delivery of a total of +32.97 Habitat Units could be achieved, which would be a net gain of +1.49 Habitat Units (+4.73%), and a net gain on Site of +1.63 Hedgerow Units (+10.24%). Additional measures undertaken to avoid, mitigate and compensate negative effects and provide ecological enhancement would include:

- Implementation of best practice measures, including Defra pollution prevention guidance, would protect water quality in Tidcombe Lane Fen SSSI and Grand Western Canal LNR/CWS during construction.
- Retained hedgerows, woodland and mature trees would be protected from disturbance during construction through the use of temporary barriers (e.g., Heras) in accordance with BS5837:2012.
- Reptile mitigation strategy would include two-stage habitat manipulation to prevent killing/injury of reptiles during construction, to be undertaken prior to the start of construction. At least three hibernacula would be created to enhance the Site for reptiles.
- A pre-construction badger survey would be undertaken to re-confirm the status of badger setts. Any setts that could potentially be damaged or disturbed during construction would be subject to a Natural England Badger Development Licence e.g. to enable temporary or permanent closure prior to the start of construction. Retained setts would be buffered (minimum 20m).
- Site clearance would be undertaken outside of bird-nesting season or preceded by a search of suitable habitats for nesting birds. Bird boxes would be installed in the walls of new buildings and on retained trees to provide suitable new nesting habitat.
- Hazel dormouse habitat (hedgerows and scrub) would be removed in accordance with a Natural England Dormouse Mitigation Licence and provision of 20 dormouse boxes within retained hedgerows and woodland.
- Conversion works to Tidcombe Hall and outbuildings would be undertaken in accordance with a Natural England Bat Mitigation Licence, acquired prior to construction. All works would be undertaken in accordance of the Method Statement within the Licence, including the provision of a bespoke bat roost building, and additional bat boxes on new buildings and retained trees.
- No lighting would be left on during the night during the construction period. Any security lighting would be positioned at low-height and motion activated on short-timers. The lighting design for the proposed development would ensure that lighting impacts to bats were minimised, including a dark road crossing to maintain bat flight corridors through the Site.
- Insect/bee bricks would be incorporated into the walls of least 20% of new residential dwellings.
- A destructive search for hedgehogs would be undertaken prior to the start of construction. Hedgehog passes would be created within new garden fences to allow hedgehogs to move around and through the Site post-development works.

A Construction and Ecological Management Plan (CEcoMP) would be produced to detail measures to ensure habitat and species protection during construction. A Landscape and Ecological Management Plan (LEMP) would be produced to detail how retained and proposed habitats will be managed in the long-term, including the proposed biodiversity offsetting area.

Residual effects

The proposed development would have no residual negative effects on any designated sites of nature conservation importance. All long-term residual negative effects on habitats would neutral and not significant. Assuming the implementation of all avoidance, mitigation, compensation and enhancement measures identified in this report, effects on protected and notable species would be either neutral or minor positive in the medium to long-term apart from badger and brown hare; loss of foraging habitat and potential loss of badger setts would be minor negative effects. No cumulative effects would occur.

Conclusions

The proposed development would avoid significant ecological harm and has potential to protect, maintain and enhance the overall biodiversity interest of the Site in accordance with policies concerning biodiversity conservation in the National Planning Policy Framework (2019) and the Mid Devon Local Plan 2013-2033.

1 Introduction, background and approach

1.1 Introduction

1.1.1 EAD Ecology was commissioned by Land Value Alliances to undertake an Ecological Impact Assessment (EcIA) of a proposed residential development at Tidcombe Hall, Tiverton, Devon (approximate OS Grid Ref: SS975122; refer to Figures 1 and 2), hereafter referred to as 'the Site'. This report documents the EcIA, which was undertaken in accordance with BS42020:2013 and following Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines (2018). It includes the following sections:

- Description of the existing ecological baseline;
- Identification of the potential impacts of the proposals during and post-construction;
- Identification of proposed avoidance, mitigation and compensation measures for negative impacts, and further enhancement measures;
- Summary of residual ecological effects, i.e. those occurring after mitigation;
- Consideration of cumulative effects; and
- Conclusions, including assessment of compliance with wildlife legislation and planning policy.

1.2 Legislation and planning policy

Wildlife legislation

1.2.1 The following wildlife legislation is relevant to the proposed development (refer also to Appendix 1):

- Conservation of Habitats and Species Regulations 2017 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way Act 2000;
- Natural Environment and Rural Communities Act 2006;
- Protection of Badgers Act 1992; and
- Hedgerow Regulations 1997 (as amended).

1.2.2 Whilst the Environment Act 2021 has recently become law, the sections relating to 'Nature and Biodiversity' (Part 6) and 'Conservation Covenants' (Part 7) have not yet come into force.

National planning policy

1.2.3 The National Planning Policy Framework (NPPF; 2021) includes the Government's policy on the protection of biodiversity through the planning system. A summary of the relevant paragraphs of the NPPF is provided in Appendix 2.

Local planning policy

1.2.4 Current local planning policy is contained in the Mid Devon Local Plan 2013-2033 (adopted July 2020). Policies relevant to biodiversity and nature conservation are outlined in Appendix 3 and comprise:

- Policy S1 part (I) – Sustainable Development Priorities
- Policy S9 – Environment
- Policy S10 – Tiverton
- Policy DM26 – Green Infrastructure in Major Development
- Policy DM27 – Protected Landscapes

- Policy DM28 – Other Protected Sites

1.3 Approach

Ecological baseline

1.3.1 The ecological baseline was determined through desk study and Site survey.

Desk Study

1.3.2 Biodiversity information was requested from a study area of 2km radius around the Site boundary (extended to 4km for bats) from Devon Biodiversity Records Centre (DBRC) in May 2023. Information requested included the location and details of the following:

- Designated sites of nature conservation importance (statutory and non-statutory; extended to 10km for European statutory designated sites and 5km for other statutory sites using the Defra MAGIC website); and
- Previous records of protected and/or notable species, including Priority Species (Species of Principal Importance for Conservation in England listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) and Devon Biodiversity Action Plan (BAP) Priority Species.

1.3.3 Information was also obtained from the following websites (September 2023):

- https://magic.defra.gov.uk/MagicMap.aspx – Information on protected sites;
- http://jncc.defra.gov.uk – information on protected sites, Priority Habitats and Species; and
- https://www.gov.uk/government/organisations/natural-england – information on protected sites and standing advice.

Site Survey

1.3.4 An Extended Phase 1 Habitat survey of the Site was undertaken in May 2018, and updated in March 2020 and April 2023. The survey followed guidelines published by JNCC (2010) and Institute of Environmental Assessment (1995), and identified the main habitat types on the Site and the presence/potential presence of protected and notable species. The results of the survey were detailed on a Phase 1 Habitat plan, with target notes used to identify specific features of ecological interest; refer to Figure 3. A botanical species list was recorded, although no attempt was made to record every plant species on the Site; refer to Appendix 4.

1.3.5 The Extended Phase 1 Habitat survey identified the potential for protected and notable species within the survey area. Further (Phase 2) surveys were subsequently undertaken to determine if such species were present. A summary of these surveys is provided in Table 1.1 below; full details of methodologies and results are contained in Appendices 5-12. All surveys were carried out following standard published methods.

Table 1.1: Summary of Phase 2 ecological surveys

Survey	Date	Details
Hedgerow	June 2018	Single survey visit undertaken to determine whether any of the hedgerows within the Site qualify as 'important' under the Hedgerows Regulations 1997 (as amended) using ecological criteria; refer to Appendix 5.

Table 1.1: Summary of Phase 2 ecological surveys

Survey	Date	Details
Invasive plant survey	June 2018 June 2023	Single survey visits to identify the presence of any legally controlled invasive plants; refer to Appendix 6.
Reptile survey	April -June 2018 April - June 2023	Deployment and seven checks of artificial refugia; undertaken in 2018 and updated in 2023. Refer to Appendix 7.
Hazel dormouse survey	May - October 2018 April - September 2023	Deployment and six checks of dormouse nesting tubes within hedgerows, undertaken in 2018 and updated in 2023. Refer to Appendix 8.
Badger survey	June 2018 April 2023	A search of the survey area and the immediate surrounding area to record signs of badger activity, including setts, latrines, pathways and feeding signs; undertaken in 2018 and updated in 2023. Refer to Appendix 9.
Bat activity survey	May – October 2018 May, July & September 2023	Monthly transect surveys and deployment of four static bat detectors for at least five nights per month to determine the importance of the Site for commuting and foraging bats, and establish species abundance and diversity; undertaken in 2018 and with partial update survey undertaken in 2023. Refer to Appendix 10.
Bat roost survey	June – September 2018 April – September 2023	Preliminary roost assessment of buildings and trees within the Site and further emergence/re-entry surveys of buildings identified as potentially suitable for roosting bats; undertaken in 2018 and updated in 2023. Refer to Appendix 11.
Habitat condition assessment survey	June 2023	Habitat condition assessment of all habitats on-Site, following Biodiversity Metric 4.0 guidance (Natural England, 2023b & 2023c); refer to Appendix 12.

Survey limitations

1.3.6 The Extended Phase 1 Habitat Survey of the Site was updated in April 2023 and did not identify any significant habitat changes to the previous surveys undertaken in May 2018 and March 2020; however, it was considered appropriate to update the majority of surveys listed in Table 1.1 to inform the emerging development proposals. As the habitats onsite had not changed significantly, the June 2018 hedgerow survey results are still considered valid.

1.3.7 Due to programme restrictions, the 2018 bat activity survey was carried out between May and October 2018 and therefore did not cover the full April to October survey period recommended in BCT guidelines (Collins 2016) for sites with 'moderate' habitat suitability. However, it is considered that the survey data, which covers the late spring, mid-summer and late summer/autumn periods, provides a sufficiently robust understanding of bat activity within the Site to inform the assessment. The bat activity survey was also subject to a partial update in 2023, with transect surveys and static detector deployment undertaken in spring, summer and autumn. As the 2023 update Phase 1 Habitat survey of the Site did not identify any significant changes, the bat activity survey data is considered to provide a robust baseline for bat activity within the Site.

1.3.8 An underground parking area with moderate suitability for hibernating bats (refer to Appendix 11; Figure A11.1) was recorded within the Site. Due to seasonal constraints, it has not been possible to complete bat hibernation surveys of this feature. These surveys will be carried out between December 2023 - February 2024 and the results and assessment of effects submitted as an Addendum to the EcIA in March 2024. The proposed bespoke bat roost building (refer to Paragraph 4.1.20) has scope to include suitable mitigation for the loss of a bat hibernation roost should such as roost be identified. This is not therefore, considered to be a significant limitation to the assessment of the development.

Evaluation of ecological features

1.3.9 The importance of the ecological features identified was evaluated using criteria for habitats and species based on CIEEM guidelines (2018). Ecological importance was classified using an eight-level geographic scale from 'Sub-Parish' (low) to 'International' (high); refer to Appendix 13. Legal protection of species is considered in Section 4 (mitigation) and does not specifically form part of the valuation process.

Confirmation of 'important' ecological features

1.3.10 Features were identified that were considered 'important', in accordance with CIEEM guidelines (2018), and therefore subject to further detailed assessment. Features that were unlikely to be affected by the project, or were sufficiently widespread, unthreatened or resilient to potential project impacts, were not considered important in the context of the proposed development, and were not, therefore, subject to further assessment.

Identification of potential impacts

1.3.11 Potential impacts on the important ecological features were described for the construction and post-construction phases of the development.

Avoidance, mitigation, compensation and enhancement measures

1.3.12 The proposed development (refer to Figure 2) was informed by the ecological baseline, including the presence/predicted presence of protected species. Therefore, the impact assessment was of a partially-mitigated scheme. Additional avoidance, mitigation, compensation and enhancement measures for the construction and post-construction phases of the development were identified; where appropriate, recommendations for how these measures could be secured (for example, through planning conditions/obligations or Natural England licensing) were also identified.

Residual effects

1.3.13 An assessment of the residual positive, negative or neutral ecological effects was undertaken following CIEEM (2018) guidelines. The effect timescale was given as:

- Acute, immediate and discrete.
- Short-term: 0-3 years.
- Medium-term: 3-10 years.
- Long-term: 10+ years.

1.3.14 Effects were described at a geographical scale (refer to Appendix 13); effects identified at Sub-Parish level and below were not considered 'Significant'.

1.3.15 The conclusion to the assessment confirms any significant residual effects, compliance with national planning policy (including the avoidance of 'significant harm' in accordance with

Paragraph 180 of the NPPF, 2023), and compliance with relevant policies of the Mid Devon Local Plan 2013-2033.

Biodiversity Net Gain

1.3.16 A Biodiversity Net Gain (BNG) Assessment was undertaken using the 'Biodiversity Metric 4.0' calculation tool (Natural England, 2023a) in order to demonstrate that the proposed development could deliver net gain. The BNG assessment included a Condition Assessment of habitats onsite using the criteria detailed in the Metric 4.0 supporting documents (Natural England, 2023b & 2023c). The Phase 1 Habitat Survey and Condition Assessment were used to inform the existing baseline on the Site for the BNG Assessment, and the Illustrative Layout Plan Plan (Figure 2) and Ecological Constraints and Opportunities Plan (Figure 4) were referenced for the proposed (post-intervention) development scenario; refer to Appendix 12 for further details. It is proposed that a further BNG assessment would be undertaken at the Reserved Matters stage using detailed landscape planting plans to confirm the delivery of net gain.

2 Ecological baseline

2.1 Designated sites of conservation importance

Statutory designated sites

2.1.1 There are no European-designated sites within 10km of the Site. Three nationally-designated sites lie within 5km of the Site boundary; refer to Table 2.1 and Appendix 14. The nearest of these, Grand Western Canal Country Park Local Nature Reserve (LNR), occurs immediately adjacent to the northern Site boundary and is designated for its abundance of local wildlife including otter and scarce chaser dragonfly. It is also designated as a County Wildlife Site (CWS). Tidcombe Lane Fen Site of Special Scientific Interest (SSSI) lies approximately 0.3km north of the Site. Palmerston Park Woods LNR lies approximately 2.5km west of the Site.

Table 2.1: Statutory designated sites within the study area

Site name	Nature conservation designation	Reason for designation	Approximate distance and direction from Site
Grand Western Canal Country Park	Local Nature Reserve (LNR) and County Wildlife Site (CWS)	Canal with associated wetland flora and marshy grassland.	Immediately adjacent to the north
Tidcombe Lane Fen	Site of Special Scientific Interest (SSSI)	Contains a type of wetland habitat that is now scarce nationally and rare in Devon. The fen meadow vegetation present contains a wide diversity of plants and displays an unusual variation in its flora composition.	0.3km north
Palmerston Park Wood	Local Nature Reserve (LNR)	Broadleaved woodland.	2.5km west

Non-statutory designated sites

2.1.2 A further 15 non-statutory designated sites lie within 2km of the Site, comprising two CWS (in addition to Grand Western Canal CWS), one Other Site of Wildlife Interest (OSWI) and 12 Unconfirmed Wildlife Sites (UWS).

2.1.3 The Guoil, a Plantation on Ancient Woodland sites (PAWS), and Canal Wood, an Ancient Semi-Natural Woodland (ASNW) which forms part of Snake's Wood CWS, lie within 2km of the Site. Also within 2km of the Site is White Down Cross, Seckerleigh Special Verge Site. Details of all non-statutory sites within the study area are provided in Appendix 14.

2.2 Habitats within the Site boundary

2.2.1 The Site comprised two distinct areas; Tidcombe Hall and its grounds, and to the east of this, two agricultural fields. Tidcombe Hall itself was a large, derelict residential dwelling with several associated outbuildings. The grounds of Tidcombe Hall comprised unmanaged areas of poor semi-improved grassland, semi-natural broad-leaved woodland, and dense scrub. Hedgerows planted with non-native species, a garden pond and scattered trees were also present.

2.2.2 To the east of Tidcombe Hall and its grounds were two arable fields bounded by species-rich and species-poor native hedgerows, with one central hedgerow associated with a wet ditch and one hedgerow section in the northeast associated with a short section of a shallow stream (running water).

2.2.3 Habitat descriptions are provided below; these should be read in conjunction with the Phase 1 Habitat Plan and target notes [TNs]; refer to Figure 4. All plant species in the main text are referred to using common names; nomenclature follows Stace (2010). A plant species list, including scientific names, is provided in Appendix 4.

Arable

2.2.4 The eastern portion of the Site was dominated by two large arable fields, planted with maize (2023). Arable margins were very narrow (<1m) or absent, containing coarse grasses and ruderal species. Previously (May 2018), the northernmost field contained cattle-grazed, poor semi-improved grassland dominated by coarse grasses.

Broadleaved trees

2.2.5 Individual broadleaved trees were present throughout the Site, within both the grounds of Tidcombe Hall [TNs 12 & 9], and associated with hedgerows bordering the eastern fields. Species included ash, lime, willow, cherry, beech, oak and sycamore.

2.2.6 Remnants of a former apple orchard were present to the east of Tidcombe Hall [TN10]; this area was not considered to meet the criteria for the Priority Habitat 'Traditional Orchards' due to the lack of management and low density of remaining fruit trees.

Buildings

2.2.7 Tidcombe Hall [TN5] and a range of associated outbuildings including two greenhouses [TNs 2 & 3], a stable [TN4], a garage [TN7] and garden shed [TN11] stood in the north-west of the Site. These comprised a range of different construction materials, ages and styles. Detailed descriptions of buildings are provided in Appendix 11.

Coniferous trees

2.2.8 Several mature coniferous trees were present within the grounds of Tidcombe Hall. Species included Scots pine and cypress species.

Hardstanding

2.2.9 Hardstanding was present around the buildings associated with Tidcombe Hall in the north-west of the Site.

Hedgerows

2.2.10 Several short sections of species-poor hedgerow, dominated by non-native and ornamental species, including laurel and cotoneaster, were present within the grounds of Tidcombe Hall [TN1] and around several sections of the field boundaries.

2.2.11 Species-rich hedgerows, some with mature trees, were present along the majority of the field boundaries in the east of the Site. Woody species present included bramble, hawthorn, oak, elm, ash, blackthorn, willow, holly, spindle, beech, birch and dog rose. Ground flora had moderate species diversity; species present included herb-Robert, male fern, lady fern, common polypody, broad buckler-fern, English bluebell and primrose.

2.2.12 All six qualifying hedgerows around the agricultural fields in the east of the Site qualified as 'important' when assessed against ecological criteria of the Hedgerows Regulations 1997; refer to Appendix 5. The hedgerows within the grounds of Tidcombe Hall and several around the boundaries of the agricultural fields were exempt from the Hedgerow Regulations 1997 as they adjoin residential properties. Hedgerow is a Priority Habitat and species-rich hedges are a Devon BAP habitat.

Poor semi-improved grassland

2.2.13 Poor semi-improved grassland was present within the grounds of Tidcombe Hall. This was dominated by sweet vernal grass, perennial rye-grass, rough meadow-grass, Yorkshire fog, red fescue and creeping bent. Creeping buttercup, daisy, white clover and dandelion were also recorded.

Running water

2.2.14 A shallow stream (running water), with south to north alignment, was present along a short section of hedgerow in the northeast of the Site. The stream joins the Grand Western Canal to the north. The channel was approximately 1m wide, shallow (>10cm) with a silt substrate. No associated aquatic vegetation was recorded within the watercourse. Streams are a Priority Habitat and a Devon BAP Priority Habitat.

Scrub

2.2.15 Several areas of dense and scattered bramble scrub were present throughout the Site, largely along field boundaries and within the grounds of Tidcombe Hall.

Semi-natural broadleaved woodland

2.2.16 Semi-natural broadleaved woodland was present in the southeastern portion of the grounds of Tidcombe Hall [TN13]. Canopy species included birch and ash. The understorey was sparsely vegetated with hazel coppice, willow, field maple and holly. Ground flora included cow parsley, bluebell, primrose, celandine, dog's-mercury and lords-and-ladies. The semi-natural broadleaved woodland was analogous to the Priority Habitat 'Lowland Mixed Deciduous Woodland'.

Standing water

2.2.17 A garden pond was present within the grounds of Tidcombe Hall [TN 6]. This was choked with emergent vegetation, including bog bean, bulrush, fool's water-cress and brooklime. An empty, concrete-walled ornamental pond was also present to the south of Tidcombe Hall [TN8]; no water was observed in this pond at any time between April and September 2023. These waterbodies were not considered to meet the Priority Habitat criteria for ponds.

Wet ditch

2.2.18 A wet ditch ran parallel to the hedgerow separating the two arable fields in the east of the Site. This was heavily shaded by overhanging hedgerow vegetation and had no associated aquatic vegetation. The ditch was observed to be largely dry by late spring, with only shallow water (<10cm) present during the early spring months.

2.3 Surrounding habitats

2.3.1 The Site was situated to the immediate south-east of Tiverton, with the Grand Western Canal located adjacent to the northern boundary. Habitats to the north and west were predominantly urban, including modern residential housing and a primary school. Areas to the south and east were agricultural, largely comprising permanent pasture and arable fields bounded by hedgerows.

2.4 Protected and notable species

Plants

Desk Study

2.4.1 A number of notable plant species have been recorded within the 2km study area including primrose (a Devon BAP Priority species) and three Devon Notable species: Solomon's seal, reed sweet-grass and narrow buckler-fern.

Site survey

2.4.2 English bluebell, which receives limited legal protection, and primrose, a Devon BAP Priority Species, were recorded within the woodland and several hedge banks. No other notable plant species were recorded and their presence within the Site was considered unlikely.

Invasive plants

Desk study

2.4.3 Four invasive plant species Japanese knotweed, Himalayan balsam, rhododendron, and montbretia have been recorded from the 2km study area. These are all listed under Schedule 9 of the WCA 1981 (as amended) making it an offence to plant or otherwise them to grow in the wild.

Site survey

2.4.4 Himalayan cotoneaster and rhododendron were present in the grounds of Tidcombe Hall. Variegated yellow archangel was recorded within southern boundary hedgerows of fields in the east of the Site; refer to Appendix 6. Variegated yellow archangel and some cotoneaster species are listed under Schedule 9 of the WCA 1981 (as amended).

Invertebrates

Desk Study

2.4.5 A range of notable invertebrates (predominantly moths) have been recorded within the 2km study area including:

- Two Priority Species of butterfly (brown hairstreak and wall brown);
- 21 Priority Species of moth (oak hook-tip, knotgrass, mottled rustic, small emerald, rustic, rosy rustic, white ermine, buff ermine, cinnabar, dark-barred twin-spot carpet, grey dagger, garden tiger, false mocha, small phoenix, august thorn, gallium carpet, v-moth, lackey, dot moth, broom moth, rosy minor, shoulder-striped wainscot, powdered quaker, shaded broad-bar, sallow, small square-spot, blood-vein, beaded chestnut, centre-barred sallow, spinach, cloaked carpet, green-brindled crescent, dusky thorn, mouse moth, feathered gothic, ghost moth, September thorn, and brindled beauty);
- A further 17 Nationally Notable species of moth: jersey tiger, marbled green, l-album wainscot, orange footman, double line, water ermine, barred hook-tip, bilberry pug, cloaked carpet, pimpinel pug, alder kitten, juniper argent, neat cosmet, pied grey, small eggar, stitchwort case-bearer, and straw obscure.

Site survey

2.4.6 No significant areas of suitable egg-laying habitat (suckering blackthorn scrub) for brown hairstreak butterfly was recorded onsite, although it is possible the species uses blackthorn in hedgerows for this purpose. . Grassland, hedgerows, trees, scrub and stream within the Site provide suitable habitat for a range of invertebrate species, possibly including notable species. However, the presence of significant populations of notable species is considered to be unlikely.

Amphibians

Desk Study

2.4.7 There are numerous amphibian records from the 2km study area, including smooth newt, palmate newt, common frog, and common toad (a Priority Species). However, there are no records of great crested newt and the Site falls outside of the 'Devon Great Crested Newt Consultation Zone' (Devon County Council 2019). All amphibians are legally protected to varying degrees.

Site survey

2.4.8 The pond within the grounds of Tidcombe Hall (TN6, Figure 4) provided potentially suitable breeding habitat for common and widespread amphibians, including common toad. Grassland, hedgebanks and scrub within the wider Site provided suitable terrestrial habitats, and low numbers of common toad and palmate newt were recorded incidentally during reptile surveys.

2.4.9 Due to the lack of great crested newt records within 2km of the Site, and as the Site is located outside of the known range of the species, great crested newt is considered absent from Site and is not considered further within this assessment.

Reptiles

Desk study

2.4.10 Grass snake and slow-worm (both legally protected Priority Species) have been recorded within the 2km study area.

Site survey

2.4.11 'Good populations' of slow-worm (maximum count 26) and grass snake (maximum count seven) were recorded within the Site during surveys; refer to Appendix 7. Suitable reptile habitat was restricted to the field margins and unmanaged grassland within the ground of Tidcombe Hall, with the majority of the arable habitat within the Site unsuitable for reptiles.

Birds

Desk study

2.4.12 A range of notable bird species have been recorded from the study area; those potentially relevant to the Site are listed in Table 2.2. All breeding birds, their nests, eggs and young are legally protected; species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) receive additional protection against disturbance when nesting.

Table 2.2: Notable bird species recorded from the study area

Species[1]	BoCC4 status[2]	Priority Species	WCA 1981 (Schedule 1)
Black-headed gull	Amber		
Brambling			Schedule 1
Bullfinch	Amber	Priority Species	
Common gull	Amber		
Common Kingfisher	Amber		Schedule 1
Cuckoo	Red	Priority Species	
Dunnock	Amber	Priority Species	
Fieldfare	Red		Schedule 1
Greenfinch	Red		
Grey wagtail	Red		
Herring gull	Red		

Species[1]	BoCC4 status[2]	Priority Species	WCA 1981 (Schedule 1)
Hobby			Schedule 1
House martin	Red		
House sparrow	Red	Priority Species	
Kestrel	Amber		
Lapwing	Red	Priority Species	
Lesser black-backed gull	Amber		
Linnet	Red	Priority Species	
Mallard	Amber		
Marsh tit	Red	Priority Species	
Meadow pipit	Amber		
Mistle thrush	Red		
Moorhen	Amber		
Mute swan	Amber		
Peregrine			Schedule 1
Red kite			Schedule 1
Redwing	Amber		Schedule 1
Reed Bunting	Amber	Priority species	
Rook	Amber		
Skylark	Red	Priority Species	
Snipe	Amber		
Song thrush	Amber	Priority Species	
Sparrowhawk	Amber		
Spotted flycatcher	Red	Priority Species	
Starling	Red	Priority Species	
Stock dove	Amber		
Swift	Red		
Tawny owl	Amber		
Wheatear	Amber		
Whitethroat	Amber		
Willow warbler	Amber		
Woodcock	Red		
Woodpigeon	Amber		
Wren	Amber		

[1]Notable wetland birds not relevant to the Site have not been included in the list.

[2]Status in Birds of Conservation Concern 4 (Eaton *et al* 2015)

Site survey

2.4.13 Hedgerows, woodland, scrub, individual trees and buildings provided suitable nesting and foraging habitat for common / widespread bird species, including 'Species of Conservation Concern' / Priority Species such as dunnock, song thrush and bullfinch. The presence of a notable breeding bird assemblage, or any specially-protected species was considered unlikely.

2.4.14 During the bat surveys of buildings, active jackdaw nests were recorded within the loft space of Tidcombe Hall and active swallow nests were recorded within the loft space of the outbuilding to the immediate west of Tidcombe Hall (Building 3). There were no incidental records of ground-nesting species such as skylark during regular Site visits over the breeding period; the Site is likely to be sub-optimal for such species due to intensive management of the arable fields. No evidence

of use of the Site by barn owl was recorded, including use of the buildings by nesting or roosting birds. It was considered likely that barn owls foraged over the Site on an occasional / infrequent basis.

Hazel dormouse

Desk Study

2.4.15 There were three records of hazel dormice within 2km of the Site. The closest of these records was located approximately 1.4km north-east of the Site. Hazel dormouse is fully protected by UK and European legislation and is a Priority Species and Devon BAP species.

Site survey

2.4.16 A total of nine hazel dormouse nests (four with dormice present, including one juvenile dormouse) were recorded in nest tubes within hedgerows during surveys; refer to Appendix 8. This species was assumed to be present in all suitable habitat (i.e., native hedgerows, scrub and woodland) throughout the Site, although the woodland was considered to be sub-optimal due to its lack of understorey vegetation.

Badger

Desk Study

2.4.17 There are a number of records of badger from the 2km study area; the closest was within 800m of the Site boundary. Badgers and their setts are legally protected.

Site survey

2.4.18 An active outlier badger sett comprising two entrance holes was recorded within the grounds of Tidcombe Hall, and one further single-entrance, active outlier sett was recorded in the eastern boundary hedgerow of the southern agricultural field; refer to Appendix 9. Additional evidence of badger activity within the Site was also recorded, including prints, feeding signs, latrines and paths. Habitats within the Site provided suitable foraging habitat for badger.

Bats

Desk Study

2.4.19 There are no previous records of bat roosts within the Site boundary. Bat records from within the 4km study area include:

- Common pipistrelle, serotine, Natterer's and Leisler's bat (all legally protected);
- Brown long-eared, noctule, Daubenton's, whiskered, lesser horseshoe, barbastelle and soprano pipistrelle bats (all legally protected and Priority Species); and
- Greater horseshoe bat (legally protected, Priority Species and Devon BAP Priority Species).

2.4.20 The closest known roosts are brown long-eared bat and common pipistrelle roosts within 500m of the Site, including a common pipistrelle maternity roost located approximately 120m to the northwest of the Site boundary. Additional roosts within the 4km search radius include further common pipistrelle and brown long-eared roosts, plus serotine, lesser horseshoe, Natterer's, whiskered and soprano pipistrelle bat roosts; the status of these roosts is not known.

Site survey

2.4.21 The results of the static bat detector survey from 2018 and the partial update survey in 2023 are presented in Appendix 10.

2018 survey results: static detector survey

2.4.22 At least ten species were recorded during the static detector survey with an overall total of 27,138 registrations. Common pipistrelle was the most abundant species comprising 58% of all recordings, followed by soprano pipistrelle (33%), *Myotis* species (5%), and noctule (2%). Other species recorded on static detectors, but accounting for less than 1% of registrations, were Nathusius' pipistrelle, greater horseshoe bat, lesser horseshoe bat, barbastelle, long-eared bat species and *Nyctalus* / *Eptesicus* species.

2.4.23 Bat activity was highest in close proximity to Tidcombe Hall and along the northern boundary with the Grand Western Canal. These higher levels of activity are attributed predominantly to foraging and commuting activity by common and soprano pipistrelle, both common and widespread species, together accounting for between 88% and 96% of recorded bat activity at these positions

2.4.24 Barbastelle activity was recorded with the timings of registrations suggesting habitats within the Site are used for commuting/occasional foraging by barbastelle, particularly in September and October. Lesser horseshoe bat activity was recorded and was likely to be associated with the lesser horseshoe bats roosting at Tidcombe Hall; refer to Appendix 11. Greater horseshoe bat activity levels were very low (a total of three registrations across all months and static detector positions, all during September). This would indicate that the Site is unlikely to constitute a regular commuting route or important foraging habitat for this species.

2018 survey results: 2018 transect survey

2.4.25 A total of 547 bat registrations from at least six species were recorded at sample points during the six transect surveys. Common pipistrelle was the most abundant species (approximately 56% of all registrations) followed by soprano pipistrelle (26%), noctule (8%) and *Myotis* species (8%). The remaining 3% of calls were from undetermined pipistrelle species, long-eared bat species and *Nyctalus* / *Eptesicus* species. The highest levels of bat activity were recorded along the northern Site boundary, adjacent to the Grand Western Canal, which is likely to provide a bat foraging and commuting feature.

2023 partial update survey: static detector survey

2.4.26 The 2023 partial update static detctor survey recorded the same species composition as that of the 2018 survey, with at least ten species were recorded. Common pipistrelle was again the most abundant species comprising 49.97% of all recordings, followed by soprano pipistrelle (38.89%), *Myotis* bat (3.56%), noctule bat (2.77%), long-eared bat (1.38%) and serotine, Leisler's or noctule bat (1.13%). Other species recorded but accounting for less than 1% of registrations each were *Nyctalus* bat species, serotine, greater horseshoe bat, lesser horseshoe bat, unidentified pipistrelle bat, barbastelle and Nathusius' pipistrelle.

2.4.27 Bat activity was again highest in close proximity to Tidcombe Hall and along the northern boundary with the Grand Western Canal. Barbastelle activity levels were considerably lower than recorded in 2018, although lesser horseshoe activity levels were still moderate and greater horseshoe levels still low. Overall, the results of the 2023 partial update static detector survey showed no significant deviations from the results of the 2028 survey, other than the reduction in Barbastelle activity.

2023 partial update survey: transect survey

2.4.28 The 2023 partial update survey recorded at least five species of bat, with a similar species composition to that recorded in 2018. Figure A10.1 shows relative densities of bat registrations across the survey area with a higher activity shown in dark green; this indicates that the highest

bat activity levels were recorded in the northern half of the survey area, specifically in the north-west, around Tidcombe Hall and outbuildings. This likely reflects the presence of roosts within these buildings. Relatively lower levels of bat activity were recorded in the south of the survey area, particularly the southern arable field. Overall, the results of the 2023 partial update transect survey were show no significant deviations from the results of the 2028 survey.

2023 bat roost surveys of buildings

2.4.29 The results of the bat roost surveys are presented in Appendix 11. A total of four intact buildings were located within the Site; these comprised Tidcombe Hall and associated outbuildings, plus several derelict garden sheds. All buildings were initially assessed for their suitability to support roosting bats through preliminary bat roost inspections. The garden walls around Tidcombe Hall were also scoped into the bat roost assessment due to the presence of crevices and cracks, however, following inspection of these features using an endoscope, the presence of bat roosts was discounted. Due their advanced dilapidation, the garden sheds were assessed as having 'Negligible' roost suitability.

2.4.30 Evidence of roosting bats, in the form of droppings identified to species level using DNA analysis (refer to Table 2.3 and Appendix 11) was recorded in Tidcombe Hall (Building 1) and two outbuilding (Buildings 2 and 3) during the preliminary roost inspections; a single lesser horseshoe bat was also observed roosting in the garage beneath Building 1.

2.4.31 Emergence surveys recorded bats emerging from Building 1 (Tidcombe Hall; common pipistrelle, brown long-eared and lesser horseshoe), Building 2 (common pipistrelle, brown long-eared and lesser horseshoe), Building 3 (common pipistrelle, soprano pipistrelle and lesser horseshoe) and Building 4 (common pipistrelle, soprano pipistrelle and lesser horseshoe).

2.4.32 The surveys recorded non-breeding day roosts for four bat species; common pipistrelle, soprano pipistrelle, brown long-eared and lesser horseshoe, and a transitional roost for lesser horseshoe bat; refer to Table 2.3 and Appendix 11 for survey details.

2.4.33 The underground parking area beneath Building 1 (Tidcombe Hall) was assessed as having moderate suitability to support a lesser horseshoe hibernation roost. Bat hibernation surveys of this feature will be undertaken in winter 2023/4, and submitted in an EcIA Addendum Report in March 2024; refer to Paragraph 1.3.8.

Table 2.3. Bat roost details

Building reference (refer to Appendix 11)	Roost status
Building 1 – Tidcombe Hall, including underground parking garage	Non-breeding day roosts within above ground parts of the building (roof void and living areas) for low numbers of: • Common pipistrelle (max. four bats recorded). • Brown long-eared bat (max. one bat recorded and droppings within loft space identified using DNA analysis). • Lesser horseshoe bat (droppings only, identified using DNA analysis). Non-breeding day roosts within underground parking garage beneath the building for low numbers of: • Common pipistrelle (max. one bat recorded).

Building reference (refer to Appendix 11)	Roost status
	• Lesser horseshoe bat (droppings identified using DNA analysis, one individual bat recorded roosting during inspection in May 2023). Transition roost for low numbers of lesser horse bat within underground parking garage (seven bats recorded emerging in September 2023), with this feature also having moderate suitability for a lesser horseshoe bat hibernation roost.
Building 2	Non-breeding day roosts for low numbers of: • Common pipistrelle (max. three bats recorded). • Brown long-eared bat (droppings only, identified using DNA analysis). • Lesser horseshoe bat (droppings only, identified using DNA analysis).
Building 3	Non-breeding day roosts for low numbers of: • Common pipistrelle (max. three bats recorded). • Soprano pipistrelle (max. five bats recorded). • Lesser horseshoe bat (droppings only, identified using DNA analysis).
Building 4	Non-breeding day roosts for low numbers of: • Common pipistrelle (max. ten bats recorded). • Soprano pipistrelle (max. one bat recorded). • Lesser horseshoe bat (max. two bats recorded).

Preliminary roost assessment of trees

2.4.34 A total of six trees within the Site were assessed during preliminary inspections as providing potential suitability for roosting bats (Collins 2016); refer to Appendix 11. None of these trees would be affected by the proposed development and therefore further roost surveys of trees were not undertaken.

Otter

Desk Study

2.4.35 There are numerous records of otter within 2km of Site. The closest of these is located approximately 0.6km from the Site boundary. Otter is a legally protected Priority Species and Devon BAP species

Site survey

2.4.36 The wet ditch and stream within the Site were sub-optimal as habitat for otter, due to their very shallow water (<10cm), and no potential holt locations were recorded. This species was therefore considered absent from Site and is not considered further within this assessment.

Water vole

Desk Study

2.4.37 No records of water vole were identified within 2km of the Site boundary. This is a legally protected Priority Species.

Site survey

2.4.38 The ditch and stream within the Site were deemed unsuitable for water vole due their very shallow water (<10cm) and the absence of water in the ditch during the summer months. This species was therefore considered absent from Site and is not considered further within this assessment.

Other mammals

Desk Study

2.4.39 There are records of brown hare and hedgehog within 2km of the Site boundary. Brown hare and hedgehog are Priority Species; brown hare is also a Devon BAP species. The Site also lies partially within a Beaver Activity Zone, as identified by Devon Wildlife Trust; beaver is a legally protected species.

Site survey

2.4.40 The Site provided suitable habitat for hedgehog and brown hare; which may occasionally occur within the Site. Extensive alternative habitat for these species occurred in the vicinity and the Site was considered unlikely to be of particular importance for them.

2.4.41 As no watercourses suitable for beaver occur within or immediately adjacent to the Site boundary, the species was considered absent from Site and is not considered further within this assessment.

2.5 Evaluation and confirmation of important ecological features

2.5.1 An evaluation of the ecological features within the study area is provided in Table 2.4 below. This also includes confirmation of 'important' ecological features in the context of the proposed development, i.e., those that have been included in, or excluded from, further assessment.

Table 2.4: Evaluation and confirmation of important ecological features

Ecological feature	Ecological importance	Included in detailed assessment?	Reason
Designated sites of nature conservation importance			
Tidcombe Lane Fen SSSI	National	Yes	Importance reflected by designation. The Site lies within an 'Impact Risk Zone' for residential development of 100 units or more in respect of the SSSI.
Grand Western Canal LNR and OSWI	Parish to District	Yes	Importance reflected by designation. Adjacent to northern boundary of the Site and potentially impacted by the development during and post-construction.
Other LNRs within 5km; other non-statutory sites within 2km	Parish to District	No	Importance reflected by designation. Would not be impacted by the development due to their distance from the Site.
Habitats on the Site			
Arable, buildings, hardstanding, poor semi-improved grassland, scrub, ditch	Sub-Parish	Yes	Common, widespread habitats of low ecological importance. Potentially impacted by the development.
Hedgerows	Parish	Yes	Hedgerows act as wildlife corridors and provide ecological connectivity within the landscape. All native hedgerows within the Site considered to be 'important' under the Hedgerow Regulations 1997. All native hedgerows are a Priority Habitat and 'species-rich hedges' is a Devon BAP habitat. Potentially impacted by the development.
Running water	Sub-Parish to Parish	Yes	Stream within the Site flows into Grand Western Canal. 'Rivers, streams, floodplains and fluvial processes' is a Devon BAP habitat. Potentially impacted by the development
Scattered trees	Sub-Parish to Parish	Yes	Common, widespread habitat although likely to support a range of species including invertebrates, nesting birds and potentially roosting bats. Potentially impacted by the development.
Semi-natural broadleaved woodland	Parish	Yes	Woodland provides suitable habitat for a range of species, including protected/notable species. 'Lowland Mixed Deciduous Woodland' is a Priority Habitat. Potentially impacted by the development.
Standing water	Sub-Parish	No	Not considered to meet the Priority Habitat criteria for ponds, although likely to support a range of common invertebrate species. Potentially impacted by the development.

Table 2.4: Evaluation and confirmation of important ecological features

Ecological feature	Ecological importance	Included in detailed assessment?	Reason
Adjacent habitats			
Agricultural land	Sub-Parish to Parish	No	Intensively managed farmland is generally of low ecological importance, although associated hedgerows and trees provide important wildlife corridors/stepping stones through the landscape. Unlikely to be sensitive to development impacts.
Canal	County	Yes	Canals are a Priority Habitat that provide foraging and breeding opportunities for a range of species and act as wildlife corridors. Designated as a County Wildlife Site. Potentially impacted by the development.
Urban	Sub-Parish	No	Common, widespread habitat of low ecological importance. Unlikely to be sensitive to development impacts.
Protected and notable species			
Plants	Sub-Parish	Yes	Primrose and English bluebell recorded within hedgebanks and woodland on Site. Potentially impacted by the development. Variegated yellow archangel, rhododendron and Himalayan cotoneaster (Schedule 9 invasive species) were recorded within the Site. Legislative Compliance for controlled species is detailed in Section 4.
Invertebrates	Sub-Parish	Yes	Site is suitable for a range of common/widespread invertebrates. Hedgerows with blackthorn assumed to support brown hairstreak butterfly, a Priority Species. Potentially impacted by the development.
Amphibians	Sub-Parish	Yes	Potential breeding habitat for common toad, a Priority Species. Suitable terrestrial habitat for common amphibians (presence of great crested newt discounted). Potentially impacted by the development.
Reptiles	Sub-Parish	Yes	'Good' populations of grass snake and slow-worm (both legally protected Priority Species) recorded within the Site. Potentially impacted by the development.
Birds	Parish	Yes	Provided foraging and nesting habitat for a range of species, including widespread but declining species such as dunnock, song thrush and bullfinch. Jackdaw and swallow nesting within Tidcombe Hall. Potentially impacted by the development.
Badger	Sub-Parish	Yes	Two active outlier badger setts recorded within the Site. Arable, grassland, woodland and hedgerows provided suitable badger foraging habitat. Potentially impacted by the development.

Table 2.4: Evaluation and confirmation of important ecological features

Ecological feature	Ecological importance	Included in detailed assessment?	Reason
Hazel dormouse	Parish	Yes	Evidence of dormice recorded; assumed to be present in all native hedgerows, woodland and scrub. Dormouse is a Priority Species and Devon BAP species. Potentially impacted by the development.
Bats	Parish	Yes	Day roosts of common pipistrelle, soprano pipistrelle, brown long-eared bat and lesser horseshoe bat recorded in Tidcombe Hall and associated outbuildings, and a lesser horseshoe bat transitional roost recorded in the underground parking garage beneath Tidcombe Hall (this feature also has moderate suitability to support a lesser horseshoe hibernation roost). At least ten species recorded commuting / foraging within the Site. The habitats in the north of the Site showed the highest levels of bat activity, with the habitat immediately adjacent to the Grand Western Canal considered to be of particular importance to foraging bats. Potentially impacted by the development.
Otter	Negligible	Yes	Onsite habitat was sub-optimal, this species is therefore considered to be absent from Site.
Water vole	Negligible	No	No records within the Study Area and onsite habitat was sub-optimal, this species is therefore considered to be absent from Site.
Other mammals	Sub-Parish	Yes	The Site may be occasionally used by hedgehog and brown hare (Priority Species). Extensive alternative habitat for occurred in the immediate vicinity and the Site was considered unlikely to be of particular importance for them. Beaver is considered absent from the Site due to the lack of suitable watercourses.

3 Assessment of ecological effects

3.1 The proposed development

Development description

3.1.1 The Outline Planning Application (with all matters reserved bar the main point of access and its associated works) is for the conversion of Tidcombe Hall and outbuildings and the erection of dwellings to provide up to 100 dwellings in total, provision of community growing areas, public open space and associated infrastructure.

Ecological design and avoidance measures

3.1.2 The proposed development incorporates an integrated landscape and ecological design, including the creation of new wildlife habitats within the Site; refer to Figure 4. The indicative design includes the following features:

- Existing boundary hedgerows and woodland to be retained and buffered from new development as far as possible, maintaining functional 'habitat corridors' around the north-eastern, eastern, southern and western Site boundaries suitable for a range of protected/notable species including bats, birds, badgers and hazel dormouse;
- Creation of a minimum 10m wide 'dark corridor' (<0.5lux) over the new access road to allow continued ecological permeability of the Site for bats;
- New habitat creation to include species-rich native hedgerows with trees, wildflower grassland, native scrub, broadleaved woodland and orchard planting, as well as SuDS ponds with associated wetland planting;
- Enhancement of the existing broadleaved woodland;
- A new bespoke bat roost building within the Public Open Space adjacent to the canal providing roosting habitat for a range of bat species, including lesser horseshoe, common pipistrelle, soprano pipistrelle and long-eared bats;
- Provision of bat tubes / boxes and bird boxes within the fabric of new buildings and on retained trees;
- Hedgehog passes within residential garden fences;
- Creation of a minimum of three reptile hibernacula within the Public Open Space; and
- Provision of insect/ bee bricks within new dwellings and walls, located in proximity to suitable pollinator habitat.

3.1.3 A Construction and Ecological Management Plan (CEcoMP) would be produced to detail measures to ensure habitat and species protection during construction. A Landscape and Ecological Management Plan (LEMP) would be produced to detail how retained and proposed habitats will be managed in the long-term. Both of these documents would be agreed with Mid Devon District Council prior to the start of construction; refer to Section 4.1.

3.2 Unmitigated effects during construction

Designated sites of nature conservation importance

Tidcombe Lane Fen SSSI

3.2.1 Without appropriate mitigation, there is a potential risk that Tidcombe Lane Fen SSSI could be affected by pollutants entering the ditch in the east of the Site, which is hydrologically connected to a stream to the northeast of the Site and feeds into the SSSI approximately 700m downstream. This could occur, for example, as a result of surface runoff contaminated with silt, hydrocarbons

or other construction materials, or from an accidental fuel or concrete spill. Although the risk of such an impact is considered very low, measures are proposed to ensure that this risk would be avoided/mitigated; refer to Paragraph 4.1.2.

Grand Western Canal LNR / CWS

3.2.2 Grand Western Canal LNR / CWS occurs adjacent to the northern boundary of the Site. There is the risk that pollution arising from construction could also affect water quality within the Grand Western Canal. Artificial lighting, noise and dust produced by construction activities could also result in disturbance or damage to habitats within the LNR / CWS. Mitigation is proposed to reduce the likelihood of such impacts; refer to Paragraphs 4.1.2 to 4.1.4.

Habitats on the Site

3.2.3 Site clearance would result in the loss or removal of the following habitats (all measurements are approximate):

- Arable: 5.45ha.
- Poor semi-improved grassland: 0.65ha.
- Dense scrub: 0.13ha.
- Introduced shrubs: 0.14ha
- Species-rich hedgerow: up to 60 linear metres.

3.2.4 In addition, the removal of approximately six mature broadleaved trees within the grounds of Tidcombe Hall is proposed to allow for access and creation of gardens. The loss of the above habitats would be mitigated in the medium to long-term through the implementation of the proposed landscape strategy; refer to Figure 4 and Paragraph 3.1.2.

3.2.5 Construction also could result in impacts to the retained trees, woodland, ditch, stream, pond and hedgerows within the Site, for example through vehicular damage to tree Root Protection Areas (RPAs) and storage of materials/site compounds damaging habitats. Such activities could also lead to the generation of the following pollutants:

- Dust: this could have an adverse effect on plants through interference with photosynthesis, respiration and transpiration;
- Sediment and pollutants in surface-water run-off: this could have an adverse effect on the water quality of the pond and ditch.

Habitats adjacent to the Site

3.2.6 In addition to habitat loss / creation and potential effects on the Grand Western Canal (refer to Paragraph 3.2.2-31681.0), construction could have a negative effect on adjacent habitats, for example vehicular damage to tree Root Protection Zones and artificial lighting causing disturbance. Mitigation is proposed to reduce the likelihood of such effects; refer to Paragraphs 4.1.3 – 4.1.4.

Protected and notable species

Plants

3.2.7 The loss of small numbers of English bluebell and primrose plants may occur during construction, although the majority of hedgerows and woodland would be retained and protected. No effects on other notable plant species are predicted during the construction phase.

Invasive / non-native plants

3.2.8 Construction could lead to the spread of Himalayan cotoneaster, rhododendron and variegated yellow archangel. Appropriate measures are proposed to ensure legal compliance; refer to Paragraph 4.1.5.

Invertebrates

3.2.9 Removal of scrub and hedgerow would reduce the available habitat for invertebrates. Given the retention of the woodland, the majority of the hedgerow network, mature trees and the extensive habitat creation proposals, the area of habitat loss is unlikely to significantly affect notable invertebrate populations or species.

Amphibians

3.2.10 The pond within the grounds of Tidcombe Hall would be retained, however this could be damaged or polluted during construction. Additionally, small numbers of common amphibians within terrestrial habitats could potentially be killed or injured during Site clearance. Mitigation is proposed to reduce the likelihood of such effects; refer to Paragraphs 4.1.4 and 4.1.8.

3.2.11 Site clearance would lead to a reduction in terrestrial habitat for amphibians; this would be mitigated in the long-term by the habitat creation proposals, including the creation of SUDS features that may also provide additional breeding habitat.

Reptiles

3.2.12 Removal of grassland, arable field margins and hedgerow sections would lead to a reduction in foraging and breeding habitat for slow-worm and grass snake. It could also result in direct effects (e.g., killing/injury). Mitigation measures would be implemented to ensure legal compliance; refer to Paragraph 4.1.9 – 4.1.10.

Birds

3.2.13 Depending on the timing of Site clearance, there could be a direct effect on nesting birds, their eggs and young. Avoidance and mitigation measures are proposed to ensure legal compliance; refer to Paragraphs 4.1.11 – 4.1.13. Habitat clearance, particularly hedgerow and scrub removal and works to existing buildings, would result in the loss of nesting and foraging habitat used by a range of common/widespread species. This would be mitigated by new habitat creation in the medium-term onwards.

3.2.14 Construction activity has the potential to cause localised noise and visual disturbance which may cause displacement of nesting birds in the immediate vicinity, although some would be tolerant of disturbance or would become habituated.

Hazel dormouse

3.2.15 The removal of approximately 60 linear metres of species-rich hedgerow and 0.13ha of dense scrub would lead to reduction in dormouse habitat and create two breaks in the hedgerow / scrub network, which would fragment available dormouse habitat and create barriers to dispersal through the Site. Without mitigation, vegetation removal could also have a direct effect on dormice through killing and/or injury of individual animals. Mitigation is proposed to ensure legal compliance; refer to Paragraph 4.1.14 -4.1.15.

3.2.16 Whilst some behavioural studies of dormice have indicated that they can be reluctant to cross even small gaps in hedgerows, they have been recorded crossing such gaps (Bright, 1998) and

studies have also reported the presence of dormice in isolated habitats (Garland and Woods, 2005). All of the boundary hedgerows around the Site would be retained and enhanced, which would maintain habitat connections between the Site and suitable habitat in the wider landscape.

Badger

3.2.17 Depending upon patterns of badger activity at the time of construction, development could result in the destruction or disturbance of two outlier setts recorded within the Site boundary, and / or killing or injury of any badgers present. Setts could be damaged as a result of landscaping works, inappropriate tracking of vehicles, or storage of plant and materials during construction. This would be re-confirmed by a further badger survey and implementation of any associated mitigation measures prior to construction; refer to Paragraph 4.1.16 – 4.1.17.

3.2.18 The development would also result in the loss of a small amount of hedgerow habitats that are likely to be used as foraging and movement corridors for badgers, although alternative habitat of a similar or higher value is available in the vicinity. Badgers could also become trapped in open excavations during the construction phase and potentially be harmed by construction materials. Mitigation is proposed to ensure legal compliance and protect animal welfare; refer to Paragraph 4.1.18.

Bats: roosting

3.2.19 The conversion of Tidcombe Hall and associated outbuildings would result in the loss of day roosts for brown long-eared bat, common pipistrelle, soprano pipistrelle and lesser horseshoe bats, and a transitional roost, and potentially a hibernation roost, for lesser horseshoe bats. There is also the potential for roosting bats to be killed, injured or disturbed during building conversion works. Proposed construction mitigation measures for roosting bats are outlined in Paragraphs 4.1.19 – 4.1.23.

3.2.20 All trees with bat roost suitability would be retained, therefore any bat roosts in trees would not be directly affected although there is potential for disturbance from lighting or noise during construction. Mitigation is proposed to reduce the likelihood of such effects; refer to Paragraph 4.1.24.

Bats: commuting and foraging

3.2.21 The key linear habitats identified as providing important flight-lines and foraging habitat for bats would be retained and buffered from the development proposals. These include the northern boundary adjacent the canal corridor, and the boundaries hedgerows. The broadleaved woodland within the grounds of Tidcombe Hall would also be retained.

3.2.22 Site clearance would result in the loss of approximately 60 linear metres of hedgerows across the Site, which would reduce the overall habitat connectivity through the Site and could affect commuting bats through the loss or fragmentation of these linear habitat features.

3.2.23 Habitat removal would decrease habitat for night-flying invertebrate prey, thereby reducing the overall value of the Site for foraging bats. However, the majority of habitat loss would be restricted to arable land, which is generally considered to be of lower importance to foraging bats (Russ & Montgomery 2002, Walsh & Harris 1996, Burrows 2019). The areas within the Site identified during the surveys as being more regularly used for foraging (i.e., the habitat adjacent to the canal corridor) would be retained and buffered from development, with residential development predominantly located within the southern arable field which had the lowest levels of bat activity during surveys.

3.2.24 Bats commuting and foraging across the Site could be adversely affected by construction lighting. This would have the greatest impact on the more light-sensitive species such as lesser horseshoe bats, barbastelle and Myotis species bats (Stone et al., 2015, Rowse et al., 2016). However, construction activities would be largely undertaken during the day when bats are not active, and construction lighting requirements are only likely to occur largely during the winter months, when bats would be expected to be hibernating and therefore either absent or present in very low numbers. Such effects are therefore considered to be minimal and unlikely to affect the local bat population. Mitigation is proposed to further reduce the likelihood of such effects; refer to Paragraph 4.1.24.

Other mammals

3.2.25 Habitat clearance within the Site could reduce the area of foraging and resting habitat for brown hare and hedgehog, however, there is abundant alternative suitable habitat present in the wider area. There is also the potential for direct effects (i.e. killing or injury) on these species during Site clearance; refer to Paragraph 4.1.25 for proposed mitigation.

3.3 Post-construction effects

Designated sites of nature conservation importance

Tidcombe Lane Fen SSSI

3.3.1 Potential effects on Tidcombe Lane Fen SSSI arising from the proposed development as a result of changes in the quantity or quality of water leaving the Site have been considered in a separate Flood Risk Assessment (AWP 2023). This states that any discharges to surface water from the development would pass through a best practice SuDS train, including a total of four SuDS attenuation features (comprising two attenuation basins, a rain garden and swale network) integrated within the POS (refer to Figure 2). All foul effluent generated by the development would drain to South West Water's adopted sewer network, with no effluent being discharged to ground or surface water. Furthermore, existing agricultural pollutants (e.g., pesticides, herbicides and fertilisers) would be reduced, as agricultural activities on the application Site would cease. Overall, therefore, it is considered that there would be either no change or a net improvement in the quality / quantity of water arising from the development that could affect the SSSI. Consequently, no effects on Tidcombe Lane Fen SSSI (and also the Grand Western Canal LNR / CWS) from surface-water drainage are predicted. No other mechanisms or pathways have been identified that would affect Tidcombe Lane Fen SSSI during the post-construction phase.

Grand Western Canal LNR / CWS

3.3.2 The increased number of residents arising from the development could raise levels of recreational pressure on Grand Western Canal LNR/CWS. However, the canal is actively managed as a Country Park by the Canal Ranger Service, whose work is led by a Management Plan. It is considered that the potential increase in the number of visitors to the Grand Western Canal from the development could be accommodated by existing Country Park management measures, and therefore no recreational impacts on Grand Western Canal LNR / CWS are predicted.

Habitats on the Site

3.3.3 The proposed approach to the landscape and ecological design for the development is summarised in Paragraph 3.1.2. Full details of onsite habitat creation would be specified in a Landscape Planting Plan submitted at the Reserved Matters stage and would include wildflower meadow and wetland creation, and native hedgerow, scrub, tree, and orchard planting within the Public Open Space (refer to Figures 2 and 4). Habitat loss would comprise predominantly habitats of low ecological importance (i.e. poor-semi improved grassland, tall ruderal and arable habitat),

and hedgerow loss (of higher ecological importance) would be minimised (approximately 60m) and mitigated through new hedgerow creation. New wetland and wildflower meadow would enhance the biodiversity value of the Site as these habitats established.

3.3.4 The calculation of change in habitat value through the Biodiversity Metric (4.0) based on the Illustrative Layout Plan (Figure 2) and Ecological Constraints and Opportunities Plan (Figure 4) confirms that the development could demonstrate net gain, with the metric showing a post-construction total of +32.97 Biodiversity Units, which would be a net gain of 1.49 Units (+4.73%). The Assessment also confirms that the proposed development would result in a net gain on Site of +1.63 Hedgerow Units (+10.24%); refer to Appendix 12.

3.3.5 New and retained hedgerows onsite could be subject to interference / removal by new homeowners whose gardens abut the hedgerow, affecting their structure and functionality. Proposed mitigation is identified in Paragraph 4.2.3.

Habitats adjacent to the Site

3.3.6 The creation of SUDS features would prevent potential water quality impacts on the Grand Western Canal; refer to Paragraph 3.3.1. No effects on other habitats adjacent to the Site are predicted post-construction.

Protected and notable species

Plants

3.3.7 No significant effects on notable native plant species are predicted. English bluebell and primrose may colonise newly-created hedgerows post-construction. New habitat creation, including wildflower meadow, would increase botanical diversity within the Site.

Invasive / non-native plants

3.3.8 Cotoneaster and variegated yellow archangel could spread elsewhere within the Site post-construction. Measures to ensure legal compliance and prevent the spread of these species is outlined in Paragraph 4.2.12.

Invertebrates

3.3.9 The proposed onsite habitats would provide suitable habitat for a range of invertebrates, including notable species. The wildflower grassland would be managed to maximise moth abundance to enhance the foraging resource for bats; such management would also benefit other invertebrate species.

Amphibians

3.3.10 Retained hedgerow would continue to provide suitable movement corridors around the Site for amphibians. Once established, residential gardens, new hedgerows, wetland and wildflower grassland would provide suitable terrestrial habitat for amphibians, and the SUDS basin would provide potentially suitable breeding habitat.

Reptiles

3.3.11 New hedgerows, wetland and wildflower grassland and the SUDS features would provide suitable foraging, hibernating and basking habitat for reptiles, once established, and the presence of reptiles would be taken into account during landscape management. Creation of reptile hibernacula within the Public Open Space would also provide suitable habitat for hibernating reptiles.

Birds

3.3.12 Native tree, scrub and hedgerow planting would result in an increase in habitat available for nesting birds, and nesting boxes would benefit a range of species, including Species of Conservation Concern / Priority Species such as house sparrow and swift. Residential gardens would also be likely to provide suitable foraging and nesting habitat as they became established.

3.3.13 It would be expected that a proportion of residents within the new development would own cats, and therefore local bird populations may also be adversely affected by increased predation. However, it would be expected that a proportion of residents within the development area would provide supplementary feeding for birds, which is likely to help winter survival rates within the local population of some species and has been shown to improve breeding success in the following spring (Robb et al., 2008). There is likely to be a change of species composition from an 'agricultural' species assemblage to a more 'urban' species assemblage.

Hazel dormouse

3.3.14 Retained habitat, including broadleaved woodland and the hedgerow network would continue to provide suitable habitat for hazel dormouse whilst maintaining connectivity to other suitable areas within the wider landscape. The development would result in a net increase of dormouse habitat once established, via the creation of new native scrub and species-rich hedgerow planting which would provide a robust ecological network through the Site.

3.3.15 The dormouse population may be vulnerable to predation risk arising from the expected increase in domestic cat population. It is thought that juvenile animals are at greatest risk of cat predation, but that most mortality in the species occurs during hibernation or during early summer due to starvation (Harris and Yalden, 2008). Due to the lack of research on the effect of cat predation on dormice populations, impacts are uncertain. It should also be noted that the Site is already likely to be subject to cat predation from the adjacent residential areas.

Badger

3.3.16 The introduction of roads and vehicles within the Site could result in increased badger mortality from collisions with vehicles. However, as the new roads would be restricted to low-speed limits, the risk of collisions is unlikely to increase significantly. New public-realm habitats within the Site would be suitable for foraging badgers and movement corridors for badgers would be retained within the Site.

Bats

3.3.17 Retained habitat, including the broadleaved woodland and hedgerow network would continue to provide suitable foraging habitat and functional flight routes for bats from within the Site to the wider landscape. The green infrastructure proposals include the creation of vegetated 'landscape buffers' of at least 10m width around the eastern, southern and western boundaries of the southern field, which would buffer the retained boundary hedgerows in these locations from the development and provide a robust functional flight route for bats, including light-sensitive species. New habitat planting of wildflower meadow, orchard, scattered trees, native scrub and SUDs features in the northern field would provide suitable foraging habitat for bats across this area.

3.3.18 Street lighting and residential lighting from properties could have an adverse effect on bats, particularly the more light-sensitive species. The impact of public-realm lighting on foraging and commuting bats is variable and depends upon the species concerned and the nature of their activity, as well as on the type and intensity of the lighting. Certain bat species are known to be

relatively tolerant of artificial lighting e.g., common pipistrelle, and noctule (Stone et al. 2009, Stone 2013). These species are likely to continue to forage over the urban areas of the Site and are unlikely to be significantly impacted by public-realm lighting. Lighting directed to features used by light-sensitive species such as lesser horseshoe bat, long-eared bat, barbastelle and *Myotis* bats could potentially inhibit use of flight-paths with such species likely to avoid illuminated areas (Jones 2000, Stone 2013). The creation of vegetated 'landscape buffers' of at least 10m width around the eastern, southern and western boundaries of the southern field, and the provision of a minimum 10m wide 'dark crossing point' of >0.5lux over the new access road would maintain functional flight routes for bats around the Site and would prevent the fragmentation or isolation of habitat across the wider landscape.

Other mammals

3.3.19 Hedgehogs are likely to use gardens and newly created habitats within the Site for foraging and shelter. However, without mitigation, close-board fences (e.g., for residential gardens) are likely to impede the movement of hedgehogs. The presence of roads within the Site is considered unlikely to result in a significant increase in hedgehog mortality as the new roads would be subject to low traffic volumes, travelling at low speeds.

3.3.29 It is unlikely that brown hare (if present) would utilise the Site following development.

4 Avoidance, mitigation, compensation and enhancement

4.1 Avoidance, mitigation, compensation and enhancement during construction

General

4.1.1 A Construction Ecological Management Plan (CecoMP) would be produced to detail measures to ensure habitat and species protection during the pre-construction and construction phases; refer to Paragraph 3.1.3. An Ecological Clerk of Works (EcoW), as required by the CecoMP, would be appointed to provide advice and undertake ecological supervision, as required.

Designated sites of nature conservation importance

4.1.2 Construction methods would follow industry best practice to ensure the risk of pollution to Tidcombe Lane Fen SSSI and the Grand Western Canal LNR/CWS is reduced to a negligible level. This would include full adherence to Defra pollution prevention guidance (https://www.gov.uk/guidance/pollution-prevention-for-businesses). Where appropriate, Method Statements would be produced for high-risk activities, such as refuelling and use of concrete. Measures to mitigate construction lighting effects are outlined in Paragraph 4.1.4. All relevant measures would be detailed in a wider Construction Environmental Management Plan (CEMP), to which the CecoMP would be appended; refer to Paragraph 3.1.3.

Habitats within and adjacent to the Site

4.1.3 Retained hedgerows, woodland and trees would be protected from potential damage during construction through the use of temporary barriers (e.g. Heras fencing). Construction would be undertaken in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction'.

4.1.4 No lighting would be left on during the night during the construction period; any security lighting would be low-level and motion activated on short-timers. All contractors' compounds would be located a minimum of 10m away from hedgerows and trees to minimise potential lighting, disturbance and dust impacts. Construction would be implemented following best practice to ensure that there would be no risk to water quality within and adjoining the Site, including full adherence to Defra pollution prevention guidance (refer to Paragraph 4.1.2). All habitat protection measures would be detailed in the CecoMP.

Protected and notable species

Invasive / non-native plants

4.1.5 Prior to the commencement of construction, an update survey of the Site would be carried out to re-confirm the Site baseline in respect of invasive plant species. Management of variegated yellow archangel, rhododendron and Himalayan cotoneaster, or any other Schedule 9 Species, may be required, which would be undertaken in accordance with an Invasive Species Method Statement. The Method Statement would include steps to remove and/or prevent the spread of the invasive species a result of construction activities. The Method Statement would be appended to the CecoMP and LEMP, as appropriate. Delivery of measures would be undertaken by a specialist contractor.

Invertebrates

4.1.6 The protection of the retained broadleaved woodland and mature hedgerows and trees (refer to Paragraphs 4.1.3 – 4.1.4) would ensure that the principal habitat for invertebrates would be protected.

4.1.7 Insect/bee bricks would be incorporated into the walls of least 20% of new residential dwellings within the proposed development; this requirement would be set out in the CecoMP. Insect/bee bricks would be concentrated around areas of nectar and pollen-rich planting within the Public Open Space, with further insect/bee bricks integrated into walls within private gardens or Public Open Space.

Amphibians

4.1.8 Habitat manipulation for reptiles (refer to Paragraph 4.1.9) would also ensure that the risk of killing/injuring common amphibians during Site clearance would be minimised. Proposed hibernacula would also be suitable for common amphibians.

Reptiles

4.1.9 Where reptiles were recorded (refer to Appendix 6), vegetation would be subject to habitat manipulation prior to Site clearance to prevent killing/injury of reptiles. This would involve two-stage cutting between late March and early October. The vegetation would first be cut to 150mm and then left for a week to allow reptiles to move into adjacent retained habitat. Grassland would then be cut to ground level to discourage individual reptiles from re-entering the Site. The topsoil would subsequently be stripped from the Site after a further week, rendering it unsuitable for reptiles. The EcoW would undertake a watching brief during the second cut and topsoil strip to search for any reptiles present. Ecological supervision of hedgerow removal would also be undertaken. Any reptiles found would be translocated by the EcoW to suitable retained habitat in the vicinity. These measures would be detailed in the CecoMP.

4.1.10 At least three hibernacula would be created, located within suitable habitat within Public Open Space, which would enhance the new and existing habitats on Site for reptiles. This would be specified in the CecoMP and LEMP

Birds

4.1.11 All tree, hedgerow and scrub removal would be undertaken outside of the main bird-breeding season (i.e., between mid-September and February) to ensure that there were no direct effects on nesting birds. If clearance, or conversion works to buildings, was required during the bird nesting season, the EcoW would first check the affected habitats for active nests. If any were found, the nest(s) and immediate surroundings would be left undisturbed until the eggs had hatched and young had fledged, or the breeding attempt was otherwise concluded i.e., nest abandoned/predated. The EcoW may establish a buffer zone around the nest (e.g., 5m) to minimise the risk of accidental damage / destruction.

4.1.12 A minimum of 30 Schwegler Type 1A swift boxes (or similar approved) would be incorporated into new buildings within the Site. These would be suitable for use by swift, which is an ‘Amber’ species of conservation concern, and can also be used by other declining urban species such as house sparrow, which is a ‘Red’ Priority Species. Boxes would be integrated into the walls of new buildings at a minimum height of 4m, ideally under the eaves or a gable end; the locations of boxes would be detailed in the CecoMP and relevant construction drawings.

4.1.13 A further ten Schwegler 1B nest boxes and ten Schwegler 2H nest boxes (or similar approved) would be installed on retained trees throughout the Site, including within the retained woodland. Approximate locations of boxes on trees would be detailed in the CecoMP; precise locations would be determined onsite by the EcoW during construction.

Hazel dormouse

4.1.14 Protection of retained hedgerows and broadleaved woodland will be maintained throughout construction; refer to Paragraph 4.1.3. All hedgerow and scrub removal would be undertaken under a Natural England Dormouse Mitigation Licence, obtained upon receipt of Reserved Matters Planning Consent. All mitigation would be detailed in the Application Method Statement and would include appropriate methodology and timing of hedgerow / scrub removal to avoid impacts on individual dormice. Hedgerow removal would be undertaken through either a one-stage or two-stage clearance process in order to minimise the risk to dormice:

- One-stage clearance: Clearance of hedgerow / scrub vegetation in September / October or April / May (outside of the breeding season and prior to hibernation) following a detailed hand-search.
- Two-stage clearance: The hedgerow and scrub sections would firstly be cut, using hand tools, to a minimum height of 150mm during winter (November to March inclusive) when dormice are likely to be hibernating at/below ground level; this would render the area unsuitable for dormice, encouraging them to move out of the affected area on emergence from hibernation in spring. The coppiced stumps would be removed from May onwards, when dormice are unlikely to be present at ground level. A suitable qualified ecologist would supervise both stages of hedgerow removal, and undertake a finger-tip search for dormice/ nests.

4.1.15 The Illustrative Layout Plan (Figure 2) and Ecological Constraints and Opportunities Plan (Figure 4) includes the provision of significant new native hedgerow, broadleaved woodland and scrub planting, and would include species of known benefit to dormice including hazel, hawthorn, blackthorn and spindle. Dormouse habitat would be provided at a minimum ratio of 2:1 (replacement: loss). In addition, twenty heavy-duty dormouse nest boxes would be provided within retained hedgerows and woodland prior to Site clearance; locations would be provided in the CEcoMP.

Badger

4.1.16 Update badger surveys would be undertaken prior to construction to confirm the status of setts within the Site. Where retention of setts is not feasible (given consideration of relevant technical constraints), a Natural England Badger Development Licence would be obtained prior to commencement of works, for any active setts likely to be damaged or disturbed during Site clearance/construction. All works would be undertaken in accordance with the Method Statement for the Licence. Requirements for a mitigation licence would be specified in the CEcoMP.

4.1.17 Exclusion Zones marked by post and rail fencing (or similar) would be set out at a 20m radius around any retained active badger setts prior to construction to avoid any accidental damage of these setts. Any landscape planting within 20m of any retained active/ partially-active setts would be undertaken using only hand tools under the supervision of the ECoW.

4.1.18 General construction management measures to minimise impacts on badgers would be adhered to during construction to protect badger welfare. Excavations and piping (>100mm in diameter) would be fenced/capped overnight to deter badgers from entering; excavations that cannot be

covered would have a means of escape for any animals that may fall in (e.g., sloping sides/ramps a maximum of 1:2 gradients). Fuel, oil and chemicals will be stored in secure sites within the construction compound, and no fires would be lit.

Bats

4.1.19 Prior to construction, an application for a Natural England Bat Mitigation Licence would be made to permit the lawful conversion of Tidcombe Hall and associated outbuildings, which have been identified as supporting day roosts for brown long-eared bat, common pipistrelle, soprano pipistrelle and lesser horseshoe bats, as well as a transitional roost, and potentially a hibernation roost, for lesser horseshoe bats. The Licence would be informed by up-to-date bat surveys to reconfirm the status of the roosts.

4.1.20 The application would detail all relevant mitigation measures in the Licence Method Statement, including a bespoke bat roost building within the northern Public Open Space, adjacent to the canal corridor, to compensate for the loss of the above roosts. The specifications of the new roost structure would follow guidance published in The Lesser Horseshoe Conservation Handbook (Schofield, 2008). This would be located within the Public Open Space along the northern boundary of the Site; refer to Figures 2 and 5 for potential approximate location. This position would allow roosting bats to forage and commute along the retained hedgerows, ensuring safe dispersal around the Site, as well as along the adjacent offsite canal corridor leading to offsite habitats. The replacement roost structure would enhance roosting habitat within the Site for bats, and would comprise the following:

- Dimensions of the roost would be approximately 6m long by 4m wide and 2.5m in height, with a ceiling with loft hatch leading into the void to allow access for monitoring.
- A pitched and covered roof in a waterproof layer (roofing felt and tiles/slate). Type 1F bitumen roofing would be used to allow purchase for roosting lesser horseshoe bats. Breathable roofing membranes would not be used under any circumstances.
- The dimensions of the access vent would be 300mm (w) x 200mm (h) and it would form a tunnel under the eaves into the roof void, suitable for lesser horseshoe bats. The tunnel would be lined at the bottom with lead flashing to discourage birds.
- Baffles would be provided to prevent light intrusion and to moderate air flows.

4.1.21 If the bat hibernation surveys of Tidcombe Hall confirm the presence of a lesser horseshoe bat hibernation roost within the underground parking area (refer to Paragraph 2.4.33), a replacement underground lesser horseshoe bat hibernation roost area would be incorporated into the design of the bespoke bat roost building. This would be confirmed within the EcIA Addendum Report (refer to Paragraph 1.3.8).

4.1.22 Building works would be carried out using a ‘soft demolition’ method under the supervision of the ‘Named Ecologist’ on the Mitigation Licence. This would be undertaken between mid-September and late October, outside of the main bat hibernation and maternity periods (and avoiding the nesting bird season). Prior to building works, a total of 15 Schwegler 2F-DFP bat boxes (or similar approved) would be installed on retained mature trees throughout the Site, including within the retained woodland. Any bats found during building works would be moved to one of the boxes by the Named Ecologist or accredited agent. The bespoke bat roost building would be completed before April of the following year i.e. prior to the next bat ‘active’ season.

4.1.23 In addition to bat boxes on trees, a minimum of 30 1FR Schwegler bat tubes (or similar approved) would be incorporated into new buildings within the Site to provide new roosting opportunities

for bats. Boxes would be integrated into the walls of new buildings at a minimum height of 4m, ideally under the eaves or a gable end; the locations of boxes would be detailed in the CEcoMP and relevant construction drawings.

4.1.24 During construction, all contractors' compounds would be located a minimum of 10m away from retained hedgerows, trees and woodland to minimise potential lighting and disturbance impacts on commuting and foraging bats. Between April and October inclusive, any construction lighting within the Site would be turned off prior to sunset; any security lighting would be positioned at low-height and motion activated on short-timers.

Hedgehog

4.1.25 Measures to protect badger welfare during construction would also apply to hedgehog; refer to Paragraph 4.1.18. Removal of habitat suitable for hedgehogs (i.e. hedgerows and scrub) would be preceded by a search by an experienced ecologist for sheltering hedgehogs. Any hedgehogs found would be moved to suitable adjacent retained habitat.

4.1.26 Hedgehog 'passes' would be created in garden close-board fencing immediately following installation to allow hedgehogs to move around the Site post-construction. Each gap would have a dimension of 13cm x 13cm and would either be cut out of the bottom of the fence, or a similar sized gap left at the end of a board. One hedgehog pass would be created in each boundary fence; this requirement would be set out in the CEcoMP and LEMP.

4.2 Avoidance, mitigation, compensation and enhancement post-construction

4.2.1 An Ecological Constraints and Opportunities Plan is provided in Figure 4.

Designated sites of nature conservation importance

4.2.2 No additional mitigation in respect of designated sites of nature conservation importance is considered necessary.

Habitats within the Site

4.2.3 New and retained hedgerows forming residential garden boundaries would be protected by a 1.8m post and wire mesh fence. The wire mesh would allow vegetation to grow through whilst also protecting the integrity of the developing/retained hedgerow. Relevant properties would also be subject to a restrictive covenant within their title deeds; this would restrict the permitted management to ensure that the integrity of hedgerows would be maintained.

4.2.4 Post-construction management of new and retained habitats would be specified in the LEMP, which would detail the management of these habitats for the first ten years post-construction. It would be reviewed and renewed for the next ten-year period in agreement with Mid Devon District Council.

Habitats adjacent to the Site

4.2.5 No mitigation is considered necessary during the post-construction phase.

Protected and notable species

Plants

4.2.6 Habitats will be managed in accordance with the LEMP, which would include habitat management measures which would promote floristic diversity within the Site.

Invasive / non-native plants

4.2.7 Post-construction management of Himalayan balsam, variegated yellow archangel, rhododendron and any other or any other Schedule 9 Species identified would be undertaken in accordance with the Method Statement(s) appended to the LEMP, as required.

Invertebrates

4.2.8 Habitats will be managed in accordance with the LEMP, which would include habitat management measures for the benefit of invertebrates. Insect / bee bricks incorporated into walls within the proposed residential development are designed to be maintenance-free and no management would be required.

Amphibians and reptiles

4.2.9 New landscape planting would provide suitable terrestrial habitat for amphibians and reptiles, with the SUDs potentially providing suitable breeding habitat for amphibians. At least three reptile hibernacula would be created within the Site, to provide additional habitat while new wildflower meadow grassland becomes established. These habitats and features would be managed in accordance with the LEMP, which would include management measures that would benefit amphibians and reptiles. This would include details of the timing and height of grassland management.

Birds

4.2.10 Measures to avoid impacts on nesting birds as a result of landscape management works would be included in the LEMP. Bird boxes on buildings are designed to be maintenance-free and no management of these would be required. Bird boxes on trees would be maintained and replaced as necessary; this would be specified in the LEMP.

Hazel dormouse

4.2.11 Habitat protection measures outlined in Paragraph 4.2.3 would protect dormouse habitat (hedgerows and woodland) from interference post-construction.

4.2.12 The LEMP would include appropriate long-term management of new and retained hedgerows, and new scrub and woodland habitat with the objective of increasing their habitat value for dormice. Retained hedges would be managed to maintain a minimum height of 3m with a maximum of 50% of hedges trimmed in a single year. This would maintain the availability of foraging habitat (i.e. fruiting/flowering shrubs) within the Site in all years. Hedgerow management would be undertaken between November and February i.e. during the dormouse hibernation period and outside of the breeding-bird period.

4.2.13 The dormouse nest boxes installed in retained hedgerows and woodland would be maintained in perpetuity and replaced if/when necessary. Dormouse monitoring would be undertaken, as required by the Natural England Dormouse Mitigation Licence.

Badger

4.2.14 Details of the management of habitats adjacent to any retained setts and the avoidance of associated disturbance actions would be set out in the LEMP. The lighting parameters set out in Paragraph 4.2.17 would avoid adverse effects on badger movement and foraging.

Bats

4.2.15 The bat roost building would be retained in perpetuity. Bat boxes within buildings are designed to be maintenance-free and no management would be required. Bat boxes on trees would be maintained and replaced as necessary; this would be specified in the LEMP.

4.2.16 The detailed design of public-realm lighting would seek to minimise the adverse effects on bats in accordance with current research and guidance (ILP 2018, Rowse *et al* 2016). Lighting would be avoided as far as possible within the Public Open Space (where health and safety considerations permit) to maximise the value of the retained and new habitats for light–averse bat species. Where essential, lighting would be the minimum necessary to meet public safety requirements and designed to direct light to discrete areas appropriate for the task and prevent spill on to adjacent habitats. The lighting design would consider the following characteristics.

- Narrow Spectrum lights with no UV content, e.g. warm white LED (up to 3000K).
- Variable lighting regimes (motion sensors or part night lighting) in areas close to watercourse and Project Site boundaries.
- Directional downlights - illuminating below the horizontal plane ideally at least 20o below the horizontal.
- Reducing the height of light units (whilst ensuring light does not spill above the horizontal plane).
- Use of fore/rear shields to restrict light direction.
- Avoidance of upward light (e.g. ground mounted floodlights up-lighting trees, buildings and vegetation).

4.2.17 Lighting proposals would be reviewed by a suitably qualified ecologist and would be subject to approval by Mid Devon District Council and / or Devon County Council.

4.3 Ecological monitoring

4.3.1 An Ecological Clerk of Works (ECoW) would be appointed to assist in the delivery of avoidance and mitigation during the pre-construction/construction period. This would be set out in the CEcoMP.

4.3.2 Post-construction monitoring of the retained, created, and enhanced habitats would be undertaken to ensure successful establishment and management; a monitoring protocol would be contained in the LEMP.

4.3.3 Monitoring of the bat roost building would be undertaken in accordance with the terms of the Natural England Bat Mitigation Licence. Monitoring of the dormouse boxes would be undertaken in accordance with the terms of the Natural England Dormouse Mitigation Licence.

4.4 Mechanisms for mitigation delivery

4.4.1 Preparation and implementation of the proposed CEcoMP, LEMP, CEMP and lighting strategy could be secured via a planning condition. These management documents would also detail responsibilities for the delivery of the construction and post-construction mitigation and management measures.

4.4.2 In addition, the Natural England Bat Mitigation Licence would ensure the delivery of the proposed bat-roost mitigation measures, and the Natural England Dormouse Mitigation Licence would ensure the delivery of the proposed dormouse-mitigation measures. The temporary or permanent closure of badger setts, if required, could be secured through a Natural England Badger Development Licence or Low Impact Class Licence; both are legally-binding documents.

5 Residual effects

5.1 Summary of residual effects

5.1.1 Table 5.1 below provides a summary of the ecological assessment and identifies the residual ecological effects arising from the proposed development.

5.2 Cumulative effects

5.2.1 There would be no likely significant effect on the integrity of any designated sites of nature conservation, either alone or in-combination with other planned development.

5.2.2 Effects on the majority of ecological receptors would be neutral or positive in the long-term and would not, therefore, contribute to cumulative effects with other developments. Long-term minor negative effects on badger and brown hare would be limited to the development Site and would not contribute to effects elsewhere. Overall, therefore, no cumulative effects with other developments are predicted.

5.3 Conclusion

5.3.1 The proposed development would have no residual negative effects on any designated sites of nature conservation importance alone, or in combination with any other proposed developments. There would be a long-term negative effect on badgers and brown hare at Sub-Parish level; this would not be significant. On the basis of the implementation of all avoidance, mitigation, compensation and enhancement measures identified in this report, all other long-term effects on habitats and species would be neutral or positive. Compliance with the legal protection of protected species could be achieved.

5.3.2 Overall, it is considered that the proposed development would accord with the ecological hierarchy to avoid, mitigate, compensate, and enhance. As calculated through the Defra Biodiversity Metric 4.0, the proposed development can demonstrate a Biodiversity Net Gain for both Habitat Units (+4.73%) and Hedgerow Units (+10.24%), via onsite habitat creation. It is considered that development could be delivered in accordance with current national and local biodiversity planning policy requirements (NPPF, 2023; Paragraph 180 and relevant policies in the Mid Devon Local Plan 2013-2033.

Table 5.1: Summary of ecological assessment

Ecological feature	Potential unmitigated impact	Avoidance, mitigation, compensation and enhancement	Residual effect
Designated sites of nature conservation importance			
Tidcombe Lane Fen SSSI	Potential pollution from construction and surface water runoff.	Construction to follow industry best practice and Defra pollution prevention guidelines; measures to be detailed in CEMP. Method Statements produced where appropriate. Flood Risk Assessment (AWP, 2023) confirms implementation of SuDS scheme would ensure that surface water runoff would not have a negative impact on the SSSI.	No adverse effect on integrity. Neutral; not significant.
Grand Western Canal LNR and CWS	Potential impacts from lighting, noise and air / water pollution (construction), recreational impacts and water pollution (post-construction).	Construction to follow industry best practice and Defra pollution prevention guidelines; measures to be detailed in CEMP. Method Statements produced where appropriate. Integrated SUDS features would attenuate stormwater runoff and prevent pollution post-construction. No mitigation required for recreational impacts; it is considered that existing management measures along the Grand Western Canal could accommodate increased numbers of visitors arising from the development.	No adverse effect on integrity. Neutral; not significant.
Habitats			
Habitats within the construction area including arable, hedgerow, poor semi-improved grassland, tall ruderal and scrub.	Removal through Site clearance.	Hedgerow removal minimised; retained hedgerows, woodland and trees protected in accordance with BS5837. Loss mitigated through new onsite habitat creation and enhancement in the medium-term. Management of habitats in accordance with LEMP.	Negative, medium-term effect at Sub-Parish level; not significant. Positive effect at Sub-Parish level in medium to long-term.
Retained habitats including trees, hedgerow, broadleaved woodland, ditch, stream and pond. Adjacent habitats	Potential impacts from air pollution, surface water run-off, artificial lighting and damage to tree RPZs during construction.	Protective fencing around woodland and retained hedgerows; all works undertaken in accordance with BS 5837:2012. Adherence to CEcoMP and CEMP including restrictions on construction lighting and best practice measures to avoid risk of pollution.	Neutral, not significant.

Table 5.1: Summary of ecological assessment

Ecological feature	Potential unmitigated impact	Avoidance, mitigation, compensation and enhancement	Residual effect
including a canal and agricultural land.	Potential damage / disturbance post-construction.		
Protected and notable species			
Plants	Loss of English bluebell and primrose within the Site from hedgerow removal.	Refer to above habitat avoidance, mitigation and compensation measures. Retained hedgerow and woodland would allow re-colonisation of English bluebell and primrose. Wildflower meadow, including wetland meadow, creation to increase botanical diversity within the Site. LEMP to provide framework for habitat management.	Negative, medium-term effect at Sub-Parish level; not significant. Positive effect at Sub-Parish level in long-term through creation of new habitats.
Invasive plants	Spread of Rhododendron, Himalayan cotoneaster and variegated yellow archangel.	Pre-construction update survey for invasive plants. Production of a Method Statement (MS) detailing steps to remove from Site and/or prevent from spreading further. MS to be appended to CEMP / CEcoMP and LEMP.	Neutral, not significant.
Invertebrates	Loss of habitat for common and widespread species. No significant effects on notable invertebrates predicted.	New habitats including wildflower meadow, scrub, woodland, hedgerows, SUDS and orchards would potentially benefit notable invertebrates. Provision of insect/ bee bricks within built development and green spaces.	Negative, medium-term effect at Sub-Parish level; not significant. Positive effect at Sub-Parish level in long-term.
Amphibians	Potential killing/injury during construction, damage of potential breeding site and loss of terrestrial habitat for common amphibians.	Habitat manipulation for reptiles (see below) would also minimise risk of killing / injury of amphibians. Landscape proposals would create new habitat including SUDS features (potential breeding habitat).	Negative short-term effect at Sub-Parish level, not significant. Positive effect at Sub-Parish level in medium to long-term.

Table 5.1: Summary of ecological assessment

Ecological feature	Potential unmitigated impact	Avoidance, mitigation, compensation and enhancement	Residual effect
Reptiles	Potential killing / injury of slow-worm and grass snake during Site clearance and loss of habitat.	Two-stage habitat manipulation undertaken prior to Site clearance. Landscape proposals would create new reptile habitat within the Site. Provision of hibernacula within POS.	Negative short-term effect at Sub-Parish level, not significant. Positive effect at Sub-Parish level in medium to long-term.
Birds	Damage / loss of suitable nesting and foraging habitat. Killing/injury of individual birds and their eggs. Disturbance during construction and operation. Damage to / destruction of nests.	Habitat clearance and building conversion works undertaken outside of main bird nesting season, or subject to pre-start check by suitably qualified ecologist. Refer also to above habitat avoidance, mitigation and compensation measures. Nesting habitat loss would be mitigated through habitat creation and the provision of bird boxes, incorporated into the fabric of buildings and on retained trees. LEMP to provide framework for habitat management.	Negative, medium-term effect at Sub-Parish level; not significant. Neutral effect at Sub-Parish level in long-term.
Hazel dormouse	Loss / fragmentation of dormouse habitat through hedgerow/scrub removal. Potential killing/injury of individuals during Site clearance. Disturbance through increased human presence and lighting. Increase in cat predation.	Application for a Natural England Dormouse Mitigation Licence. Hedgerow removal to follow methodology in Licence Method Statement. Refer also to above habitat avoidance, mitigation and compensation measures. Landscape proposal would create nesting, foraging and hibernation habitat. Retained hedgerows, scrub and woodland to be buffered from boundaries of residential plots. Nest boxes to be installed in retained habitats.	Negative, medium-term effect at Sub-Parish level, not significant. Neutral effect in the long-term.
Badger	Sett damage or destruction and killing or injury of badgers. Loss of foraging habitat. Entrapment / injury during construction. Habitat	Pre-construction survey for badgers to determine distribution and activity at setts in vicinity of construction area. Closure of setts undertaken under Natural England Badger Development Licence, if required.	Negative, long-term effect at Sub-Parish level; not significant.

Table 5.1: Summary of ecological assessment

Ecological feature	Potential unmitigated impact	Avoidance, mitigation, compensation and enhancement	Residual effect
	fragmentation, lighting and roads. Vehicle collisions / mortality.	Construction-management working methods implemented. New habitat creation suitable for badgers. Lighting design for public realm to minimise impacts on badgers and maintain dark corridors.	
Bats	Loss of brown long-eared bat, common pipistrelle, soprano pipistrelle and lesser horseshoe bat roosts during building conversion. Loss of commuting / foraging habitat and potential impacts from lighting during and post-construction.	Building conversion undertaken in accordance with a Natural England Bat Mitigation Licence, acquired prior to construction. Provision of bespoke bat roost building, and additional bat boxes on new buildings and retained trees. Restrictions on locations of construction compounds and lighting; post-construction lighting would be designed to ensure impacts on bats were minimised, including provision of >0.5lux 'dark corridor' and habitat corridors along boundary hedgerows to maintain permeability. Lighting plan subject to review by a qualified ecologist.	Negative short-term effect at Sub-Parish level, not significant. Neutral effect in the medium to long-term.
Other mammals	Loss of habitat for hedgehog and brown hare. Potential for direct effects (killing/ injury) on hedgehog during Site clearance. Fenced gardens could potentially impede the movement of hedgehogs across the Site. Construction likely to displace brown hare, if present.	Removal of suitable habitat preceded by a check for hedgehogs by a suitably qualified ecologist. Hedgehog passes created within new garden fences. Habitat loss would be mitigated through new habitat creation.	Hedgehogs: Negative, medium-term effect at Sub-Parish level, not significant. Neutral effect in medium-term onwards. Brown hare: Negative long-term effect at Sub-Parish level, not significant.

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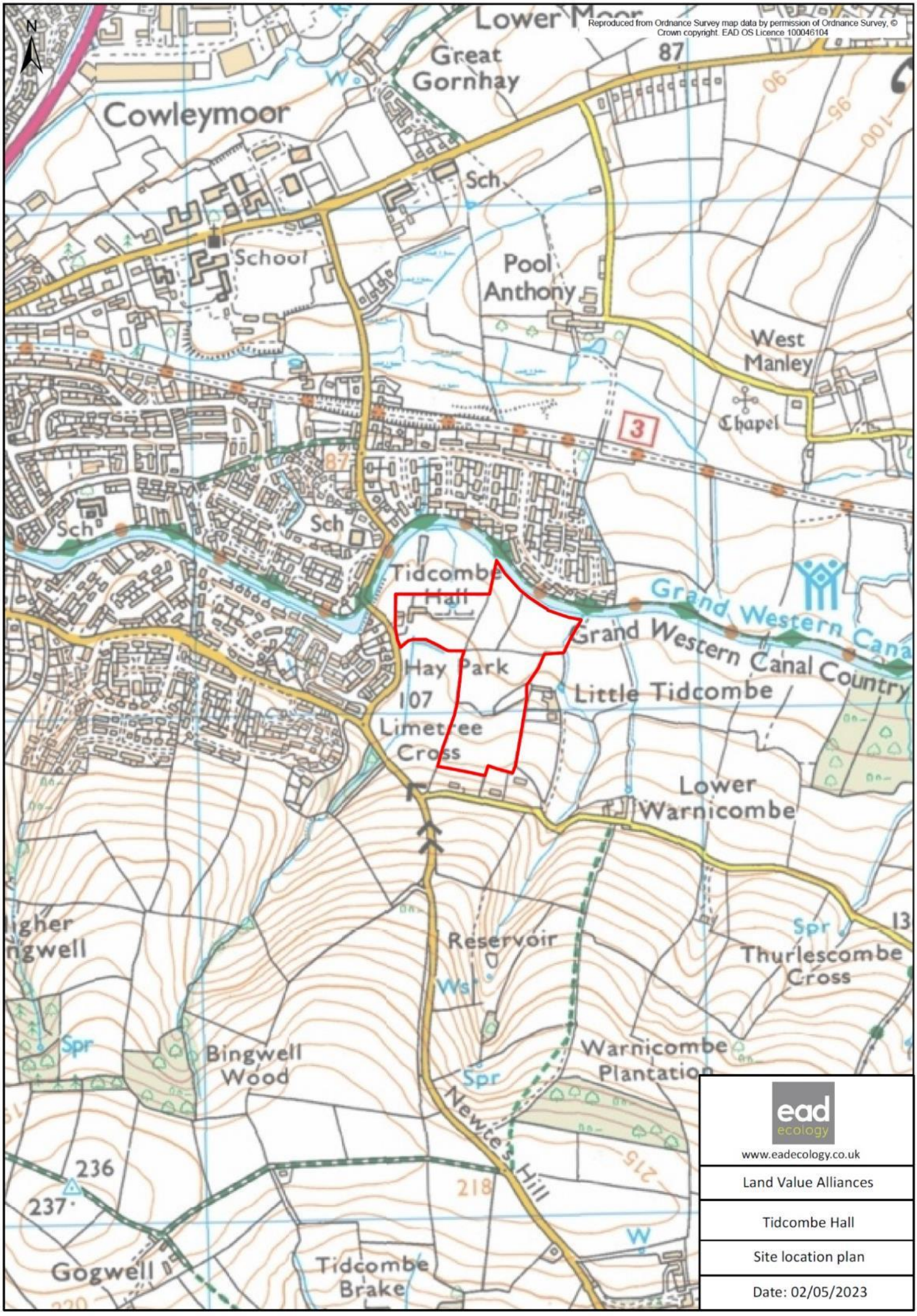
Figure 1: Site location plan



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Tidcombe Hall

Site location plan

Date: 02/05/2023

Figure 2: Illustrative layout plan

Tidcombe Hall, Tiverton

Illustrative layout

- Application boundary
- (1) Vehicular access from Tidcombe Lane
- (2) Restored Tidcombe Hall and entrance space
- (3) High quality courtyard development - inc sympathetic conversion of existing outbuildings
- (4) Existing driveway - cycle/ pedestrian access
- (5) Community orchard/growing areas
- (6) Growing area and parking (including EV charging)
- (7) Existing landscape entrance retained and enhanced
- (8) Primary access route
- (9) Courtyard housing
- (10) Existing trees and hedgerows retained and enhanced
- (11) Public open space - Parkland landscape and enhanced Grand Western Canal corridor, made up of a mix of wildflower planting, native hedgerow planting and native scrub species (including marginal planting in areas for SUDs)
- (12) Structured residential development - enabling high quality living environments and public realm
- (13) Low density courtyard style development - transitional development edge
- (14) Landscape buffer planting enhancing wildlife corridors
- (15) Opportunities for orchard tree planting
- (16) Proposed bat roost building
- (17) 10m wide dark crossing point over access road to allow for bat movement - Low lux levels, to be specified by ecologist

Note:

Bat and bird boxes to be included throughout development in a range of places, including trees and built form. To be confirmed and located in accordance with Ecologist recommendation.

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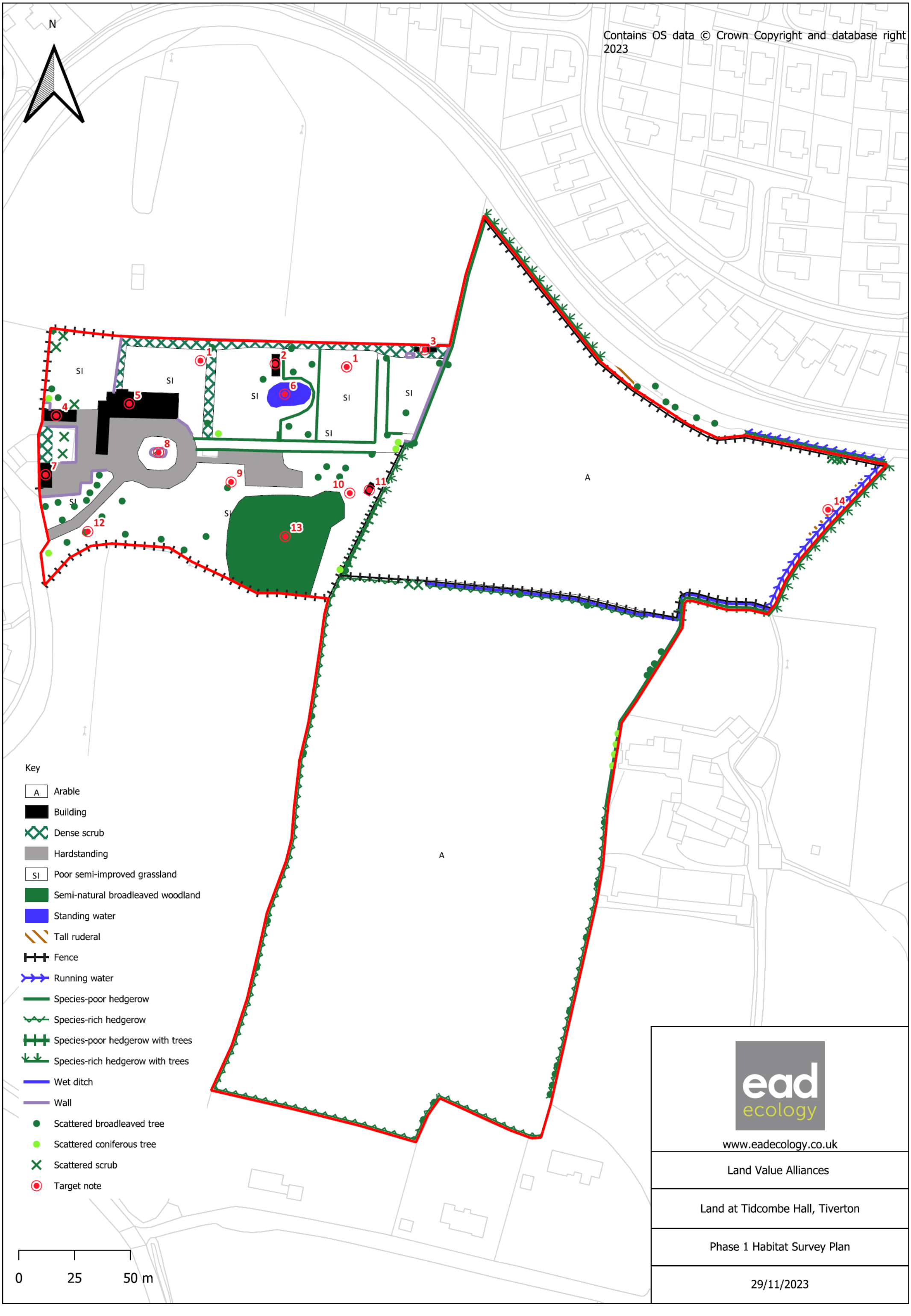
Figure 3: Phase 1 Habitat plan, target notes and photographs



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Land at Tidcombe Hall, Tiverton

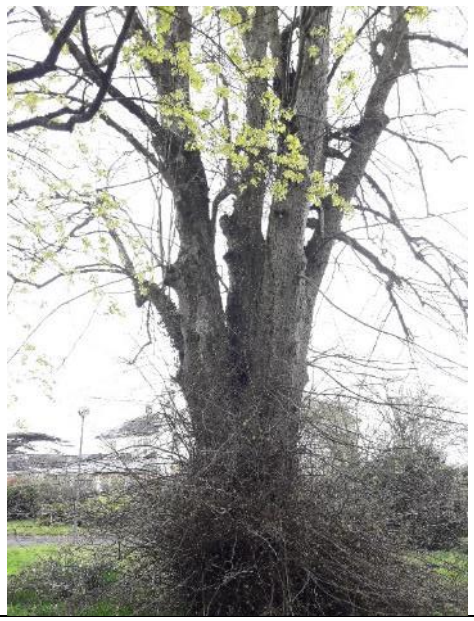
Phase 1 Habitat Survey Plan

29/11/2023

Target Notes	
Number	**Description**
1	Garden of Tidcombe Hall comprising species-poor semi-improved grassland, with laurel hedgerows and ornamental planting areas which have been colonised by scrub. 
2	Greenhouse covered with dense bramble scrub. 
3	Greenhouse and dilapidated wooden shed overgrown with bramble scrub. 

4	Derelict stone building with pitched, tiled roof and wooden beams. Open at one end and with holes in the doors and roof, and broken windows. 
5	Derelict residential dwelling - Tidcombe Hall. Pitched tiled roofs and holes in the soffit box. All windows and doors boarded up. 

6	Garden pond with emergent vegetation, including bog bean, bulrush, fool's water-cress and brooklime. 
7	Derelict stone garage with corrugated iron roof. Small gaps down the side of the door. 
8	Dry concrete-walled garden pond. 

9	Mature lime with several knot holes. 
10	Remnants of orchard – poor semi-improved grassland dominated by perennial rye-grass with scattered young and mature apple trees, as well as hazel coppice and a semi-mature ash. 
11	Derelict wooden shed with pitched felt roof and broken windows. Very open and light. 

12	Mature oak with many knot holes. 
13	Semi-natural broadleaved woodland with birch and ash in the canopy and hazel coppice, willow, field maple and holly in the understorey. Ground flora included cow parsley, bluebell, primrose, celandine, dog's mercury and lords-and-ladies. 

14	Stream approximately 1m wide with very shallow water. Emergent and bank-side vegetation included soft-rush and hemlock water-dropwort. 

Figure 4: Ecological constraints and opportunities plan

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Reptile mitigation strategy to include habitat manipulation of arable margins and translocation of grassland habitat, to be undertaken prior to the start of construction.

Bespoke bat roost building suitable for roosting lesser horseshoe, common pipistrelle, soprano pipistrelle and long-eared bats. Position would allow roosting bats to forage and commute along the retained hedgerows and canal corridor, ensuring safe dispersal around the Site.

Native scrub planting, wildflower meadow and wet meadow creation around the SUDs pond would offset habitat loss, and provide habitat for a range of notable species.

Conversion works to Tidcombe Hall and outbuildings would be undertaken in accordance with a Natural England Mitigation Licence, which would be aquired prior to construction.

Sensitve lighting strategy designed to maintain movement corridors for bats, badger, dormouse and hedgehog, inclusion provision of a minimum 10m wide >0.5lux dark crossing over the access road.

Woodland to be retained and buffered from development.

Loss of hedgerow to facilitate site access.

Two outlier badger setts recorded within the Site. Any setts that could potentially be damaged or disturbed during construction would be subject to a Natural England Badger Development Licence.
Retained setts would be buffered (minimum 20m) during construction.

Badger sett

The majority of the hedgerow network would be retained and buffered from development. During construction, no lighting would be left on overnight, and any security lighting would be low-height and motion activated on short-timers. The lighting design of the development would ensure that lighting impacts on bats were minimised.

Hedgerow and scrub clearance would be undertaken outside of the main bird-breeding season, or subject to a pre-clearance check by ecologist.

Native hedgerow creation, native scrub planting and wildflower meadow within the POS would offset habitat loss, and provide habitat for a range of species.

Loss of dormouse habitat (hedgerow and scrub) would be mitigated through native hedgerow and scrub planting. 20 dormouse boxes would also be installed in retained hedgerows / woodland.

Hedgehog passes would be created within new residential garden fences to allow movement post-development.

Creation of SuDs would provide potential suitable breeding/foraging habitat for amphibians and reptiles. At least three hibernacula to be installed in this area.

Vegetated landscape buffers would provide movement corridors and maintain permeability for a range of species.

Bat and bird boxes incorporated within the fabric of new buildings and installed on retained trees.
Insect / bee bricks to be incorporated within at least 20% of new buildings.

Habitat key

- Retained hedgerow
- Hedgerow lost
- Native species-rich hedgerow planting
- Retained pond
- Retained and enhanced woodland
- Orchard planting
- Wildflower grassland
- SUDs and wetland planting
- Native scrub / woodland planting

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Tidcombe Hall, Tiverton

Ecological constraints and opportunities plan

Date: 28/11/2023

Appendix 1: Wildlife legislation, species legislation and conservation status

Wildlife Legislation

Conservation of Habitats and Species Regulations 2017 (as amended)
These Regulations, also referred to as the 'Habitats Regulations', provide for the designation and protection of 'European Sites' (the National Site Network). They convey a statutory requirement for local planning authorities to undertake a 'Habitats Regulations Assessment' of the potential impacts of plans and projects, including development proposals, on European Sites. The provisions also include protection of 'European Protected Species' (EPS). Under the Regulations, local planning authorities have to consider three 'derogation tests' when deciding whether to grant permission for a development that affects an EPS, which are as follows:

- the development must be for over-riding public interest or for public health and safety;
- there are no satisfactory alternatives to the proposed development; and
- the favourable conservation status of the EPS concerned must be maintained.

Wildlife and Countryside Act 1981 (as amended)
This Act is the principal wildlife legislation in Great Britain. It includes provisions for important habitats to be designated and protected as Sites of Special Scientific Interest (SSSIs). Numerous plant and animal species, and the places that they use for shelter and protection, are also protected under the Act, including all birds, their nests and eggs.

Countryside and Rights of Way Act 2000
Referred to as the CROW Act, this legislation increases the protection of SSSIs and strengthens wildlife enforcement action. The Act also strengthens the protection of protected species under the Wildlife and Countryside Act 1981 (as amended) through the introduction of a new offence of 'reckless disturbance'.

Natural Environment and Rural Communities Act 2006
This Act places a duty on all public bodies and statutory undertakers to have due regard to the conservation of biodiversity in all their functions. It also requires the publication of a list of habitats and species of principal importance for the conservation of the biodiversity. This list, known as the Section 41 list, includes all Priority Habitats and Species of Principal Importance for the Conservation of Biodiversity in England.

Protection of Badgers Act 1992
This Act was introduced primarily for animal welfare reasons, as opposed to species conservation. It provides protection of badgers and their setts.

Hedgerow Regulations 1997 (as amended)
These Regulations include provisions for the protection of hedgerows and make it an offence to remove 'important' hedgerows without consent from the local planning authority. Where planning permission is granted for a development proposal, the removal of 'important' hedgerows is deemed to be permitted.

Species legislation and conservation status

Invertebrates
A number of UK invertebrates are protected under UK legislation, including the Wildlife and Countryside Act 1981 (as amended). In addition, numerous species are Priority Species.

Plants
All wild plants are protected against unauthorised removal or uprooting under Section 13 of the Wildlife and Countryside Act 1981 (as amended). Plants listed on Schedule 8 of the Act (e.g. stinking goosefoot, red helleborine, monkey orchid) are afforded additional protection against picking, uprooting, destruction and sale. Bluebell (*Hyacinthoides non-scripta*) is protected against sale only. Further species are also protected under the Conservation of Habitats and Species Regulations 2017.

Notable plant species include those that are listed as:

- Nationally vulnerable – A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A-E for Vulnerable, and is therefore considered to be facing a high risk of extinction in the wild (Cheffings C M & Farrell L (Eds) (2005) *Species Status No. 7 – The Vascular Plant Red Data List for Great Britain*, JNCC (online).
- Nationally scarce – species recorded in 16-100 hectads in Great Britain.
- Nationally rare – species occurring in 15 or fewer hectads in Great Britain.

Section 14 of the Wildlife and Countryside Act 1981 (as amended) prohibits the planting of certain invasive plant species in the wild, or otherwise causing them to grow there. Prohibited plants are listed on Part 2 of Schedule 9 and include Japanese knotweed, Himalayan balsam and giant hogweed.

Amphibians
There are seven native amphibian species present in Britain. These are afforded varying degrees of protection under UK legislation. Great crested newts (*Triturus cristatus*) and their habitat are afforded full protection under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CRoW) Act 2000 and the Conservation of Habitats and Species Regulations 2017 (as amended). Together, this legislation makes it illegal to:

- Deliberately capture, injure or kill a great crested newt.
- Damage or destroy any place used for shelter or protection by great crested newts, including resting or breeding places; or intentionally or recklessly obstruct access to such a place.
- Deliberately, intentionally or recklessly disturb great crested newts.

Great crested newt and common toad (*Bufo bufo*) are Priority Species.

Reptiles
Slow-worm (*Anguis fragilis*), viviparous/common lizard (*Zootoca vivipara*), adder (*Vipera berus*) and grass snake (*Natrix natrix*) are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional killing and injuring. These species are also Priority Species.

Birds
The bird breeding season generally lasts from March to early September for most species. All birds are protected under the Wildlife and Countryside Act (1981) (as amended) and the Countryside & Rights of Way (CRoW) Act 2000. This legislation makes it illegal, both intentionally and recklessly, to:

- kill, injure or take any wild bird.

- take, damage or destroy the nest of any wild bird while it is being built or in use.
- take or destroy the eggs of any wild bird.

Furthermore, birds listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) are protected against intentional or reckless disturbance whilst nest building and when at or near a nest containing eggs or young. Dependent young of Schedule 1 species are also protected against disturbance.

In addition to this legal protection, the leading governmental and non-governmental conservation organisations in the UK have reviewed the population status of the birds regularly found here and produced a list of birds of conservation concern. Of the 245 species assessed, 70 were placed on the Red List of high conservation concern, 103 on the Amber List of medium conservation concern and 72 on the Green List of low conservation concern:

- Red list species are those that are Globally Threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.
- Amber list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; and those with internationally important or localised populations.

Badgers

Badger (*Meles meles*) is a widespread and common species. However, they are legally protected under The Protection of Badgers Act 1992, due to animal welfare concerns. Under this legislation it is illegal to:

- Wilfully kill, injure, take, or cruelly ill-treat a badger, or attempt to do so.
- Intentionally or recklessly interfere with a sett by disturbing badgers whilst they are occupying a sett, 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”.

Bats

There are 18 species of bats found in the UK, 17 of which are known to breed here. The conservation status of these species is summarised in the table below:

Common name	Scientific name	IUCN Red List*	Priority Species
Greater horseshoe	*Rhinolophus ferrumequinum*	LC	Yes
Lesser horseshoe	*Rhinolophus hipposideros*	LC	Yes
Daubenton’s	*Myotis daubentonii*	LC	No
Brandt’s	*Myotis brandtii*	LC	No
Whiskered	*Myotis mystacinus*	LC	No
Natterer’s	*Myotis nattereri*	LC	No
Bechstein’s	*Myotis bechsteinii*	NT	Yes
Alcathoe bat	*Myotis alcathoe*	DD	No
Greater mouse-eared	*Myotis myotis*	LC	No
Common pipistrelle	*Pipistrellus pipistrellus*	LC	No
Soprano pipistrelle	*Pipistrellus pygmaeus*	LC	Yes
Nathusius’ pipistrelle	*Pipistrellus nathusii*	LC	No

Serotine	*Eptesicus serotinus*	LC	No
Noctule	*Nyctalus noctula*	LC	Yes
Leisler's	*Nyctalus leisleri*	LC	No
Barbastelle	*Barbastella barbastellus*	NT	Yes
Brown long-eared	*Plecotus auritus*	LC	Yes
Grey long-eared	*Plecotus austriacus*	LC	No

*IUCN categories: LC Least Concern, NT Near Threatened, DD Data Deficient

All bat species are afforded full protection under UK legislation, including the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Together, this legislation makes it illegal to:

- Deliberately capture, injure or kill a bat.
- Damage or destroy a bat roost; or intentionally or recklessly obstruct access to bat roosts.
- Deliberately, intentionally or recklessly disturb a bat, including in particular any disturbance which is likely:
- to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or
- in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

A bat roost is defined in the legislation as "any structure or place which a bat uses for shelter or protection". Roosts are protected whether or not bats are present at the time.

Otter

Otters (*Lutra lutra*) are fully protected under UK legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CRoW) Act 2000 and the Conservation of Habitats and Species Regulations 2017 (as amended). Together, this legislation makes it illegal to:

- Deliberately capture, injure or kill an otter.
- Damage or destroy any structure or place used for shelter or protection by an otter; or intentionally or recklessly obstruct access to such a place.
- Deliberately, intentionally or recklessly disturb an otter whilst it is occupying a structure or place which it uses for shelter or protection.

Otter is a Priority Species.

Water vole

Water vole (*Arvicola amphibious*) are afforded full protection under the Wildlife and Countryside Act 1981 (as amended), which make it illegal to:

- Kill, injure or take a water vole.
- intentionally or recklessly destroy, damage or obstruct access to any structure or place that is used by a water vole for shelter or protection.
- intentionally or recklessly disturb a water vole whilst it is in a place used for shelter or protection.

Water vole is a Priority Species.

Common/Hazel dormouse

The hazel dormouse (*Muscardinus avellanarius*) is fully protected under UK legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CRoW) Act 2000 and

the Conservation of Habitats and Species Regulations 2017 (as amended). Together, this legislation makes it illegal to:

- Deliberately capture, injure or kill a dormouse.
- Damage or destroy any structure or place used for shelter or protection by a dormouse; or intentionally or recklessly obstruct access to such a place.
- Deliberately, intentionally or recklessly disturb a dormouse whilst it is occupying a structure or place which it uses for shelter or protection.

Hazel dormouse is a Priority Species.

Appendix 2: National planning policy

National Planning Policy Framework (2031)

The National Planning Policy Framework (NPPF) includes the Government's policy on the protection of biodiversity through the planning system. The following policies are relevant to the Proposed Development:

174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *a) 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);*
- *b) 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;*
- *c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- *d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *e) 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*
- *f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

175. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

179. To protect and enhance biodiversity and geodiversity, plans should:

- *a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[1]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[2]; and*
- *b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

180. When determining planning applications, local planning authorities should apply the following principles:

[1] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

[2] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

a) *if significant harm to biodiversity 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;*
b) *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;*
c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[3] and a suitable compensation strategy exists; and*
d) *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.*

181. The following should be given the same protection as habitats sites:

a) *potential Special Protection Areas and possible Special Areas of Conservation;*
b) *listed or proposed Ramsar sites[4]; and*
c) *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.*

182. 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.

[3] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

[4] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.

Appendix 3: Local planning policy

Policy S1: Sustainable development priorities

The following strategic priorities outline what will need to be achieved to deliver the Vision and address the key issues that have been identified in Mid Devon. All development will be expected to support the creation of sustainable communities by: …

l) Minimising impacts on biodiversity and geodiversity by recognising the wider benefits of ecosystems, delivering natural environment objectives, providing a net gain in biodiversity and by the protection of international, European, national and local designated wildlife sites; …

Policy S9: Environment

Development will sustain the distinctive quality, character and diversity of Mid Devon's environmental assets and minimise the impact of development on climate change through:

a) High quality sustainable design which reinforces the character and distinctiveness of Mid Devon's historic built environment, mitigates and adapts to climate change and creates attractive places;

b) The efficient use and conservation of natural resources of land, water and energy, minimising pollution and preserving the quality and productivity of the best and most versatile agricultural land wherever possible;

c) The provision of measures to reduce the risk of flooding to life and property, requiring sustainable drainage systems including provisions for future maintenance, guiding development to locations of lowest flood risk by applying a sequential test where appropriate, and avoiding an increase in flood risk elsewhere;

d) Renewable energy development in locations where there is an acceptable local impact, including visual, on nearby residents, landscape character and wildlife, balanced with the wider sustainability benefits of renewable energy;

e) The preservation and enhancement of the distinctive qualities of Mid Devon's natural landscape, supporting opportunities identified within landscape character areas. Within the Blackdown Hills Area of Outstanding Natural Beauty, and within the setting of the Blackdown Hills Area of Outstanding Natural Beauty, and Exmoor and Dartmoor National Parks, the primary objective will be to protect the special qualities of that landscape and its setting;

f) The protection and enhancement of designated sites of international, national and local biodiversity and geodiversity importance. On both designated and undesignated sites, development will support opportunities for protecting and enhancing species populations and linking habitats. If significant harm resulting from development cannot be avoided impacts should be adequately mitigated. Compensation measures will only be considered where appropriate as a last resort; and

g) The preservation and enhancement of Mid Devon's cultural and historic environment, and the protection of sites, buildings, areas and features of recognised national and local importance such as listed buildings, conservation areas, scheduled monuments and local heritage assets.

Policy S10: Tiverton

Tiverton will continue to develop in a balanced way as a medium sized market town serving a rural hinterland in the central part of Mid Devon and to the north. The strategy will maintain its status as the largest urban area in Mid Devon and increase the self-sufficiency of the town and its area by improving access to housing, employment and services for its population and that of the surrounding rural areas. Proposals will provide for approximately 2,358 dwellings, of which 660 will be affordable, and 29,400 gross square metres of commercial floor space over the plan period.

The Council will guide high quality development and other investment to:

a) Manage the town centre so that economic success and heritage reinforce each other, promoting new homes, shops, leisure, offices and key town centre uses which contribute to vitality and viability, including an additional 7,000 square metres of gross commercial floorspace in accordance with the sequential approach in Policy DM15;

b) Enhance walking and cycling opportunities and bus services around the town, particularly improving access via these more sustainable modes to the town centre, Tiverton Parkway Station, Exeter and Taunton, and their interchange in the town centre;

c) Retain the green setting provided by the steep open hillsides, particularly to the west and south of the town and the historic parkland of Knightshayes to the north of the A361;

d) Protect the importance of Tidcombe Fen, other areas of biodiversity value and green infrastructure, supporting opportunities for enhancement;

e) Enhance the tourism and visitor role of the town and surrounding area; and

f) Support measures to reduce flood risk within Tiverton, working with natural processes wherever possible.

Policy DM26: Green infrastructure in major development

Major development proposals must demonstrate that green infrastructure will be incorporated within the site as follows:

a) Biodiversity mitigation, resulting in a net gain in biodiversity;

b) Flood and water resource management;

c) Green corridors and public rights of way to link the site to the wider GI network, provide walking and cycling opportunities and avoid habitat fragmentation; and

d) New green infrastructure such as the creation of native woodland where possible.

Where evidence demonstrates that meeting these criteria in full would render the development unachievable, the Council will balance the benefits of the development against the objectives of this policy. Where appropriate, the Council will seek contributions toward off-site green infrastructure where on-site green infrastructure is unfavourable.

Policy DM27: Protected landscapes

Development proposals affecting the Blackdown Hills Area of Outstanding Natural Beauty, Dartmoor National Park, Exmoor National Park and the North Devon Biosphere Reserve must demonstrate that:

a) Cultural heritage and the character, appearance, setting and other special qualities of the landscape will be conserved or, where possible, enhanced; and

b) Biodiversity will be conserved and enhanced where possible through improved linking of habitats, appropriate landscaping and habitat creation.

Major developments within or adjoining the Area of Outstanding Natural Beauty and Dartmoor or Exmoor National Parks will only be permitted in exceptional cases.

Policy DM28: Other protected sites

Where development proposals would lead to an individual or cumulative adverse impact on Sites of Special Scientific Interest, ancient woodland, ancient trees, Regionally Important Geological Sites, County Wildlife Sites, Local Nature Reserves or priority habitats defined under the UK and Devon Biodiversity Action Plans, the Council will balance the overall benefits of the proposal against the impact. Sufficient information must be provided for the Council to assess the significance of the impact against the importance of the protected site and the species which depend upon it. Planning permission will be granted where:

a) The benefits of and need for the development clearly outweigh the direct and indirect impact to the protected site and the ecosystem services it provides;

b) The development could not be located in an alternative, less harmful location; and

c) Appropriate mitigation measures have been put in place. Where mitigation measures are not possible compensatory measures in some cases may be considered appropriate.

Where development proposals are likely (leaving aside mitigation measures) to have a significant effect on a European site (as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017), an appropriate assessment will be required. In such cases, planning permission will be refused unless it has been ascertained that with mitigation measures in place the development will not adversely affect the integrity of the site.

Appendix 4: Botanical species list

Scientific Name	Common Name
Trees and shrubs	
Acer campestre	Field maple
Acer pseudoplatanus	Sycamore
Betula pendula	Silver birch
Corylus avellana	Hazel
Cotoneaster spp.	Cotoneaster species
Crataegus monogyna	Hawthorn
Cupressus × leylandii	Leyland cypress
Fagus sylvatica	Beech
Fraxinus excelsior	Ash
Ilex aquifolium	Holly
Lonicera periclymenum	Honeysuckle
Malus x domestica	Apple
Prunus laurocerasus	Cherry laurel
Prunus spinosa	Blackthorn
Quercus spp.	Oak
Rosa spp.	Rose species
Rubus fruticosus agg.	Bramble
Salix cinerea	Grey willow
Salix spp.	Willow species
Sambucus nigra	Elder
Tilia spp.	Lime species
Ulmus spp.	Elm species
Herbs and ferns	
Achillea millefolium	Yarrow
Aegopodium podagraria	Ground elder
Alchemilla mollis	Lady's mantle
Anthriscus sylvestris	Cow parsley
Apium nodiflorum	Fool's watercress
Arum maculatum	Lords-and-ladies
Athyrium filix-femina	Lady fern
Bellis perennis	Common daisy
Cardamine hirsuta	Bittercress
Cardamine pratensis	Cuckoo flower
Cerastium fontanum	Common mouse-ear
Cirsium arvense	Creeping thistle
Cirsium vulgare	Spear thistle
Digitalis purpurea	Foxglove
Dryopteris dilatata	Broad buckler-fern
Ficaria verna	Lesser celandine
Fumaria officinalis	Common fumitory
Galium aparine	Cleavers
Geranium robertianum	Herb-Robert
Geum urbanum	Wood avens
Glechoma hederacea	Ground ivy

Scientific Name	Common Name
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Hyacinthoides non-scripta	Common bluebell
Hypochaeris radicata	Common cats-ear
Lamiastrum galeobdolon subsp. argentatum	Variegated yellow archangel
Lemna spp.	Duckweed species
Menyanthes trifoliata	Bogbean
Mercurialis perennis	Dog's mercury
Oenanthe crocata	Hemlock water dropwort
Plantago lanceolata	Ribwort plantain
Polypodium vulgare	Common polypody
Polystichum setiferum	Soft-shield fern
Primula vulgaris	Primrose
Ranunculus Acris	Meadow buttercup
Ranunculus repens	Creeping buttercup
Rumex obtusifolius	Broad-leaved dock
Senecio vulgaris	Groundsel
Silene dioica	Red campion
Stellaria holostea	Greater stitchwort
Stellaria media	Common chickweed
Synonyms aspidium filix-mas	Male fern
Taraxacum spp.	Dandelion agg.
Teucrium scorodonia	Wood sage
Trifolium pratense	Red clover
Typha latifolia	Bulrush
Urtica dioica	Common nettle
Veronica beccabunga	Brooklime
Veronica chamaedrys	Germander speedwell
Veronica persica	Common field-speedwell
Grasses, sedges and rushes	
Alopecurus pratensis	Meadow foxtail
Anthoxanthum odoratum	Sweet vernal grass
Festuca spp.	Fescue species
Holcus lanatus	Yorkshire fog
Juncus effusus	Soft rush
Lamium album	White dead-nettle
Lolium perenne	Perennial ryegrass
Luzula campestris	Field woodrush
Poa annua	Annual meadow grass
Poa pratensis	Smooth meadow grass

Appendix 5: Hedgerow survey results

Hedgerow survey

1 Methodology

The hedgerow survey was undertaken on 4 June 2018 in accordance with survey guidelines published by Defra (2007). The survey focused on the ecological component of the assessment; no cultural heritage aspects were assessed. For each hedgerow, a 30m section(s) was surveyed in detail, identifying any woody and woodland indicator species present. Other features, such as the presence of a bank, gaps or hedgerow trees were also noted. Each hedgerow was then assessed against the criteria set out in the Hedgerow Regulations to establish whether or not it was 'Important'.

2 Limitations

The Extended Phase 1 Habitat Survey of the Site was updated in April 2023 and did not identify any significant habitat changes to the previous surveys undertaken in May 2018 and March 2020; therefore, the June 2018 hedgerow survey results are considered valid.

3 Results

Table A5.1 below details the results of the hedgerow survey. Hedgerows within the grounds of Tidcombe Hall and those adjacent to residential dwellings were exempt from the survey and were not assessed. Due to the confirmed presence of hazel dormouse, a protected species (refer to Appendix 8), all six native hedgerows that were subject to assessment were considered to be ecologically 'important'. The locations of all hedgerows are shown on Figure A5.1.

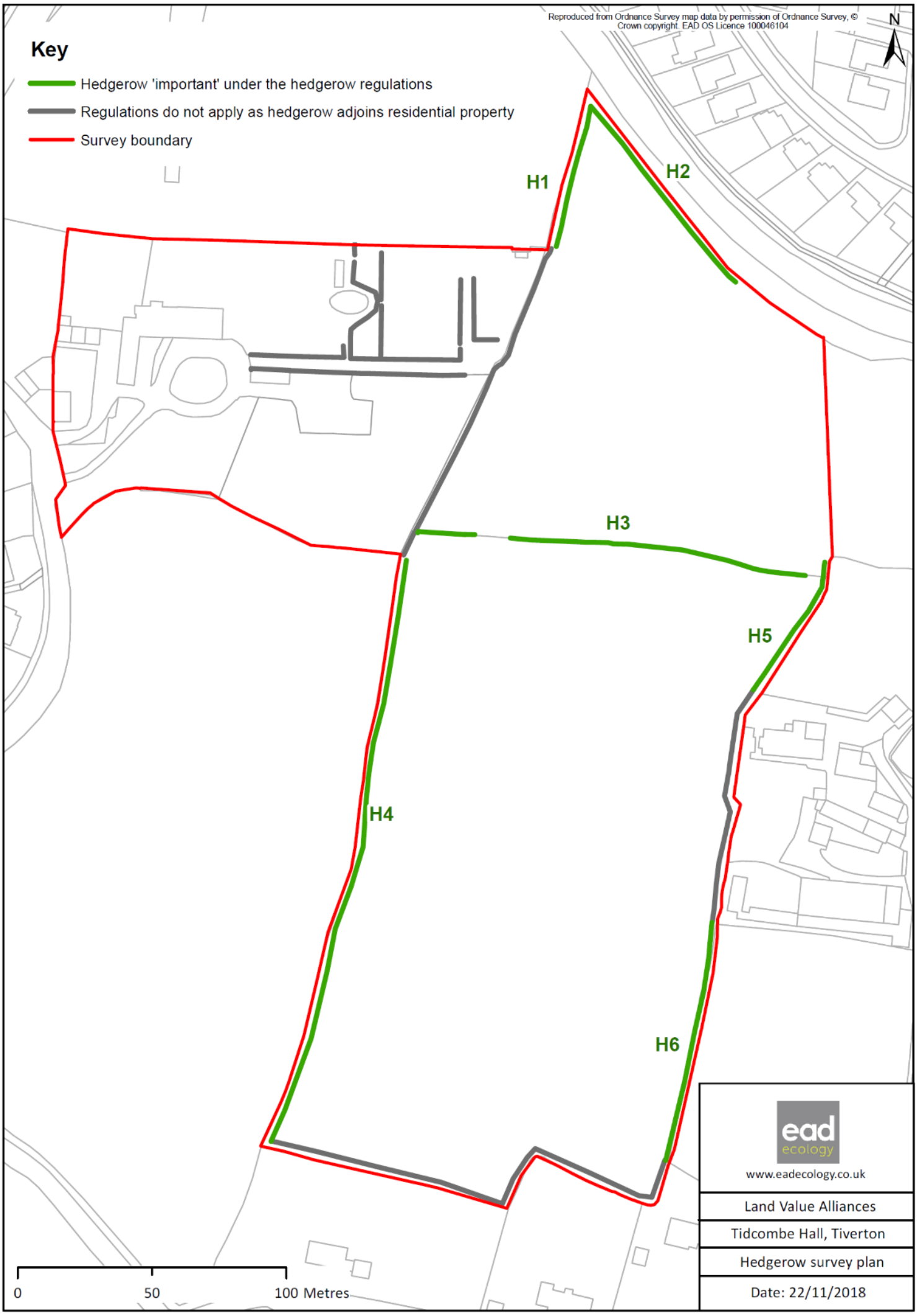
4 References

Defra (2007) *Hedgerow Survey Handbook - a standard procedure for local surveys in the UK.* Defra, London.

Table A5.1 Hedgerow survey results

Hedgerow number (refer to Hedgerow survey plan)	Length (m approx.)	Presence of protected/notable species	Parallel to right of way	Gaps <10% hedgerow length	Parallel to hedgerow within 15m	Wall/bank over half length of hedgerow	Ditch over half length of hedgerow	Number of connections	At least one standard tree per 50m length	Woody species	Average number of woody species in 30m length	Woodland indicator species	Number of woodland indicator species	Important
H1	69m	Hazel dormouse	No	Yes	No	Bank	No	3	No	Elder, hazel, elm	3	Male fern, wood avens, English bluebell	3	Yes
H2	85m	Hazel dormouse	No	Yes	No	Bank	No	2	Yes	Willow sp., alder, hazel, ash, rose sp., hawthorn	6	None recorded	0	Yes
H3	156m	Hazel dormouse	No	Yes	No	Bank	Yes	4	Yes	Hawthorn, elm, hazel, elder, ash, rose sp., oak, holly, field maple	6	Herb-Robert, broad buckler fern, lady fern, male fern	4	Yes
H4	237m	Hazel dormouse	No	Yes	No	Bank	No		No	Elm, elder, hawthorn, hazel, blackthorn, ash, holly, rose sp.,	4.6	None recorded	0	Yes
H5	51m	Hazel dormouse	No	Yes	No	Bank	No		Yes	Hawthorn, holly, hazel, elm, elder, ash	6	None recorded	0	Yes
H6	88m	Hazel dormouse	No	Yes	No	Bank	No		Yes	Hazel, holly, hawthorn, elm, elder, blackthorn, ash	7	Wood avens	1	Yes

Figure A5.1: Hedgerow survey plan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N
Key
Hedgerow 'important' under the hedgerow regulations
Regulations do not apply as hedgerow adjoins residential property
Survey boundary
H1
H2
H3
H4
H5
H6
0
50
100 Metres
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Land Value Alliances
Tidcombe Hall, Tiverton
Hedgerow survey plan
Date: 22/11/2018

Appendix 6: Invasive plant survey results

1 Methodology

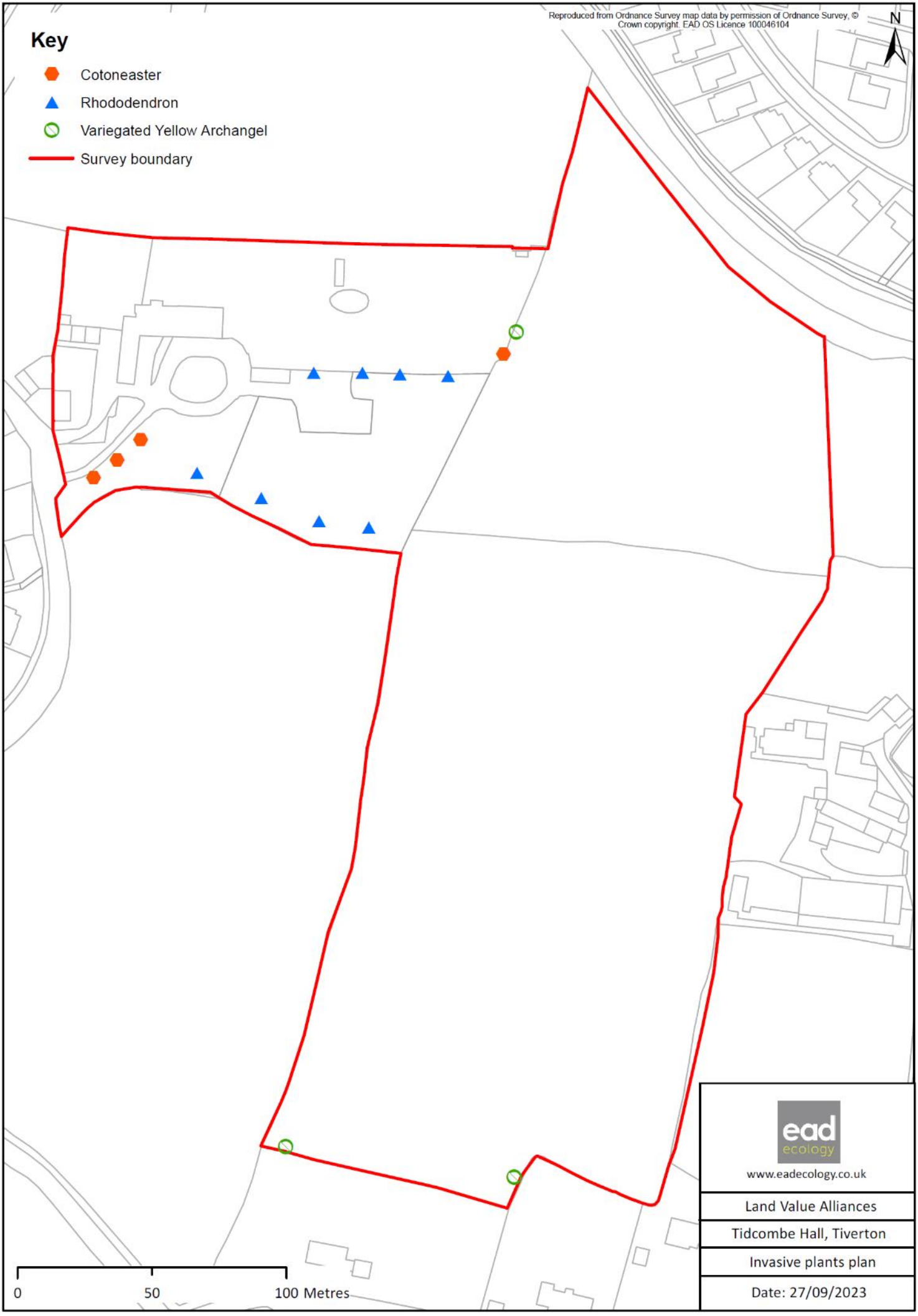
The invasive species survey was undertaken on 4 June 2018 and updated on 13 June 2023, and involved surveying the Site for invasive plant species, including those identified in the Wildlife and Countryside Act 1981 (as amended) Part 2 of Schedule 9 such as Japanese knotweed, Himalayan balsam and giant hogweed.

2 Results

The invasive species survey identified cotoneaster and variegated yellow archangel within the Site. Cotoneaster was present in the grounds of Tidcombe Hall, although this could not be identified to species level at the time of survey. Variegated yellow archangel was identified in two locations; to the east of Tidcombe Hall garden and on the southern boundary of the Site (refer Figure A6.1). Variegated yellow archangel and some cotoneaster species are listed under Schedule 9 of the WCA 1981 (as amended).

3 References

Defra (2007) *Hedgerow Survey Handbook - a standard procedure for local surveys in the UK*. Defra, London.


Reproduced from Ordnance Survey map data by permission of Ordnance Survey, © Crown copyright. EAD OS Licence 100046104
N
Key
Cotoneaster
Rhododendron
Variegated Yellow Archangel
Survey boundary
0
50
100 Metres
ead ecology
www.eadecology.co.uk
Land Value Alliances
Tidcombe Hall, Tiverton
Invasive plants plan
Date: 27/09/2023

Appendix 7: Reptile survey results

Reptile survey results

1 Methodology

A reptile survey was undertaken according to standard methodology (English Nature 1994; Froglife 1999). 94 artificial refuges (0.5m x 0.5m roofing felt tiles) were deployed on 24 April 2023 and checked on seven occasions in appropriate weather conditions in May and June 2023.

2 Limitations

There were no limitations to the reptile survey.

3 Results

Survey results are provided in Table A7.1 with locations shown on the Figure A7.1.

Table A7.1 Reptile survey results

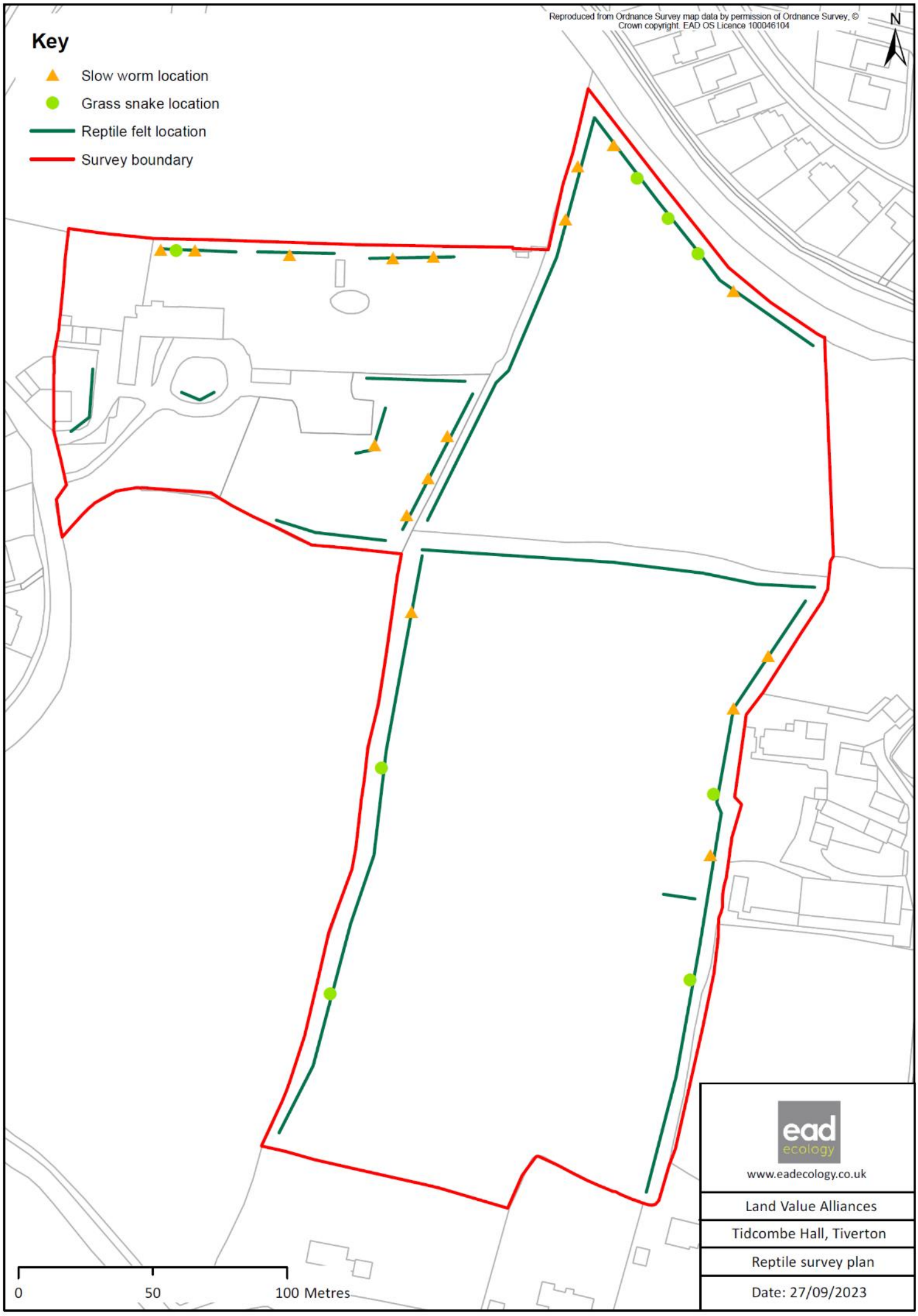
Visit number	Date	Start Time	Temp ('C)	Cloud cover	Wind force	Results
1	11.05.23	14:00	14	5/8	0-1	6 slow worm (1 male, 4 female, 1 juvenile) and 1 juvenile grass snake
2	18.05.23	11:00	17	7/8	0	11 slow worm (1 male, 2 female, 8 juvenile) and 3 grass snakes (2 adult and 1 juvenile)
3	23.05.23	13:55	18	8/8	2	15 slow worm (2 male, 4 female, 9 juvenile) and 7 grass snakes (2 adult and 1 juvenile)
4	31.05.23	9:30	13	8/8	3	11 slow worm (3 male, 4 female, 7 juvenile) and 1 adult grass snake
5	13.06.23	09:00	20	0/8	1	12 slow worm (2 male, 4 female, 6 juvenile) and 2 grass snakes (1 adult and 1 juvenile)
6	19.06.23	08:30	17	6/8	1	5 slow worm (2 male, 3 juvenile) and 1 juvenile grass snake
7	21.06.23	09:15	18	3/8	1	26 slow worm (6 male, 10 female, 10 juvenile) and 1 adult grass snake)

4 References

English Nature, (1994). *Species Conservation Handbook*. JNCC, Peterborough.

Froglife (1999). *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10*. Froglife, Halesworth.

Figure A7.1: Reptile Survey Plan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N
Key
Slow worm location
Grass snake location
Reptile felt location
Survey boundary
0
50
100 Metres
www.eadecology.co.uk
Land Value Alliances
Tidcombe Hall, Tiverton
Reptile survey plan
Date: 27/09/2023

Appendix 8: Hazel dormouse survey results

Dormouse survey results

1 Methodology

The dormouse survey was undertaken following standard methodology (Bright et al. 2006) and under a Natural England dormouse survey licence. Dormouse nesting tubes were installed within hedgerows and scrub on 24.04.23 and surveys were subsequently completed once a month until September. 52 dormouse nest tubes were installed, giving an index score of 20, the suggested minimum index score for adequate survey effort is 20 (Chanin & Woods 2003).

2 Limitations

There were no limitations to the dormouse survey.

3 Results

Dormice or dormouse nests were recorded in nests tubes during each survey month, with a total of nine dormouse nests recorded; refer to Table A8.1 for survey conditions. Refer to the Dormouse Plan for the location of dormouse nesting tubes.

Table A8.1 Dormouse survey results

Date	Results
23.05.23	One active dormouse and a nest recorded within a nest tube.
19.06.23	Three empty dormouse nest tubes recorded.
25.07.23	Two empty dormouse nests and one active nest with at least 2 dormice present.
28.08.23	Four empty nests, and one active nest with one adult dormouse present.
21.09.23	Six empty nests and one active nest with a juvenile dormouse present.

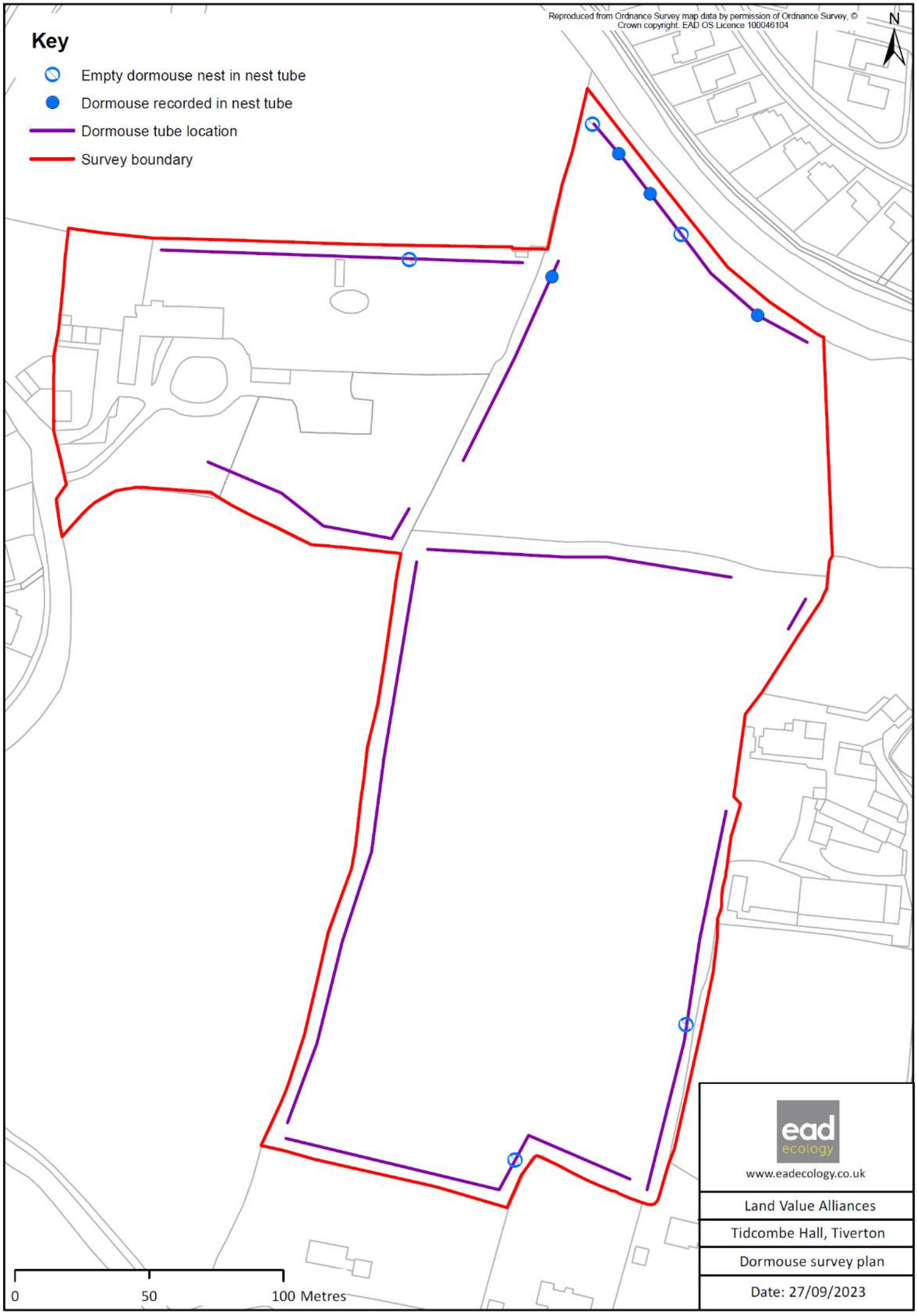
4 References

Bright, P., Morris, P and Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook 2nd edition.* English Nature, Peterborough.

Chanin, P & Woods, M (2003). *Surveying dormice using nest tubes. Results and experiences from the South West Dormouse Project.* English Nature Research Report No. 5.

English Nature (2004) *Species Conservation Handbook.* English Nature, Peterborough

Figure A8.1: Hazel dormouse survey plan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N
Key
Empty dormouse nest in nest tube
Dormouse recorded in nest tube
Dormouse tube location
Survey boundary
0
50
100 Metres
ead ecology
www.eadecology.co.uk
Land Value Alliances
Tidcombe Hall, Tiverton
Dormouse survey plan
Date: 27/09/2023

Appendix 9: Badger survey results

Badger survey

1 Methodology

A badger survey was undertaken in accordance with the Mammal Society publication 'Surveying badgers' (Harris et al, 1989). A search for badger setts and other badger activity (e.g. hairs, pathways, latrines, and foraging signs) was carried out within the Site and surrounding area (30m from Site boundary where access allowed) on 24 April 2023.

2 Limitations

There were no limitations to the badger survey.

3 Results

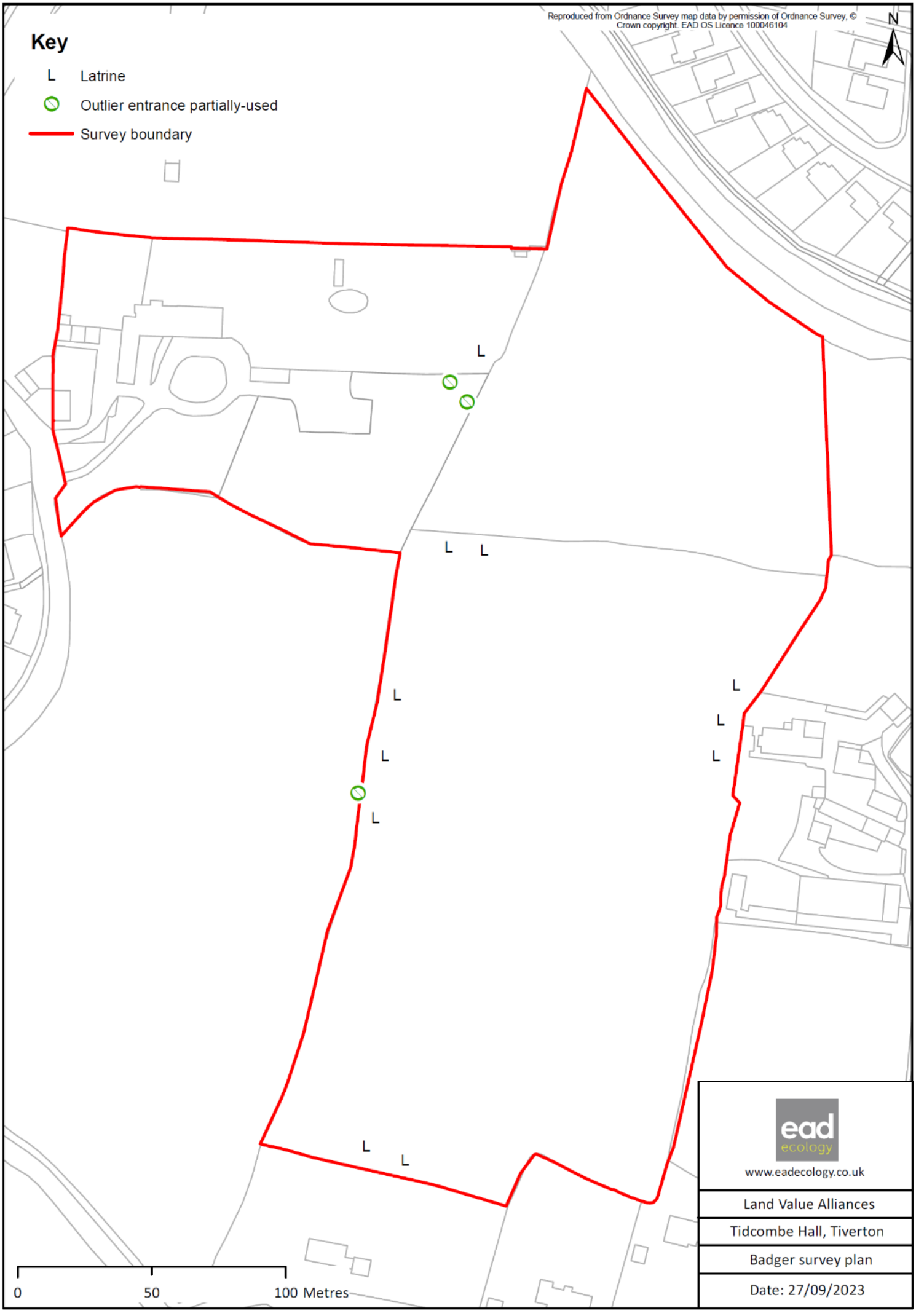
An active outlier badger sett comprising two entrance holes was recorded within the grounds of Tidcombe Hall, and one further single-entrance, active outlier sett was recorded in the eastern boundary of the southern agricultural field; refer to the Badger Survey Plan.

Other evidence of badger activity within the Site was also recorded, including prints, feeding signs, latrines and paths. Habitats within the Site provided suitable foraging habitat for badger.

4 References

Harris, S, Cresswell P & Jeffries D (1989) *Surveying Badgers.* The Mammal Society, London

Figure A9.1: Badger survey plan


Key
Latrine
Outlier entrance partially-used
Survey boundary
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N
0
50
100 Metres
ead ecology
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Land Value Alliances
Tidcombe Hall, Tiverton
Badger survey plan
Date: 27/09/2023

Appendix 10: Bat activity survey results

Bat activity survey (2018)

1 Methodology

The bat activity survey unertaken in 2018 covered a wider survey area than that surveyed in 2023; this relates to changes in the application boundary over time.

The bat activity survey comprised two elements: transect survey and static detector survey. Transect surveys were carried out on a monthly basis and four static detectors were deployed within the surveys area for at least five nights per month between May and October 2018 in accordance with BCT guidelines (Collins [ed.] 2016). The survey was undertaken to determine the use of the Site by bats by identifying the species present, their commuting routes and key foraging areas.

Transect survey

For each monthly transect survey, two surveyors walked one of two, predetermined transect routes within the survey boundary (refer to Figure A10.1). The route contained six sample points where the number of bat calls was recorded over a three-minute period and observations were made of bat behaviour and flight direction where possible. The starting point of the transect and direction in which it was walked was varied between surveys to reduce bias. Surveys began at sunset and lasted at least two hours. The transect was walked, and each sample point sampled, at least once per survey visit. Surveyors were equipped with Anabat Express and Batbox Duet bat detectors in order to record any echolocation calls for subsequent analysis. A desk-based analysis of these recordings was subsequently undertaken using the software application 'AnalookW' and relevant literature (Russ 2012). A Bat Activity Index (BAI) was calculated for the transect sample point data, based on the number of bat registrations per minute.

Static detector survey

Four static bat detectors (Anabat Express detectors) were placed in separate locations within the survey area for at least five nights per month between May and October 2018. Analysis was undertaken following the same technique used for the bat transect survey data. A sufficient volume of data was collected to estimate relative bat activity, which was done by dividing the number of bat registrations by unit of time (in this case, per night). This provided a quantitative comparison of bat activity between species, locations and months.

2 Limitations

Due to late commission, no bat activity surveys were undertaken in April. However, April is outside of the bat maternity period and is generally a period of lower activity for bats, and therefore it was considered that the survey effort was adequate and this was not considered to pose a significant limitation.

During October 2018, the static detector located at position 4 had an electronic failure, resulting in only four nights of data being recorded. This is not considered to be a significant limitation given that detectors were regularly deployed for more than five nights (as per BCT guidelines, (Collins [ed.] 2016)).

3 Results

Transect survey

At least 10 bat species were recorded during the transect and static detector surveys. Species name abbreviations used in the results hereafter are provided in Table A10.1.

Table A10.1: Species recorded during bat activity surveys

Common name	Scientific name	Species code
Common pipistrelle	*Pipistrellus pipistrellus*	Pp

Table A10.1: Species recorded during bat activity surveys

Common name	Scientific name	Species code
Soprano pipistrelle	*P. pygmaeus*	Ppyg
Nathusius' pipistrelle	*P. nathusii*	Pn
Lesser horseshoe bat	*Rhinolophus hipposideros*	LHS
Greater horseshoe bat	*R. ferrumequinum*	GHS
Long-eared bat species	*Plecotus sp.*	Pl sp.
Noctule	*Nyctalus noctula*	Nn
Nyctalus sp.	*Nyctalus sp.*	Nysp
Serotine	*Eptesicus serotinus*	Es
Nyctalus sp. or serotine	*Nyctalus/Eptesicus sp.*	Ny/Es
Barbastelle	*Barbastella barbastellus*	Bb
Myotis species	*Myotis sp.*	My sp.

Weather conditions during the transect surveys are provided in Table A10.2.

Table A10.2. Weather during bat activity surveys

Survey number	Date	Start – End Times	Sunset	Cloud (Octas) start / end	Wind start / end	Temp (^{0}C)
1	30.05.18	21.16 – 23.16	21.16	8/8 / 8/8	Force 0-1 / Force 0	16 / 14
2	25.06.18	21.32 – 23.27	21.32	2/8 / 8/8	Force 0-1 / Force 0-1	19 / 16
3	12.07.18	21.25 – 23.25	21.25	1/8 / 0/8	Force 1 / Force 1	19 / 17
4	15.08.18	20.36 – 22.36	20.36	8/8 / 2/8	Force 1-2 / Force 0-1	19 / 17
5	13.09.18	19.34 – 21.34	19.34	7/8 / 7/8	Force 0-1 / Force 0-1	13 / 11
6	11.10.18	18.30-20.30	18.30	3/8 / 7/8	Force 0 / Force 0	12 / 12

A total of 547 bat calls from a minimum of six species were recorded at sample points during the seven transect surveys (refer to Table A10.3 and Graph A10.1). Of these calls, the majority (56%) were from common pipistrelle, 26% of calls were from soprano pipistrelle, 8% were from noctule and 7% were from myotid bats. The remaining c.3% of calls were undetermined pipistrelle species, long-eared bat species, Nyctalus sp. and serotine or Nyctalus sp.. The highest numbers of bat calls were recorded at sample points H and J near the northern survey boundary (refer to Figure A10.1). Bat activity was lowest at sample point B, located in the centre of the large field to the west of the the survey area, where occasional common pipistrelle passes and a single long-eared bat species was recorded.

In terms of monthly variation, the highest number of bat calls at sample points (159) was recorded in October and the lowest (58) in July and September. Outside of sample points, generally low to moderate levels of common pipistrelle activity were recorded at locations across the survey area. Occasional passes from soprano pipistrelle and noctule were also recorded.

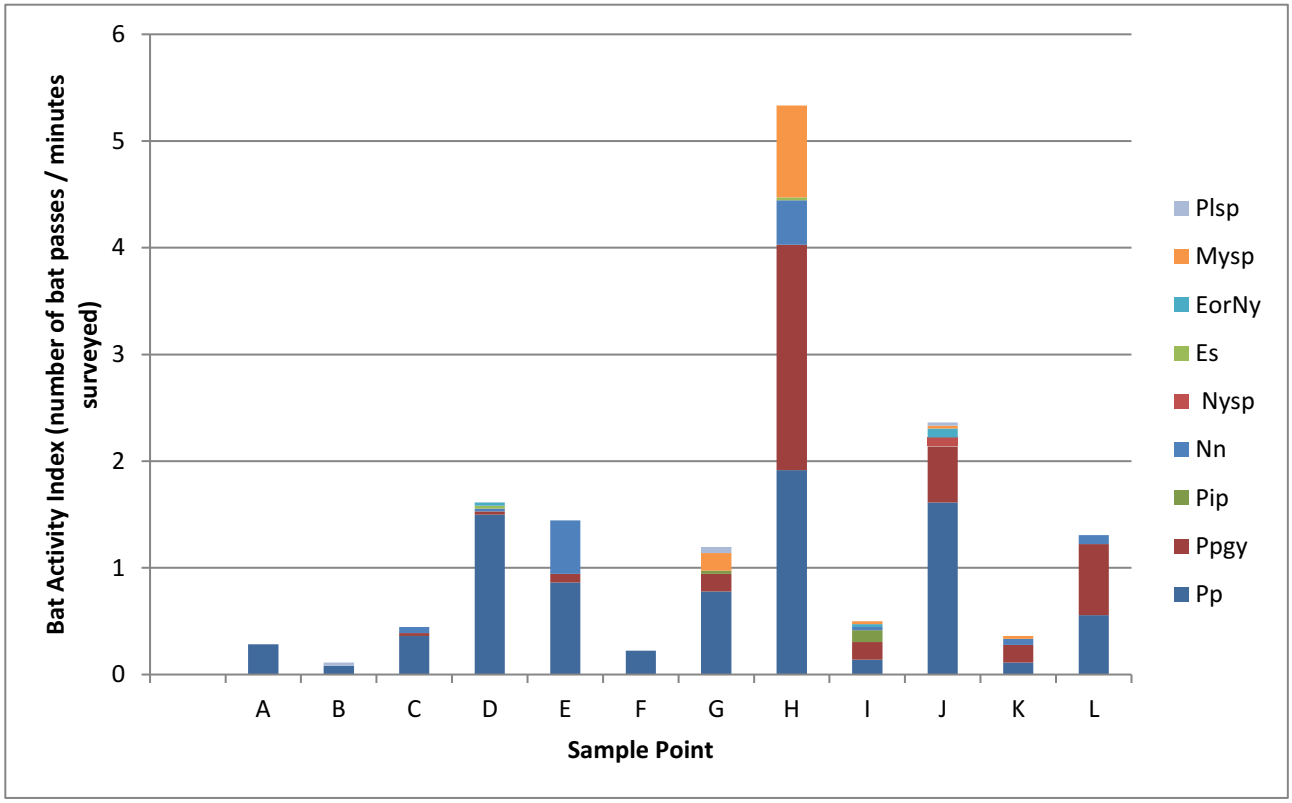
Table A10.3: Summary of transect sample point data

	Sample point												
Species	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**Total**
Pp	11	3	13	54	31	8	28	69	5	58	4	20	304
Ppgy	0	0	1	1	3	0	6	76	6	19	6	24	142
Pip	0	0	0	0	0	0	1	0	4	0	0	0	5
Nn	0	0	2	1	18	0	0	15	1	0	2	3	42

Table A10.3: Summary of transect sample point data

	Sample point												
Species	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**Total**
Ny sp.	0	0	0	0	0	0	0	0	0	3	0	0	3
Es	0	0	0	1	0	0	0	1	0	0	0	0	2
EorNy	0	0	0	1	0	0	0	0	1	3	0	0	5
Mysp	0	0	0	0	0	0	6	31	1	1	1	0	40
Plsp	0	1	0	0	0	0	2	0	0	1	0	0	4
Total	11	4	16	58	52	8	43	192	18	85	13	47	547

Graph A10.1 Bat Activity Index (BAI) of sample point data



Static detector survey

At least ten species were recorded during the static detector survey with an overall total of 27138 registrations (refer to Tables A10.4). Common pipistrelle was the most abundant species comprising 58% of all recordings, followed by soprano pipistrelle (33%), *Myotis* species (5%) and noctule (2%). Other species recorded on static detectors but accounting for less than 1% of registrations included Nathusius' pipistrelle, greater horseshoe bat, lesser horseshoe bat, barbastelle, serotine and long-eared bat sp.

Position 1 was located in the north west portion of the survey area in relatively close proximity to Tidcombe Hall and recorded a BAI of 253.91 (refer to Figure A10.1 and Table A10.4). Common pipistrelle accounted for approximately 63% of all registrations recorded at this location. Position 1 recorded the highest levels of lesser horseshoe bat (LHS) registrations with 56% of all LHS registrations across the survey area. This activity peaked in September and October with 8 and 7 passes respectively. This static detector was the closest to Tidcombe Hall, a confirmed lesser horseshoe roost (refer to Appendix 9).

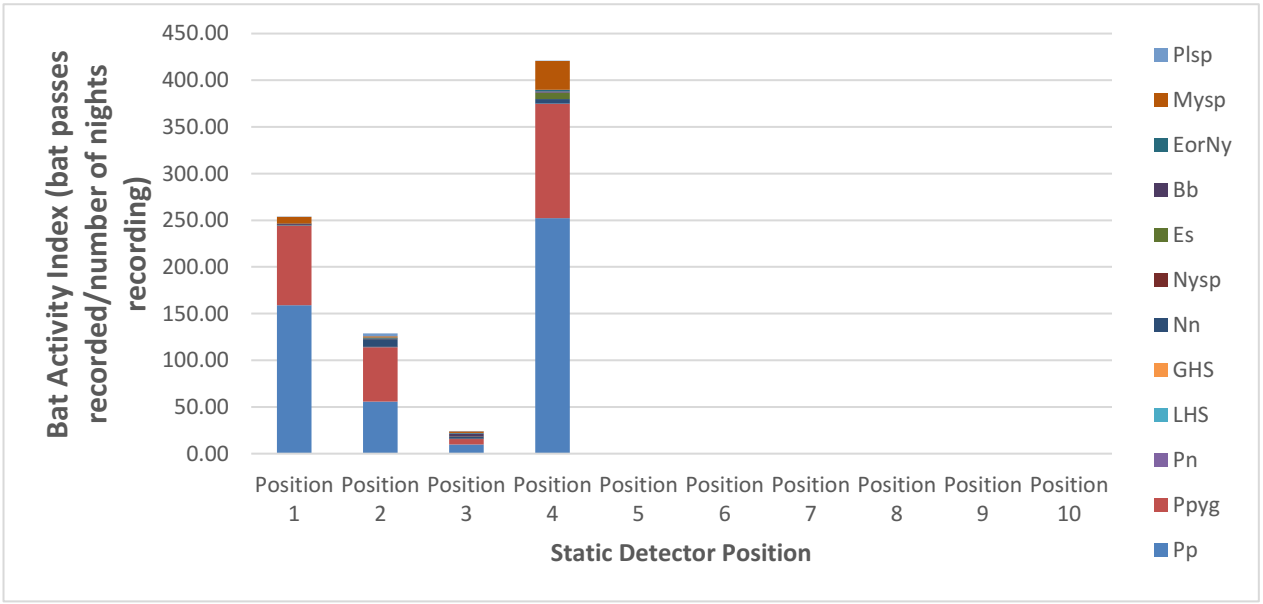
Position 2 was situated on the northern boundary of the survey area, adjacent adjacent to the Grand Western Canal. The activity at this position was BAI 128.97. This location recorded the highest levels of noctule and long-eared bat activity (BAI 8.36 and 3.21, respectively).

Position 3 was located towards the centre of the survey area and recorded the lowest levels of activity (BAI 24.37; refer to Figure A10.1 and Table A10.4). This position recorded the highest levels of barbastelle activity within the survey area (BAI 2.97), with a total of 95 registrations. Of these registrations 88 occurred in September, with 41 of these being recorded on a single night (refer to Table A10.4).

The highest overall levels of bat activity were recorded at Position 4, located on the eastern boundary of the survey area alongside a hedgerow with trees, which recorded 421.12 bat passes per night on average. This location recorded the highest levels of Myotis sp. activity with a total of 992 registrations. Peak *Myotis* sp. activity occurred in September (BAI 27.66) and October (BAI 142.8).

Barbastelle activity and timings of registrations suggest that habitats within the survey area are used for commuting/occasional foraging by barbastelle, particularly in September and October. Lesser horseshoe bat activity was assessed as 'Moderate' and the activity recorded is likely to be associated with the low numbers of lesser horseshoe bats roosting at Tidcombe Hall; refer to Appendix 9. A total of three greater horseshoe bat registrations were recorded within the survey area during static detector surveys, all during September. This would indicate that the survey area is unlikely to constitute a regular commuting route or important foraging habitat for this species.

Graph A10.2 Bat Activity Index (BAI) of static detector data



Reference

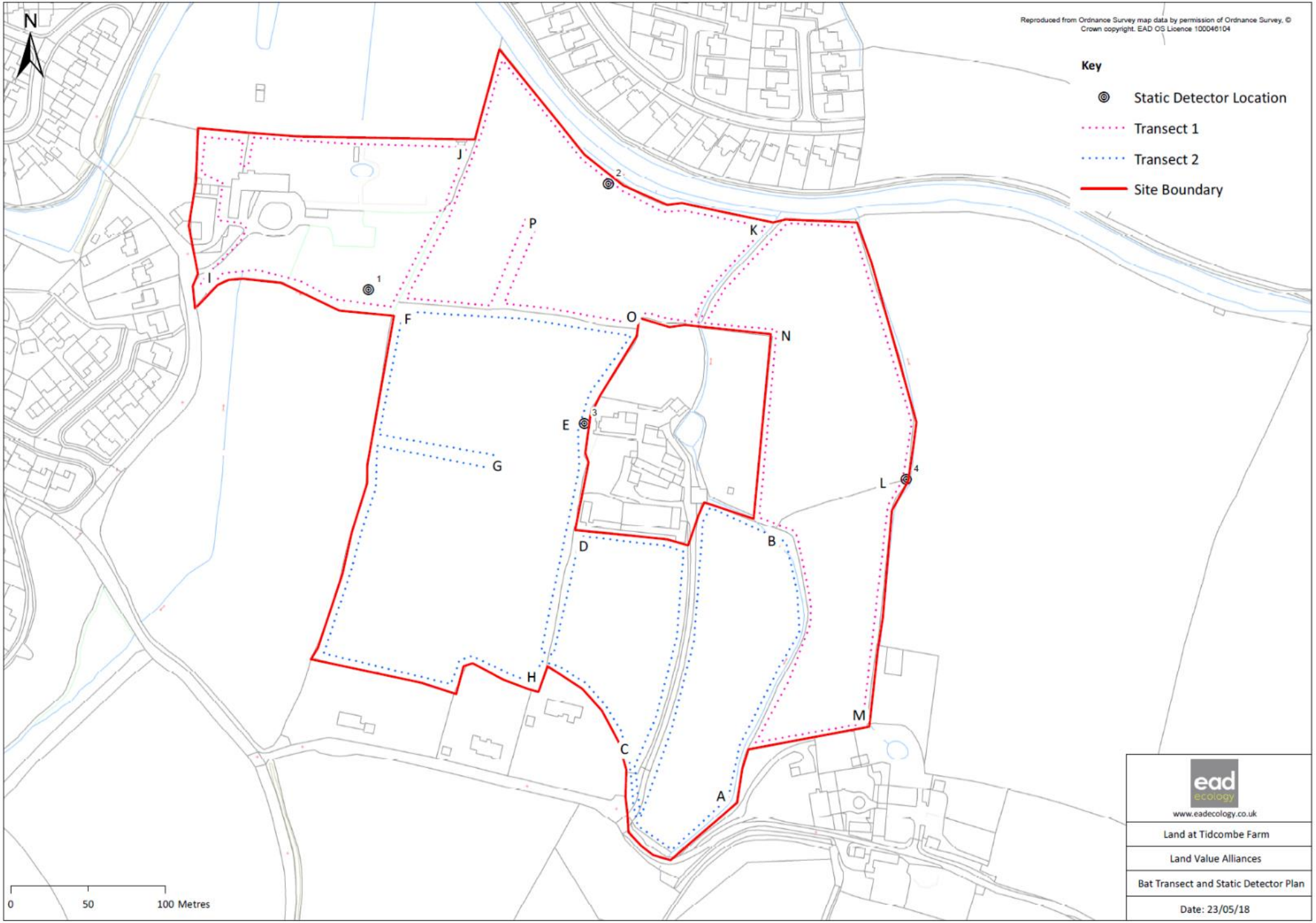
Collins J (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

Russ J (2012) *British Bat Calls: A Guide to Species Identification*. Pelagic Publishing, Exeter

Table A10.4: Bat Activity Index (BAI) at static detector positions

Detector Position	Month	No. of nights	Pp	Ppyg	Pip	Pn	LHS	GHS	Nn	Nysp	Es	Bb	EorNy	Mysp	Plsp	Total
Position 1	May	6	115.50	29.83	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.17	0.00	8.33	0.00	155.33
	June	5	3.60	0.60	0.00	0.00	0.80	0.00	0.20	0.00	0.00	0.00	0.20	0.00	0.00	5.40
	July	7	5.57	11.43	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00	1.57	0.14	19.57
	August	5	689.60	336.40	0.00	0.00	0.20	0.00	1.00	0.00	0.00	7.80	0.20	16.40	1.00	1052.60
	September	6	1.50	20.00	0.00	0.00	1.33	0.17	0.50	0.00	0.17	0.00	0.17	4.00	0.00	27.83
	October	5	240.80	163.60	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.20	0.00	15.40	0.00	421.40
Total for position		**34**	**159.15**	**84.76**	**0.00**	**0.00**	**0.59**	**0.03**	**0.53**	**0.00**	**0.03**	**1.38**	**0.09**	**7.18**	**0.18**	**253.91**
Position 2	May	6	116.67	233.17	0.00	0.00	0.00	0.00	25.33	0.50	0.00	0.00	4.17	2.83	1.33	384.00
	June	5	4.40	3.20	0.00	0.00	0.20	0.00	6.40	0.40	0.00	0.00	0.40	0.20	0.20	15.40
	July	7	23.57	3.29	0.00	0.00	0.00	0.00	7.71	0.00	0.00	0.00	0.29	0.86	0.29	36.00
	August	5	40.60	38.40	0.00	0.00	0.20	0.00	3.80	0.00	1.40	0.00	0.80	0.20	2.80	88.20
	September	6	42.00	34.83	0.00	0.17	0.17	0.17	3.17	0.00	0.00	0.33	1.50	1.33	13.50	97.17
	October	4	124.75	21.50	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.50	0.25	2.00	0.00	149.75
Total for position		**33**	**55.79**	**58.33**	**0.00**	**0.03**	**0.18**	**0.03**	**8.36**	**0.15**	**0.21**	**0.12**	**1.30**	**1.24**	**3.21**	**128.97**
Position 3	May	6	16.17	1.83	0.00	0.00	0.00	0.00	5.67	0.50	0.00	0.17	1.17	1.50	0.00	27.00
	June	5	1.40	5.20	0.00	0.00	0.00	0.00	2.20	0.20	0.00	0.00	0.00	0.00	0.00	9.00
	July	5	5.00	7.60	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.40	0.20	14.80
	August	5	17.20	2.40	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.00	2.40	0.60	0.20	23.20
	September	6	12.17	9.83	0.00	0.00	1.17	0.17	2.50	0.00	0.00	14.67	0.67	2.67	2.50	46.33
	October	5	5.00	9.20	0.00	0.20	0.00	0.00	0.00	0.00	0.00	1.20	0.20	5.20	0.00	21.00
Total for position		**32**	**9.78**	**6.00**	**0.00**	**0.03**	**0.22**	**0.03**	**2.16**	**0.13**	**0.03**	**2.97**	**0.75**	**1.75**	**0.53**	**24.37**
Position 4	May	6	254.67	49.33	0.00	0.00	0.00	0.00	10.33	0.00	2.67	0.17	1.00	7.33	0.50	326.00
	June	5	67.40	69.60	0.00	0.00	0.00	0.00	3.60	0.00	0.00	0.00	0.40	1.60	0.00	142.60
	July	5	35.00	23.80	0.00	0.00	0.00	0.00	2.40	0.00	8.60	0.00	3.80	5.20	0.00	78.80
	August	5	219.20	53.60	0.00	0.00	0.00	0.00	4.20	0.00	30.00	0.00	0.20	7.20	1.00	315.40
	September	6	228.17	114.00	0.00	0.00	0.50	0.00	8.17	0.00	1.67	6.67	3.50	27.33	0.83	390.83
	October	5	713.20	441.40	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	142.80	0.20	1298.20
Total for position		**32**	**252.22**	**122.56**	**0.00**	**0.03**	**0.09**	**0.00**	**5.09**	**0.00**	**6.84**	**1.31**	**1.53**	**31.00**	**0.44**	**421.12**
Overall average (all positions)			**119.82**	**68.32**	**0.00**	**0.02**	**0.27**	**0.02**	**4.02**	**0.07**	**1.75**	**1.44**	**0.91**	**10.23**	**1.09**	**207.98**

Figure A10.1: Bat activity survey plan (2018)


N
Reproduced from Ordnance Survey map data by permission of Ordnance Survey, © Crown copyright. EAD OS Licence 100046104
Key
Static Detector Location
Transect 1
Transect 2
Site Boundary
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
2
3
4
0
50
100 Metres
ead ecology
www.eadecology.co.uk
Land at Tidcombe Farm
Land Value Alliances
Bat Transect and Static Detector Plan
Date: 23/05/18

Bat activity survey (2023)

1 Survey methodology

A partial update bat activity survey was undertaken in 2023. As the 2023 update Phase 1 Habitat survey of the Site did not identify any significant changes, the 2018 bat activity survey data is considered to provide a robust baseline for bat activity within the Site, with the partial update survey undertaken to allow confirmation of this position.

The 2023 survey area was reduced from that surveyed in 2018, due to a reduction in the application boundary; refer to Figure A10.2. The methodology was also slightly modified to reflect upgrades to bat survey equipment and analysis techniques over the five years between surveys.

Static detector survey

A stratified sampling of the survey area using static bat detectors was undertaken. Four static bat detectors (Anabat Express, Titley Scientific Ltd, capable of recording full spectrum data), 'Positions 1-4' were deployed area beside habitat features considered likely to be of value for commuting and foraging bats within the survey area; refer to Figure A10.2 for locations. Detectors were set to record from 30 minutes prior to sunset to 30 minutes post-sunrise for a minimum of five nights per month in May, July and September 2023, providing a total of seventy-six nights of data; refer to Table A10.5.

Table A10.5. Number of hours static detectors were deployed each month

Static Detector Location	Month (2023)	Total hours of active deployment
1	May	46.21
	July	73.04
	September	74.54
	Total	193.79
2	May	46.21
	July	73.04
	September	74.54
	Total	193.79
3	May	44.80
	July	73.04
	September	74.54
	Total	192.37
4	May	46.21
	July	73.04
	September	74.54
	Total	193.79
Total	**-**	**773.73**

Transect survey

Bat activity transect surveys were undertaken to determine the use of the survey area by bats by identifying the species present, commuting routes and foraging areas. The survey area was subject to two hour transect surveys over three separate evenings with one survey per season in the months of May, July and September 2023; refer to Table A10.6 for dates and times.

A single transect route was designed based on preliminary identification of habitat features through Extended Phase 1 Habitat survey; refer to Figure A10.2 for route. On each survey, surveyors walked the

predetermined transect route at a constant pace. Surveys began at sunset and continued for at least two hours. In order to facilitate the production of a kernel density estimate plot of bat activity along the transect, the start point of each transect was randomised between surveys.

Surveyors carried Anabat Scout (Titley Electronics Ltd) bat detectors in order to record and GPS tag bat registrations for subsequent analysis.

Key observations of bats such as flight direction, flight height, number of bats and behaviour (e.g. characteristic foraging or commuting) were recorded where relevant. Determination of transect routes and all surveys were carried out by suitably qualified and experienced ecologists. All surveys were undertaken in suitable weather conditions; refer to Table A10.6.

Table A10.6: Details of timings and conditions during bat transect surveys

Date	Start / end times	Sunset time	Cloud (Oktas)	Wind speed (Beaufort)	Temp. (C)
18.05.23	21:00	21:00	6	1	13
	23:00		6	1	11
17.07.23	21:20	21:20	1	0	15
	23:20		3	0	13
14.09.23	19:31	19:31	8	1	17
	21:31		0	1	16

2 Analysis methodology

General

All bat detector data was downloaded and analysed using 'Anabat Insight version 2.0.8' (Titley Electronics).

Bat registrations for each species were defined as a series of pulses within a single Anabat Insight Full Spectrum (WAV) file. Whilst this results in files of different length, consideration of a file as a single registration provides a consistent measure of relative activity for each species and total bat activity, to enable comparison across the dataset (i.e. between static detector locations).

Static detector survey

For months / positions with large amounts of data Kaleidoscope Lite version 5.6.3 was used to filter out noise prior to further analysis.

To analyse the static detector dataset, bespoke 'filters' were created within the Anabat Insight software. The 'All bats' filter (which is provided as part of the Anabat Insight software) was used to remove 'noise' files where no bat registrations will be detected; this was performed on an 'Average' file basis.

The 'smoothness' function of Anabat Insight was set to '3' to reduce noise interference within WAV files. A trigger setting of 12-120khz will also be applied to further reduce 'noise'.

Following this, the resulting bat data was processed using the decision tree function on a 'per pulse' basis. The decision tree allowed for multiple, bespoke 'filters' to be applied to the dataset simultaneously; resulting in a semi-automated classification system, which is capable of identifying multiple bat species within a single WAV file.

The filters were designed by an experienced bat ecologists from EAD Ecology and used diagnostic characteristics of bat registrations in order to 'group' registrations which 'pass' the filter. The filters were tested and refined against the data collected within the Survey Area to ensure they were as accurate and specific as could be achieved; refer to Table A9.1 for the parameters of each filter. This approach was

considered to provide a consistent and repeatable process for the analysis of large volumes of bat registrations, thereby reducing surveyor bias,

The resulting filtered files, that were be negative for the species filters presented in Table A10.7, were analysed manually by EAD Ecology staff against bat call characteristics using reference data from known bat roosts, as well as stock recordings from other bat workers and call parameters detailed in relevant literature (Russ, 2021).

Transect survey
The geotagged bat registrations recorded during the transect surveys were processed, using the kde2d function from the MASS package (Venables & Ripley 2002) in R version 4.1.3, to produce a kernel density estimate plot of bat activity along the transect route. The kernel density plot enables a visual comparison of the estimated relative density of bat registrations via a colour gradient. The parameters of the kernel density estimate plots will be selected to best represent the data visually. The 'heat map' is therefore subjective and provides a visual aid to the assessment. Note that the density of bat registrations is relative to the analysed dataset and cannot necessarily be compared to other sites/datasets. Individual registrations of notable species have been added to the heat map to provide further clarity.

Verification of analysis
A proportion of the data (refer to Table A10.7) including filtered 'noise' files were reviewed as part of the analysis process to minimise the risk of bat registrations from key species being omitted from analysis and to ensure robustness of filters. All raw data will be retained on file for future confirmation/validation purposes.

As part of the review process, any individual errors, should they occur, were manually corrected. The accepted error criteria were based on professional judgement and error recorded within these parameters was considered unlikely to materially change the interpretation of the results recorded within the Survey Area.

Table A10.7 Filter Parameters

Species filter	Characteristic registration parameters	Minimum number / Percentage of calls manually verified (largest option selected)	Percentage of error accepted during manual verification
Anabat Insight 'Example: All Bats'	As per software; Anabat Insight v2.0.8.	100 files / 10%	<10%
Common pipistrelle *Pipistrellus pipistrellus*	Characteristic frequency; 41 - 50 kHz Pulse duration 1.5 - 8.6ms Mean frequency 41 – 50kHz End frequency 40kHz (minimum)	100 files / 10%	<10%
Soprano pipistrelle *P. pygmaeus*	Characteristic frequency; 51 - 63 kHz Pulse duration 1.5 - 8.2ms Mean frequency 51 – 63kHz	100 files / 10%	<10%
Greater horseshoe bat	Characteristic frequency; 75 - 90kHz	100%	All files manually verified.

Table A10.7 Filter Parameters

Species filter	Characteristic registration parameters	Minimum number / Percentage of calls manually verified (largest option selected)	Percentage of error accepted during manual verification
Rhinolophus ferrumequinum	Characteristic slope -10 – 10OPS Mean frequency 75 – 90kHz		
Lesser horseshoe bat *Rhinolophus hipposideros*	Characteristic frequency; 100 - 120kHz Characteristic slope -100 – 100OPS Mean frequency 100 – 120kHz	100%	All files manually verified.
Myotis bat Myotis sp.	Characteristic frequency; 30 - 120kHz Characteristic slope 100-1500OPS Mean frequency 30 – 120kHz Maximum frequency 60kHz (minimum) Inter-pulse interval 1 – 7.1ms	100 files / 50%	All files manually verified.

Analysis with R

The static detector datasets were processed to provide 'Bat Activity Index (BAI)' scores based on number of registrations over a set unit of time. For static detector surveys, the BAI equates to registrations per hour of the night, which is defined in this instance as the period from 30 minutes prior to sunset to 30 minutes post-sunrise (the time in which the static detectors are recording). This allowed a quantitative comparison of bat activity between species and survey month. The BAI was calculated using R version 4.1.3 (R Core Team, 2023).

Species Groups

Species identification from sound files and use of associated sonogram analysis software is constrained where overlaps in the parameters of call structure occur between closely related species. In addition, bats will alter their call characteristics in relation to both habitat structure and their behaviour. This can limit the ability to accurately analyse calls to species level, particularly in the genus Myotis.

Registrations from Myotis genus bats are virtually impossible to separate to species level due to their plasticity in call structure and as such, where no other information was available, such as visual observation of bat behaviour, habitat structure, position in relation to known roosts, or clear registrations allowing detailed slope profile analysis, identification to species has not been attempted and registrations were grouped as 'Myotis sp'.

Nyctalus/Eptesicus ('big bats')

Registrations from Nyctalus and Eptesicus genus bats demonstrate overlapping sound characteristics and can therefore be subject to misclassification. For the purposes of this assessment, registrations have only separated to species level where clear distinction can be made. Calls showing some of the characteristics but not meeting all of the parameters set out in Table A10.8 were identified as 'big bat' or Nyctalus / Eptesicus bats.

Table A10.8 Registration parameters used to distinguish Nyctalus / Eptesicus bats

6.1.1	Species	6.1.2 Characteristic registration parameters
6.1.3	Noctule (*Nyctalus noctula)*	• Registration shows two types of alternating frequency • Peak frequency below 21 kHz
6.1.4	Leisler's bat (*Nyctalus leiseri)*	• Registration shows two types of alternating frequency • Peak frequency above 24 kHz
6.1.5	Serotine (*Eptesicus serotinus)*	• Registrations are of a single, consistent type • Peak frequency between 24 kHz and 32 kHz

3 Limitations

There were no limitations to the survey or analysis of results.

4 Results

Species name abbreviations used in the results hereafter are provided in Table A10.9.

Table A10.9. Bat species recorded

Common name	Scientific name	Species code
Barbastelle	*Barbastella barbastellus*	Bb
Nathusius' pipistrelle	*Pipistrellus nathusius*	Pn
Common pipistrelle	*Pipistrellus pipistrellus*	Pp
Soprano pipistrelle	*P. pygmaeus*	Ppyg
Pipistrelle bat	*Pipistrellus sp.*	Pip
Noctule	*Nyctalus noctule*	Nn
Nyctalus bat	*Nyctalus sp.*	Ny sp.
Myotis bat	*Myotis sp.*	My sp.
Serotine	*Eptesicus serotinus*	Es
Serotine, Leisler's or noctule	*Eptesicus serotinus or Nyctalus sp.*	EorNy
Long-eared bat	*Plecotus sp.*	Pl sp.
Lesser horseshoe	*Rhinolophus hipposideros*	LHS
Greater horseshoe	*Rhinolophus ferrumequinum*	GHS

Static detector survey

At least ten bat species were recorded during the static detector surveys, with an overall total of 28,736 registrations; refer to Tables A10.10 and A10.11. Common pipistrelle was the most abundant species comprising 49.97% of all recordings, followed by soprano pipistrelle (38.89%), Myotis bat (3.56%), noctule bat (2.77%), long-eared bat (1.38%) and serotine, Leisler's or noctule bat (1.13%).

Other species recorded but accounting for less than 1% of registrations each were *Nyctalus* bat species, serotine, greater horseshoe bat, lesser horseshoe bat, unidentifed pipistrelle bat, barbastelle and Nathusius' pipistrelle. Overall, species distribution across static detector locations are presented below in Graph A10.2; refer to Figure A10.2 for static detector locations.

Common pipistrelle was the most abundant species all positions (Position 2 BAI 17:00, Position 3 BAI 4.93, Position 4 BAI 22.71) except for Position 1 (within the grounds of Tidcombe Hall) where soprano pipistrelle

was the most abundant (BAI 30.32). Light-sensitive bat species were recorded at all static detector locations within the survey area.

Light-sensitive bat species recorded within the survey area included greater and lesser horseshoe bat, *Myotis* bat, long-eared bat and barbastelle bat. *Myotis* bat activity was recorded at all of the static detector locations. The highest activity was recorded at Position 2 (BAI 2.40; adjacent to the canal corrdior), with activity lower at Position 4 (BAI 1.42), Position 1 (BAI 1.17) and Position 3 (BAI 0.30). Long-eared bats were recorded at all static detector locations, with activity higher at Position 2 (BAI 1.57), than at Position 4 (BAI 0.33), Position 3 (BAI 0.10) and Position 1 (BAI 0.05). Barbastelle activity was also recorded at all static detector locations, with higher activity at Position 4 (BAI 0.59) than at Position 3 (BAI 0.19), Position 1 (BAI 0.13) and Position 2 (BAI 0.03).

A total of 245 lesser horseshoe bat registrations were recorded across the survey area. Position 4 had the highest activity (112 registrations; BAI 0.58), followed by Position 2 (54 registrations; BAI 0.28), Position 1 (42 registrations; BAI 0.22) and Position 3 (37 registrations, BAI 0.19). Lesser horseshoe bats were recorded in all three months, the highest number of registrations was in September (130 registrations), followed by May (75 registrations) and July (40 registrations). Across all four positions, 47 registrations occurred within an hour of sunrise/sunset (refer to Table A10.13), with the highest number at Position 1 (25 registrations), followed by Position 4 (22 registrations) and Position 3 (3 registrations). Registrations within an hour of sunset / sunrise are indicative of a nearby roost. There were no registrations within an hour of sunset/sunrise at Position 2. September had the highest number of registrations within an hour of sunset/sunrise, both overall and at each static detector position, indicative of a transitional roost – which is used by small groups or individuals in the period prior to hibernation.

A total of six greater horseshoe bat registrations occurred within the survey area, of these, three occurred at Position 4 which had the highest activity (BAI 0.02). There was also activity at Position 1 (BAI 0.01; 2 registrations) and Position 2 (BAI 0.01; 1 registration). Position 3 had no activity. There were no greater horseshoe registrations at any position within an hour of sunrise/sunset. Greater horseshoe bat registrations occurred across all three months, with three in May at Positions 1 and 2, two in September and a single registration in July, both at Position 4. Temporal activity patterns of GHS registrations across the months May, July and September are generally indicative of low levels commuting and foraging activity within the survey area (refer to Graphs A10.3 and A10.4) It is considered that suitable habitats within the survey area, in particular the species-rich hedgerow on the western edge of the fields that form the eastern half of the Site, are used for low levels of commuting and foraging throughout the summer activity period.

There were 745 noctule registrations across the survey area, registrations were highest at Position 2 (518 registrations; BAI 2.67), followed by Position 3 (155 registrations; BAI 0.81), Position 4 (78 registrations; BAI 0.40) and Position 1 (44 registrations; BAI 0.23). 85.75% of the noctule bat registrations at Position 2 (439 registrations) occurred within an hour of sunrise / sunset suggesting a roost either within the Survey Area or nearby, refer to Table A10.12. Noctule are predominately tree roosting bats and there is abundant suitable habitat for roosting within the survey area and surrounding countryside. Of the noctule registrations at Position 2, the highest number occurred in July (315 registrations), potemtially indicating the presence of maternity roost within the vicinty.

Table A10.10 Number of bat registrations recorded within the survey area

Static detector location	Month	Bb	EorNy	Es	GHS	LHS	Mysp	Nn	Nysp	Pip	Plsp	Pn	Pp	Ppyg	Total
1	May	0	101	0	2	7	29	19	0	0	1	0	768	1205	2132
	July	0	31	0	0	7	82	25	0	0	8	0	3151	3522	6826
	September	26	30	4	0	28	116	0	0	6	0	8	1796	1148	3162
	Total	26	162	4	2	42	227	44	0	6	9	8	5715	5875	12120
2	May	2	62	0	1	53	401	149	0	0	33	0	2715	2478	5894
	July	1	41	0	0	1	30	351	0	0	270	0	349	526	1569
	September	2	2	0	0	0	34	18	3	0	1	0	231	157	448
	Total	5	105	0	1	54	465	518	3	0	304	0	3295	3161	7911
3	May	11	19	0	0	11	2	69	0	0	2	0	416	176	706
	July	20	16	12	0	12	34	74	129	0	18	2	400	241	958
	September	14	0	22	0	14	21	12	2	0	0	0	132	307	524
	Total	45	35	34	0	37	57	155	131	0	20	2	948	724	2188
4	May	0	1	11	0	4	23	44	5	0	10	0	509	380	987
	July	19	22	1	1	20	164	28	0	3	53	0	2150	461	2922
	September	96	0	12	2	88	88	6	0	0	0	0	1741	575	2608
	Total	115	23	24	3	112	275	78	5	3	63	0	4400	1416	6517
Total	**-**	191	325	62	6	245	1024	795	139	9	396	10	14358	11176	28736

Table A10.11. Bat Activity Index (BAI) recorded within the survey area

Static detector location	Month	Bb	E or Ny	Es	GHS	LHS	My sp	Nn	Ny sp	Pip	Pl sp	Pn	Pp	Ppyg	Total
1	May	0.00	2.19	0.00	0.04	0.15	0.63	0.41	0.00	0.00	0.02	0.00	16.62	26.08	46.14
	July	0.00	0.42	0.00	0.00	0.10	1.12	0.34	0.00	0.00	0.11	0.00	43.14	48.22	93.46
	September	0.35	0.40	0.05	0.00	0.38	1.56	0.00	0.00	0.08	0	0.11	24.09	15.40	42.42
	Total	0.13	0.84	0.02	0.01	0.22	1.17	0.23	0.00	0.03	0.05	0.04	29.49	30.32	62.54
3	May	0.04	1.34	0.00	0.02	1.15	8.68	3.22	0.00	0.00	0.71	0.00	58.75	53.62	127.55
	July	0.01	0.56	0.00	0.00	0.01	0.41	4.81	0.00	0.00	3.70	0.00	4.78	7.20	21.48
	September	0.03	0.03	0.00	0.00	0.00	0.46	0.24	0.04	0.00	0.01	0.00	3.10	2.11	6.01
	Total	0.03	0.54	0.00	0.01	0.28	2.40	2.67	0.02	0.00	1.57	0.00	17.00	16.31	40.82
3	May	0.25	0.42	0.00	0.00	0.25	0.04	1.54	0.00	0.00	0.04	0.00	9.29	3.93	15.76
	July	0.27	0.22	0.16	0.00	0.16	0.47	1.01	1.77	0.00	0.25	0.03	5.48	3.30	13.17
	September	0.19	0.00	0.30	0.00	0.19	0.28	0.16	0.03	0.00	0.00	0.00	1.77	4.12	7.03
	Total	0.23	0.18	0.18	0.00	0.19	0.30	0.81	0.68	0.00	0.10	0.01	4.93	3.76	11.37
4	May	0.00	0.02	0.24	0.00	0.087	0.50	0.95	0.11	0.00	0.22	0.00	11.01	8.22	21.36
	July	0.26	0.30	0.01	0.01	0.27	2.25	0.38	0.00	0.04	0.73	0.00	29.44	6.31	40.01
	September	1.29	0.00	0.16	0.03	1.18	1.18	0.08	0.00	0.00	0.00	0.00	23.36	7.71	34.99
	Total	0.59	0.12	0.12	0.02	0.58	1.42	0.40	0.03	0.02	0.33	0.00	22.71	7.31	33.63
Total	-	0.25	0.42	0.08	0.01	0.32	1.32	1.03	0.18	0.01	0.51	0.01	18.56	14.44	37.14

Graph A10.2. Bat Activity Index at each Static Detector Location

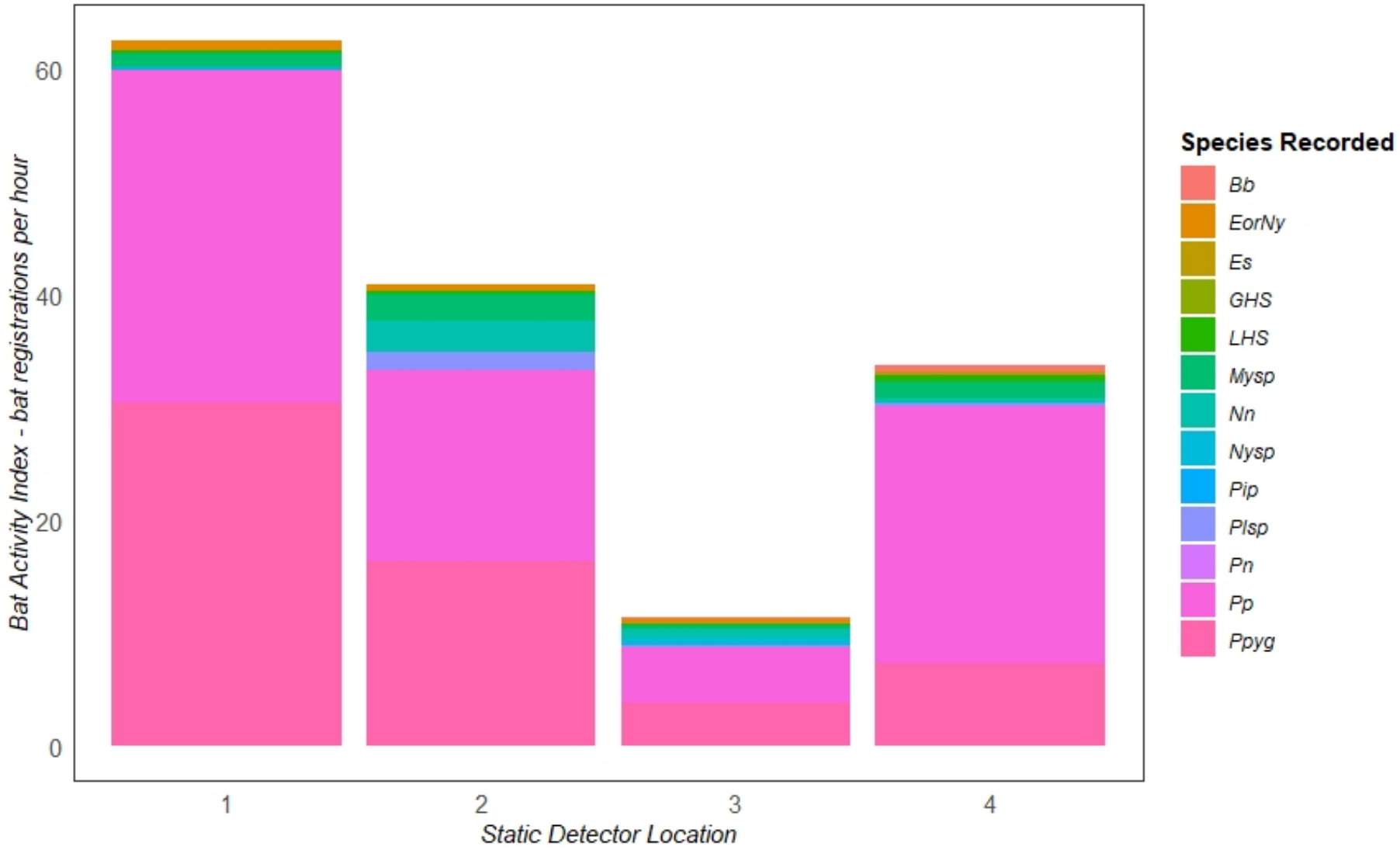


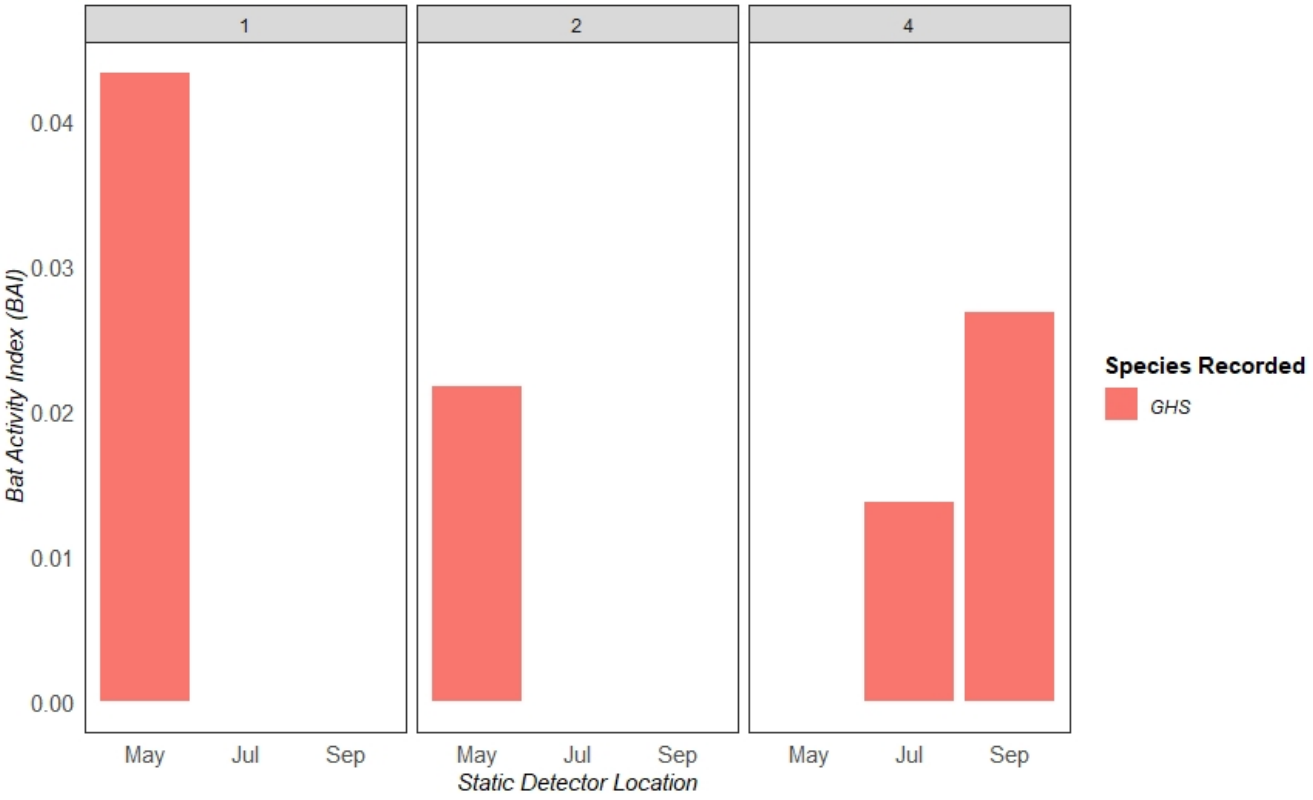
Table A10.12. Number of noctule registrations from static detector Position 2 occurring within one hour of sunset / sunrise

Position	Month	Night	Number of registrations within an hour of sunrise/sunset
2	May	18.05.23	1
		19.05.23	20
		20.05.23	34
		21.05.23	47
		22.05.23	16
		Total	118
	July	17.07.23	105
		18.07.23	8
		19.07.23	117
		20.07.23	43
		21.07.23	9
		23.07.23	19
		24.07.23	7
		Total	308
	September	14.09.23	4
		15.09.23	9
		Total	13
	Total	-	439

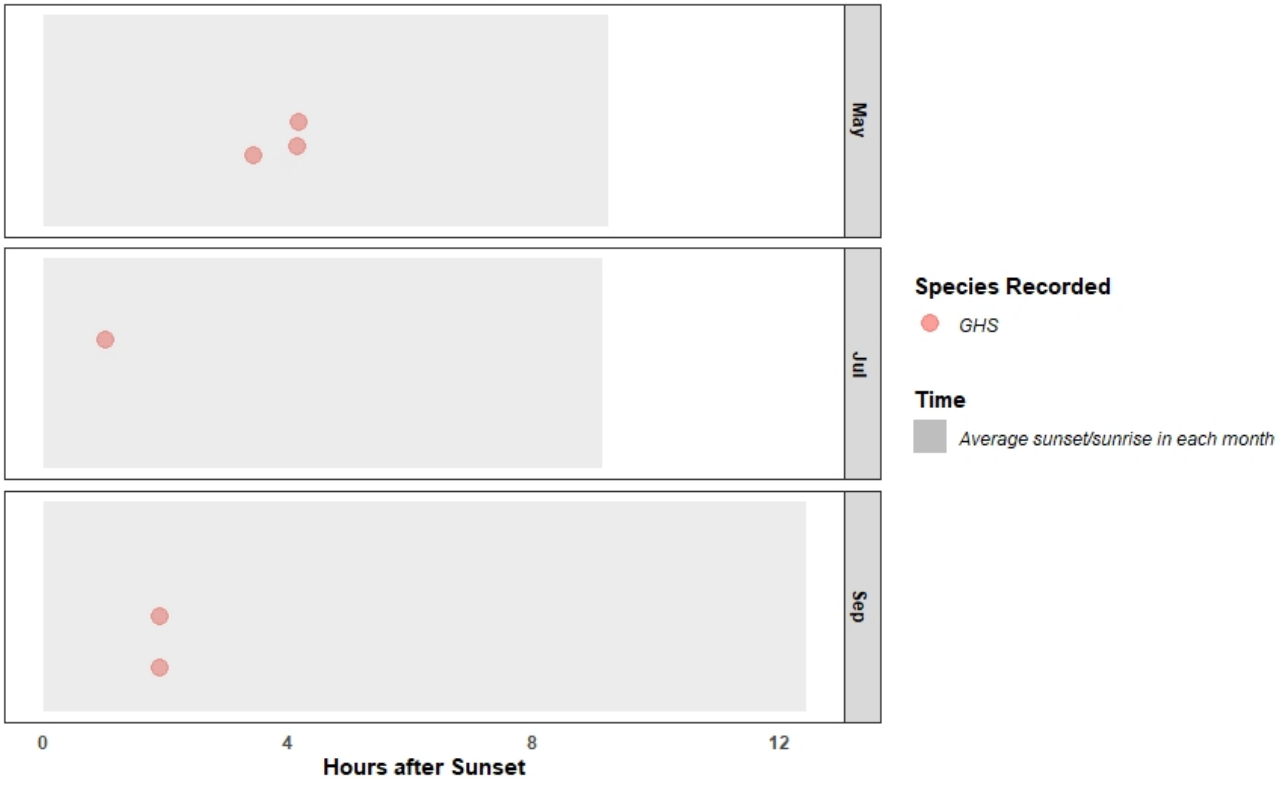
Table A10.13. Number of lesser horseshoe registrations from static detectors occurring within one hour of sunset/sunrise

Position	Month	Night	Number of registrations within an hour of sunrise/sunset
1	May	19/05/23	2
		21/05/23	1
		22/05/23	2
		Total	5
	July	17/07/23	1
		18/07/23	2
		19/07/23	1
		22/07/23	1
		23/07/23	1
		Total	6
	September	14/09/23	2
		15/09/23	4
		19/09/23	8
		Total	14
	Total	-	**25**
3	May	29/05/23	1
		Total	1
	September	14/09/23	2
		Total	2
	Total	-	**3**
4	May	20/05/23	1
		Total	1
	July	18/07/23	1
		19/07/23	1
		20/07/23	2
		21/07/23	1
		22/07/23	1
		23/07/23	1
		24/07/23	1
		Total	10
	September	15/09/23	6
		16/09/23	2
		17/09/23	4
		Total	12
	Total	-	**22**

Graph A10.3. Greater horseshoe bat activity index (BAI) per month across the survey area



Graph A10.4. Temporal distribution of GHS activity within the survey area per month



Transect survey

At least five species of bat were identified during the transect surveys with a cumulative total of 338 registrations recorded across all three survey sessions. Soprano pipistrelle accounted for the highest number of registrations within the Survey Area (49.11%), followed by common pipistrelle (43.49%), noctule (2.96%), *Myotis* bat (2.07%), noctule, serotine or Leisler's bat 2.07% and lesser horseshoe bat 0.30%; refer to Table A10.5.

Figure A10.1 shows relative densities of bat registrations across the survey area with areas of (relatively) higher activity shown in dark green; this indicates that higher bat activity was recorded in the northern half of the survey area. The highest activity levels were recorded in the north-west, around the buildings. Relatively lower levels of bat activity were recorded in the south of the survey area.

Light-averse bat species were located across the survey area. Myotis bat were recorded in all areas of the survey area, with higher activity recorded in the northern portion of the survey area. A lesser horseshoe bat species was recorded in the north-west of the Survey Area. Noctule, serotine or Leisler's bat were also recorded across the survey area with a greater number of registrations in the north.

Table A10.14. Transect survey results

Species	**Number of registrations**	**Percentage (%)**
Common pipistrelle	147	43.49
Soprano pipistrelle	166	49.11
Myotis bat	7	2.07
Noctule	10	2.96
Noctule, serotine or Leisler's bat	7	2.07
Lesser horseshoe bat	1	0.30
Total	338	100

5 References

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

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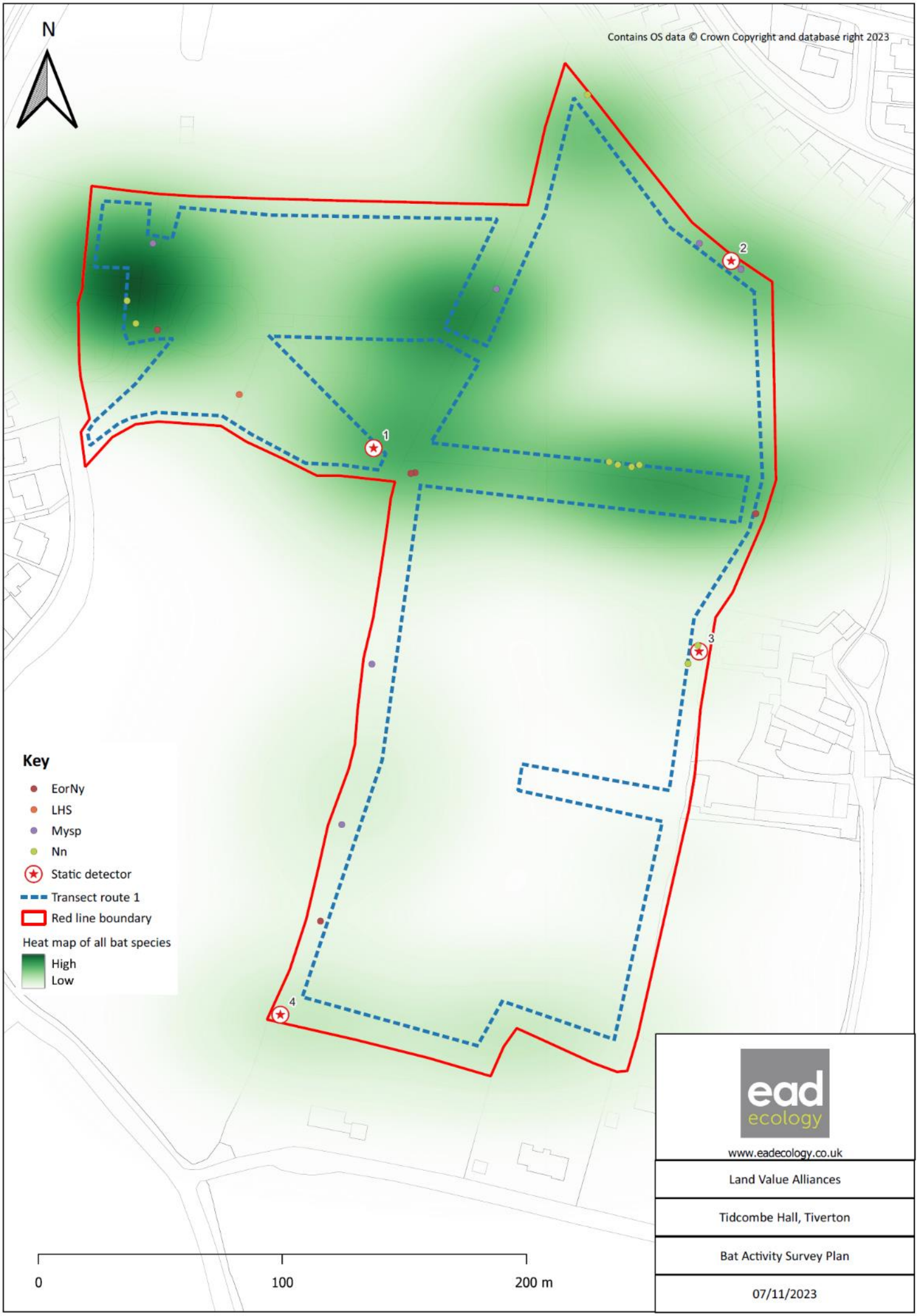
Russ, J. (2012). British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.

Venables, W. N. & Ripley, B. D. (2002) Modern Applied Statistics with S. Fourth Edition. Springer, New York. ISBN 0-387-95457-0.

Websites

http://jncc.defra.gov.uk/

Figure A10.2: Bat activity survey plan (2023)



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Land Value Alliances

Tidcombe Hall, Tiverton

Bat Activity Survey Plan

07/11/2023

Appendix 11: Bat roost survey results

Bat roost survey results

1 Methodology

Preliminary roost inspection

Buildings and walls

All buildings within the survey boundary were subject to internal and external inspections for bats on 11 May 2023; refer to Figure A11.1. The garden walls around Tidcombe Hall were also subject to external inspections on this date. Inspections were led by Natural England-licensed bat ecologists and followed Bat Conservation Trust (BCT) guidelines for preliminary roost assessment (Collins 2016); refer to Table A11.1. The inspections involved searches for features that could support roosting bats and evidence of bat usage including droppings, staining or scratch marks. Samples of droppings were collected and sent to Swift Ecology for DNA analysis to identify to species.

Trees

All trees within the survey boundary were subject to a ground-level roost assessment on 11 May 2023. This involved a detailed inspection of each tree from ground level using binoculars to record potential bat roost features such as rot holes and hazard beams. Trees were then assessed against the criteria in BCT guidelines to determine roost suitability.

All trees were assessed against BCT criteria (refer to Table A11.1 below) to determine their suitability for roosting bats on a scale from 'Negligible' to 'High'. Trees assessed as having 'Negligible' or 'Low' roost suitability were not recorded as no further survey of these would be required (following BCT guidance).

Table A11.1 Guidelines for assessing the potential suitability of proposed development sites for bats (adapted from Collins [ed.] 2016).

Suitability	Description of roosting habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of the species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Endscope survey – garden walls

The bat roost inspection identified that the garden walls around Tidcombe Hall provided potential bat roosting spaces within small cracks and crevices. An endoscope survey of these cracks and crevices

was undertaken on 28 August 2023 by Natural England-licensed bat ecologists to allow a more detailed inspection of the potential roost features within the wall.

Dusk emergence/dawn re-entry surveys - buildings

Buildings within Confirmed bat roost status, and those considered to have 'Moderate' suitability suitability during the preliminary roost assessment, were subject to three further dusk emergence surveys each between August and September 2023 in line with BCT Guidelines (Collins 2016).

The dusk emergence surveys were undertaken in suitable weather conditions and commenced 15 minutes before sunset and continued up to 90 minutes after sunset. Surveyors were located around buildings in order to observe suitable access features. Surveyors were equipped with broadband bat detectors (Anabat Express and Batbox duet) to record any echolocation registrations for subsequent analysis.

At least one infra-red camera was used for each building during each survey to aid surveyors in establishing the status of the roost. Video footage obtained from the infra-red cameras was later analysed using VLC media player. Bats recorded were subsequently compared with echolocation registrations recorded on the bat detector located alongside each infra-red camera, in order to identify the species of bat. Refer to Figure A11.1 for building and surveyor locations.

2 Limitations

An underground parking area with moderate suitability for hibernating bats (refer to Figure A1.1) was recorded within the Site. Due to seasonal constraints, it has not been possible to complete bat hibernation surveys of this feature. These surveys will be carried out between December 2023 - February 2024 and the results and assessment of effects submitted as an Addendum to the EcIA in March 2024.

3 Results

Preliminary roost assessment

Buildings and walls

The results of the building assessments are provided in detail in Table A11.2, and summarised in Figure A11.1 and below:

- Building 1 (Tidcombe Hall) was confirmed as a bat roost due to the presence of droppings from long-eared and lesser horseshoe in the loft space and throughout the living area. A single lesser horseshoe bat was also observed roosting in the garage underneath Building 1.
- Building 2 was confirmed as a bat roost due to the presence of droppings from lesser horseshoe and brown long-eared bat.
- Building 3 was confirmed as a bat roost due to the presence of lesser horseshoe bat droppings.
- Building 4 was assessed as having Moderate bat roost suitability due to the presence of bat access points and potential roost features.
- Several additional derelict garden sheds were assessed as having 'Negligible' roost suitability.
- The garden walls surrounding Tidcombe hall grounds were assessed as having 'Low' roost suitability.

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

Building reference	Building description	Roost suitability
1 (Tidcombe Hall)	A large three-storey house with rendered brick construction and a slate-tiled hipped roof, chimneys, double-glazed sash windows and dormer windows. Building now derelict with multiple areas of damage creating bat access throughout the building into cavities between floors, plasterboard and walls and into loft spaces. Boarded windows providing bat roosting habitat between boards and windows/frames. Several windows and doors broken, providing bat access points.	Confirmed roost

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

Building reference	Building description	Roost suitability
	Bat droppings recorded throughout the living area confirmed by DNA analysis to come from **lesser horseshoe** and **brown long-eared bats**. The western loft space was found to contain large accumulations of bat droppings confirmed by DNA analysis to come from **brown long-eared bat**. **Lesser horseshoe bat** droppings (confirmed by DNA analysis) and a single roosting lesser horseshoe bat were recorded in the garage under Building 1; access from the garage into Building 2 possible via broken smashed door, and inside large cavity surrounding pipework through hole in plywood (droppings from **lesser horseshoe** found in both these areas). Garage has moderate suitability for a lesser horseshoe bat hibernation roost. *Photograph 1: Southern elevation of Tidcombe Hall.*  *Photograph 2: Northern elevation of Tidcombe Hall*  *Photograph 3: Parking garage under Tidcombe Hall*	

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

Building reference	Building description	Roost suitability
	 *Photograph 4: Loft space of Tidcombe Hall* 	
2	A large two-storey storage building attached to the western gable end of Tidcombe Hall, with rendered brick construction and a slate-tiled roof which was hipped to the north and gabled to the south. Building now derelict with multiple areas of damage creating bat access throughout the building into cavities between plasterboard and walls, and between window coverboards and windows/frames. Bat access to loft space through gaps around the soffit box on the southern gable, gaps around ridge ventilation strips and hole in the roof in the north of the building. 100-200 bat droppings recorded in the loft space confirmed by DNA analysis (refer to Figure A11.1) to come from **lesser horseshoe** and **brown long-eared bat**.	Confirmed roost

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

Building reference	Building description	Roost suitability
	Photograph 5: Western elevation of Building 2 	
3	A detached stone outbuilding with a slate-tiled gabled roof. Internally this was divided into three rooms; the eastern room had a plastered ceiling and was used as a chicken coup, the middle room was used for storage of straw with exposed wooden rafters. The western room had exposed wooden rafters and three active swallow nests within. Bitumen underfelt was observed throughout and a hole in the centre of northern pitch of the roof created an access point. 50-100 **lesser horseshoe bat** droppings recorded in the southern loft space; bat access through the eastern gable and loft hatch into ground floor. Multiple bat access points and suitable roosting habitat for bats. *Photograph 6: Southern elevation of Building 3* 	Confirmed roost

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

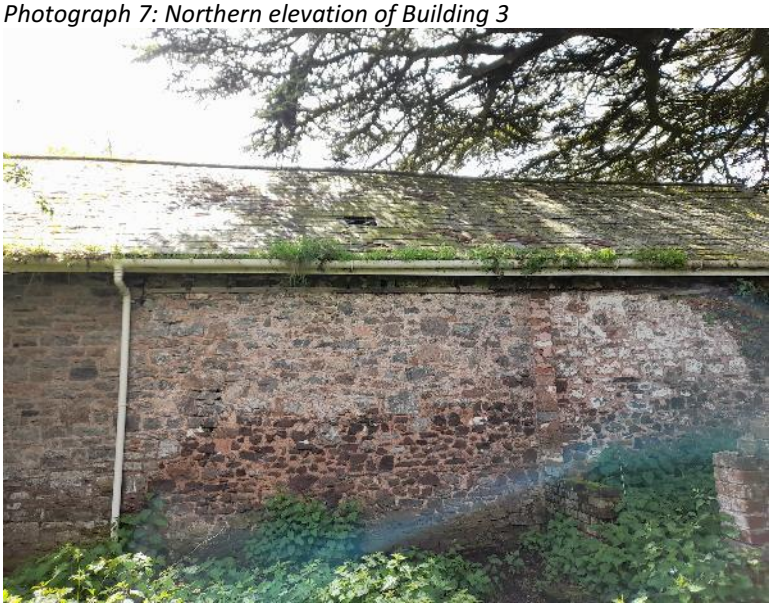
Building reference	Building description	Roost suitability
	Photograph 7: Northern elevation of Building 3 	
4	A single-story stone garage with a corrugated asbestos, single pitch roof. Several access points were noted and included; gaps between roof and walls/wooden beams, cracks in walls and gaps above lintel. *Photograph 8: Western elevation of Building 4* 	Moderate (Since confirmed as a roost)

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

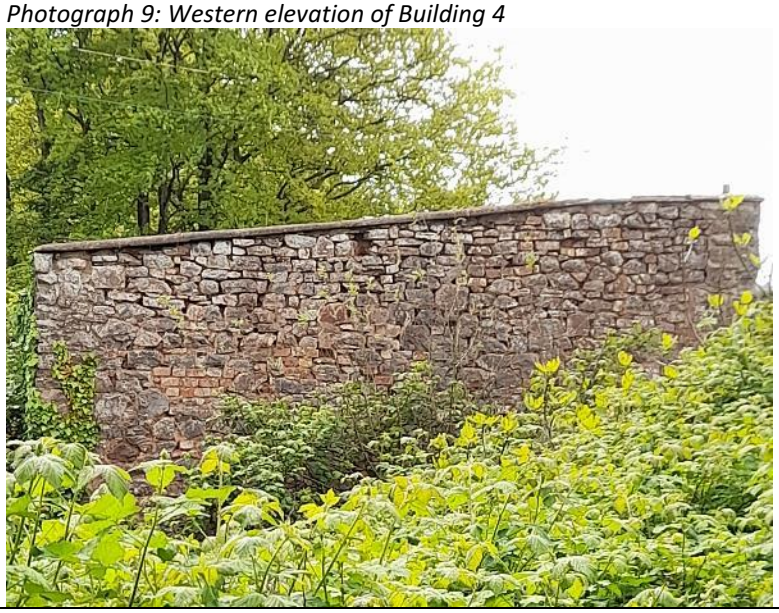
Building reference	Building description	Roost suitability
	Photograph 9: Western elevation of Building 4 	
Additional garden sheds	Wall surrounding Tidcombe Hall grounds has some cracks that have low suitability for roosting bats. The western corner of the northern wall contains a small room with a locked door with potential bat access points. No surveyor access was possible and further survey not considered necessary as this feature would be retained. *Photograph 10: Garden shed within the grounds of Tidcombe Hall.* 	Negligible

Table A11.2: Results of preliminary roost assessment of buildings and DNA analysis of droppings

Building reference	Building description	Roost suitability
	Photograph 11: Garden sheds within the grounds of Tidcombe Hall. 	
Garden walls	Wall surrounding Tidcombe Hall grounds has some cracks that have low suitability for roosting bats. *Photograph 12: Garden wall around the grounds of Tidcombe Hall.* 	Low

Trees

The results of the tree assessment are provided in Table A11.3 and Figure A11.2. Within the survey area, one tree was assessed as having 'High' roost suitability and four were assessed as having 'Moderate' roost suitability.

None of the trees within the Site boundary with bat roost potential would be affected by the proposed development and therefore further roost surveys of trees were not undertaken.

Table A11.3 Results of preliminary roost assessment of trees

Tree Reference	Species	Bat roost features and notes	BCT Roost Category (Collins 2016)
1	English oak	Several knot holes on truck and broken limb provided potential bat roost features. Assumed to be Tree 161 within arboricultural report.	Moderate
2	Lucombe oak	Holes and knots on truck and multiple limbs provided potential bat roost features. Assumed to be Tree 165 within arboricultural report.	High
3	Monterey pine	Woodpecker holes on the truck provided potential bat roost features. Assumed to be Tree 169 within arboricultural report.	Moderate
4	English oak	Knot holes on limbs, split limbs and crevice along hartwood on primary limb provided potential bat roost features. Assumed to be Tree 176 within arboricultural report.	Moderate
5	Common lime	Several knot holes provided potential bat roost features. Assumed to be Tree 171 within arboricultural report.	Moderate

Endoscope survey – garden walls

An endoscope survey was undertaken of all cracks and crevices which provided potential bat roosting features within the garden walls of Tidcombe hall, to determine the presence of bat roosts. No suitable internal roost features were identified during the endoscope inspection, with all potential features found to be too shallow or otherwise unsuitable; the presence of roosts was therefore discounted.

Dusk emergence surveys – buildings

Survey timings and weather conditions are provided in Table A11.4.

Table A11.4 Weather conditions during the emergence surveys

Date	Data at start/end of survey period	Time	Sunset time	Cloud (Octas)	Wind Speed (Beaufort)	Temperature (C)
09/08/2023	Start	20:32	20:47	0/8	0-1	19
	End	22:02		0/8	0-1	17
16/08/2023	Start	20:18	20:33	7/8	0	18
	End	22:05		1/8	1	18
23/08/2023	Start	20:04	20:19	1/8	0	20
	End	21:49		0/8	0	19
31/08/2023	Start	19:47	20:02	7/8	0-1	16
	End	21:32		8/8	0--1	15
14/09/2023	Start	19:10	19:31	8/8	2	17
	End	21:15		8/8	2	16
20/09/2023	Start	19:02	19:17	6/8	1	15
	End	20:47		5/8	1	12

The results of the emergences/re-entry surveys are provided in detail in Table A11.5.

Table A11.5 Emergence survey results

Building	Date	Position & surveyor type	Result per position	Summary
1 & 2	16/08/23	P1 (Thermal camera)	3 common pipistrelle bats emerged from Building 1; 1 at 21:40 from open dormer window on northern aspect, 1 at 21:43 from ridgeline on northwest corner, 1 at 21:43 from roof tiles to west of chimney.	Building 1: 4 common pipistrelle bats and 1 lesser horseshoe bat emerged. Building 2: 3 common pipistrelle bats emerged.
		P2 (Infra-red camera)	No emergence.	
		P3 (Surveyor)	3 common pipistrelle bats emerged from Building 2; 1 at 20:59 from gap in roof tiles, 2 at 21:08 from beneath gable.	
		P4 (Infra-red camera)	1 common pipistrelle emergence at 21:00, 1 lesser horseshoe bat emergence at 21:10, both from underground parking garage beneath Building 1.	
		P5 (Infra-red camera)	No emergence.	
		P6 (Surveyor)	No emergence.	
	31/08/23	P1 (Thermal)	No emergence.	Building 1: 3 lesser horseshoe bats, 3 common pipistrelle and 1 long-eared bat emerged. Building 2: No emergence
		P2 (Infra-red camera)	No emergence.	
		P3 (Surveyor)	No emergence.	
		P4 (Surveyor)	2 lesser horseshoe bats emerged from underground parking garage beneath Building 1; 1 at 20:23, 2 at 20:29.	
		P5 (Surveyor)	1 common pipistrelle emerged from dormer window on southern aspect of Building 1 at 20:16.	
		P6 (Infra-red camera)	2 common pipistrelle bats emerged from window on northern aspect on Building 1 at 20:31.	
		P7 (Infra-red camera)	No emergence.	
		Additional Surveyor	1 long eared bat emerged from dormer window on northern aspect of Building 1 at 20:38, 1 lesser horseshoe emerged from north-facing dormer window of Building 1 at 20:45.	
	20/09/23	P1 (Thermal)	No emergence.	Building 1: 7 lesser horseshoe bats and 1 common pipistrelle bats emerged. Building 2: No emergence.
		P2 (Surveyor)	No emergence.	
		P3 (Infra-red camera)	No emergence.	
		P4 (Surveyor)	7 lesser horseshoe bats emerged from underground parking garage beneath Building 1; 1 at 19:32, 1 at 19:39, 2 at 19:40, 1 at 19:42, 2 at 19:44.	

Table A11.5 Emergence survey results

Building	Date	Position & surveyor type	Result per position	Summary
		P5 (Infra-red camera)	No emergence.	
		P6 (Surveyor)	No emergence.	
		P7 (Infra-red camera)	1 common pipistrelle emerged from under eaves on southern aspect of Building 1 at 20:28.	
3	09/08/23	P1 (Infra-red camera)	No emergence.	No emergence.
		P2 (Infra-red camera)	No emergence.	
	23/08/23	P1 (Infra-red camera)	No emergence.	1 soprano pipistrelle bat emerged and up to 2 common pipistrelles entered/emerged.
		P2 (Surveyor)	1 soprano pipistrelle bat emergence from ridgeline at 20:37, 1 common pipistrelle re-entry 20:28 through open door on western aspect, 1 common pipistrelle bat emergence and re-entry at 20:46 via open door on western aspect.	
	14/09/23	P1 (Infra-red camera)	2 soprano pipistrelle bat re-entry via hole on northern aspect of roof; 1 at 20:14, 1 at 20:14.	Up to 5 soprano pipistrelle bats emerged / re-entered, and up to 3 common pipistrelles emerged / re-entered.
		P2 (Surveyor)	2 common pipistrelle bat emerged; 1 at 19:49 from lifted roof tile, 1 at 19:59 from eastern gable end. 1 common pipistrelle re-entered at 20:53 via eastern gable end.	
		P3 (Infra-red camera)	1 soprano pipistrelle bat emergence at 19:54 from eaves of western aspect, 1 soprano pipistrelle bat emergence and re-entry via open door on western aspect at 20:51.	
4	09/08/23	P1 (Surveyor)	1 soprano pipistrelle bat emerged at 20:59 from crack at top of northern wall, 2 common pipistrelles emerged; 1 at 21:08 and 1 at 21:13 from open door on eastern aspect. 2 lesser horseshoe bats emerged at 21:25 from open door on eastern aspect.	1 soprano pipistrelle bat, 3 common pipistrelle bats, and 2 lesser horseshoe bats emerged.
		P2 (Surveyor)	1 common pipistrelle emerged from crack at top of northern wall at 21:16.	
	23/08/23	P1 (Infra-red camera)	Up to 10 common pipistrelle bats emerged, and up to 6 common pipistrelle re-entered; all between 20:30 – 21:30 via open door on eastern aspect. Lots of foraging within the building.	Up to 10 common pipistrelle bats emerged.
		P2 (Surveyor)	No emergence	
	14/09/23	P1 (Infra-red camera)	No emergence	No emergence.
		P2 (Surveyor)	No emergence	

Summary of combined results and roost status

Building 1:

- Day roosts for low numbers of common pipistrelle within loft above ground parts of the building (maximum count of up to 4 emerged / re-entered in one night via open / damaged windows and roof tiles) and within underground parking garage (maximum count of 1 emerged in one night);
- Day roost for low numbers of brown long-eared bat (droppings recorded in loft space and living areas, and 1 long-eared bat recorded emerging from dormer window on northern aspect);
- Day roost for low numbers of lesser horseshoe bat within living areas of building (droppings were recorded during the roost inspection, but no lesser horseshoe bats were recorded emerging from above ground parts of building during emergence survey); and
- Lesser horseshoe day and transition roost recorded in underground parking garage beneath Tidcombe Hall, with potential for this feature to also support a lesser horseshoe hibernation roost (droppings recorded in underground parking area, one individual bat recorded roosting during inspection, up to 7 bats recorded emerging).

Building 2:

- Day roost for low numbers of lesser horseshoe bat (droppings were recorded in loft space, but no lesser horseshoe bats were recorded during the emergence survey);
- Day roost for low numbers of brown long-eared bat (droppings were recorded in loft space, but no long-eared bats were recorded during the emergence survey); and
- Day roost for low numbers of common pipistrelle (no evidence of common pipistrelle recorded during building inspection, maximum count of up to 3 emerged / re-entered in one night).

Building 3:

- Day roost for low numbers of lesser horseshoe bat (50 – 100 droppings were recorded during the roost inspection, but no lesser horseshoe bats were recorded during the emergence survey);
- Day roost for low numbers of common pipistrelle (no evidence of common pipistrelle recorded during building inspection, maximum count of up to 3 emerged / re-entered in one night); and
- Day roost for low numbers of soprano pipistrelle (no evidence of soprano pipistrelle recorded during building inspection, maximum count of up to 5 emerged / re-entered in one night) emerged.

Building 4:

- Day roost for low numbers of lesser horseshoe bat (no evidence recorded during the roost inspection, but 2 lesser horseshoes bat were recorded during the emergence survey);
- Day roost for low numbers of common pipistrelle (no evidence of common pipistrelle recorded during building inspection, maximum count of up to 10 emerged / re-entered in one night); and
- Day roost for low numbers of soprano pipistrelle (no evidence of soprano pipistrelle recorded during building inspection, 1 recorded emerging).

4 References

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

English Nature (2004) *Species Conservation Handbook*. English Nature, Peterborough.

Natural England (2010) *South Hams SAC greater horseshoe bat consultation zone planning guidance*. Natural England, Exeter.

Russ J (2012) *British Bat Calls: A Guide to Species Identification.* Pelagic Publishing, Exeter.

Figure A11.1: Bat Building Roost Survey Plan

N

Building 2

Day Roost
- Common pipistrelle

16.08.2023
Single common pipistrelle emerged from gap in roof tiles (20:59). Two common pipistrelle recorded emerging from the bottom of the gable (21:08).

Building 3

Day roost
- Common pipistrelle
- Soprano pipistrelle

23.08.2023
Single soprano pipistrelle emerged from ridgeline (20:37). Single common pipistrelle re-entry through open door on the western aspect (20:28). Single common pipistrelle emergence and re-entry via open door at western end of building (20:46).

14.09.2023
Two soprano pipistrelle recorded re-entering via hole on the northern aspect of roof (20:14). Single common pipistrelle recorded emerging from lifted ridge tile (19:49). Single common pipistrelle recorded emerging from eastern gable end (19:59). Single common pipistrelle recorded re-entering via the apex of the eastern gable end (20:53). Single soprano pipistrelle emerged from the eaves on the western aspect of the building (19:54). Single soprano pipistrelle recorded emerging and re-entering via the open door on the western aspect (20:51).

Building 4

Day Roost
- Common pipistrelle
- Lesser horseshoe
- Soprano pipistrelle

09.08.2023
Single soprano pipistrelle recorded emerging from crack in the eastern-facing wall (20:59). Two common pipistrelle (21:08, 21:13) and two lesser horseshoe (21:25) recorded emerging via open door. Single common pipistrelle recorded emerging from under a lifted stone tile (20:59). Single common pipistrelle recorded emerging from hole in northern-facing wall (21:16).

23.08.2023
13 pipistrelles (common and soprano) recorded emerging and six recorded re-entering via open door between 20:30 and 21:30.

50-100 lesser horseshoe bat droppings recorded in the southern loft space

Surveyor access into western loft space containing large accumulation of bat droppings (long-eared bat).

Lesser horseshoe and long-eared bat droppings recorded within living area.

Building 3

Building 1

Building 2

Building 4

Garage space beneath Building 1 suitable as a hibernation roost. Further survey necessary to characterise roost.

100-200 bat droppings recorded in the loft space (LHS and brown long-eared bat).

Building 1

Day roost
- Long-eared species
- Common pipistrelle
- Lesser horseshoe

Transitional roost
- Lesser horseshoe (potential hibernation roost)

16.08.2023
Single common pipistrelle recorded emerging from open dormer window (21:40). Single common pipistrelle recorded emerging from the ridgeline on the north-west corner (21:43). Single common pipistrelle recorded emerging from roof tiles to the west of the chimney (21:43). Single common pipistrelle and single lesser horseshoe recorded emerging from garage (21:00 and 21:10 respectively).

31.08.2023
Two lesser horseshoe recorded emerging from the garage (20:23, 20:29). Single common pipistrelle recorded emerging from south-facing dormer window (20:16). Single long-eared species recorded emerging from North-facing dormer window (20:38). Two common pipistrelle recorded emerging from a lower north-facing window (20:31). Single lesser horseshoe recorded emerging from north-facing dormer window (20:45).

21.09.2023
7 lesser horseshoe recorded emerging from the garage (19:32 – 19:44). Single common pipistrelle recorded emerging from the eaves on the southern aspect of the building (20:28).

Key
- Long-eared species point of emergence
- Lesser horseshoe point of emergence
- Soprano pipistrelle point of emergence/re-entry
- Common pipistrelle point of emergence/re-entry
- Evidence of bat use - droppings
- Building with confirmed bat roost
- Building with moderate bat roost suitability
- Building
- Survey Boundary

0 10 20 m

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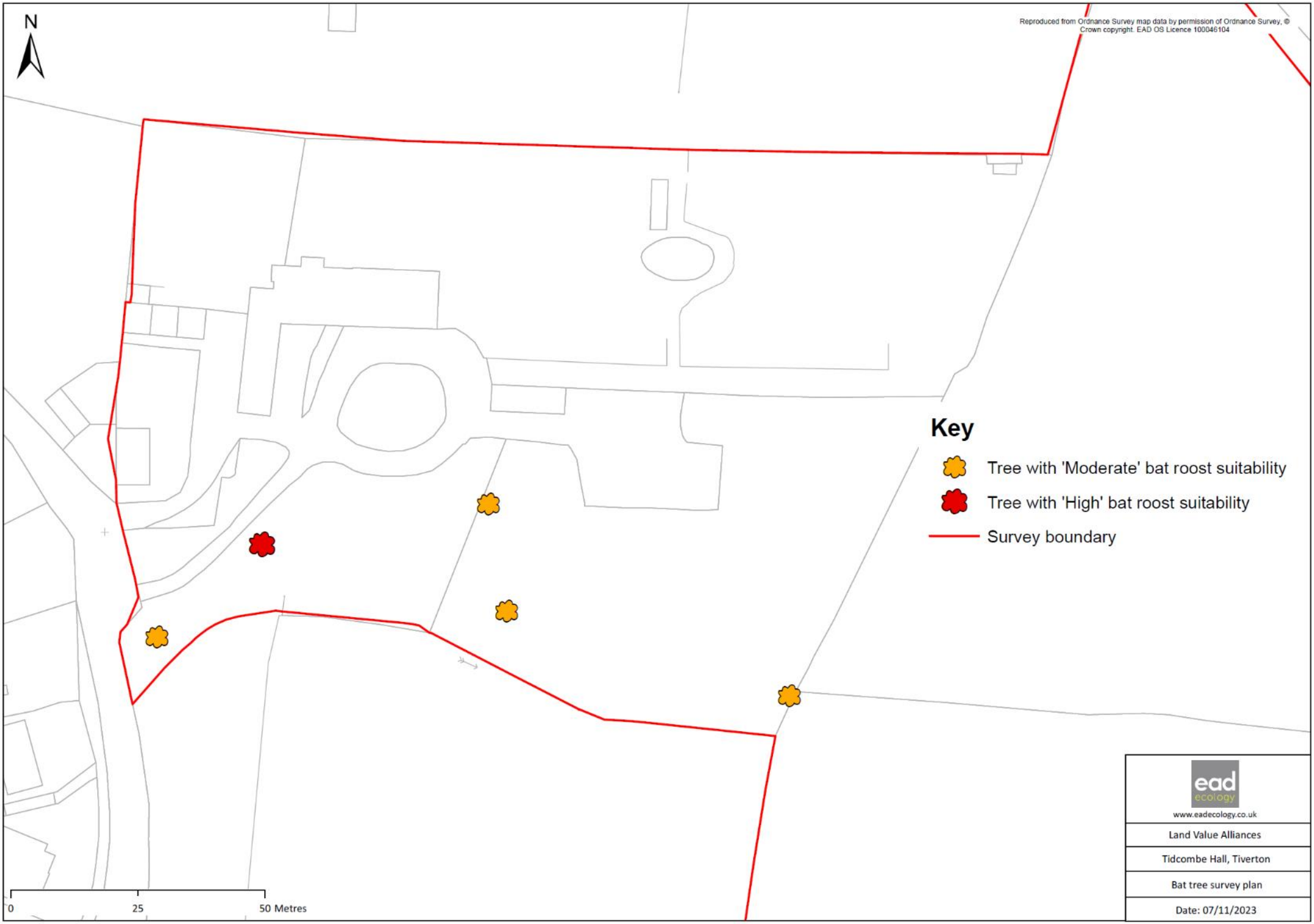
Tidcombe Hall, Tiverton

Bat Roost Plan

Date: 09/11/2023

Figure A11.2: Bat Tree Roost Survey Plan


N
Reproduced from Ordnance Survey map data by permission of Ordnance Survey, © Crown copyright. EAD OS Licence 100046104
Key
Tree with 'Moderate' bat roost suitability
Tree with 'High' bat roost suitability
Survey boundary
0
25
50 Metres
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Tidcombe Hall, Tiverton
Bat tree survey plan
Date: 07/11/2023

Appendix 12: Biodiversity Net Gain assessment

Biodiversity Net Gain Assessment

1 Methods and assumptions

A Biodiversity Net Gain (BNG) assessment of the development proposals of the Site was undertaken. The BNG assessment utilised Defra Biodiversity Metric calculation tool (version 4.0, Natural England 2023) with reference to supporting documents (Natural England 2023a, 2023b & 2023c), to quantify the net change in habitats as a result of the proposed development. The completed Metric has been supplied as a digital file (Excel spreadsheet).

Pre-development habitats

The onsite habitat, and hedgerow baseline was informed by a Habitat Condition Assessment (HCA) survey undertaken by an experienced (FISC level 4) ecologist from EAD Ecology on 13 June 2023 (refer to Tables A12.2, A12.3 and 12.4, and the Baseline Condition Assessment Plan (Figure A12.1) and separate Biodiversity Metric spreadsheet (Tables A12.5 to A12.9). All baseline habitat information was gathered prior to any construction activity within the Site, and the Habitat Condition Assessments followed relevant methodologies (Natural England 2023c).

Baseline habitat measurements were undertaken using QGIS, then consolidated and incorporated into the metric using the Natural England Biodiversity Metric 4.0 GIS import tool (Natural England 2023 & 2023b). Baseline tree areas were calculated using the integrated Metric 4.0 Individual tree helper.

Due to differences in habitat definitions between UKHab and Phase 1 Habitat survey, the scattered trees within the grounds of Tidcombe Hall have been mapped and assessed within the baseline as broadleaved woodland.

Post-development habitats

Post-development habitat areas shown are based on the Illustrative Layout prepared for the planning application (Ref: 230301 L 02 02 E; Clifton Emery Design 2023); refer to Figure 2 and Figure A12.2. Habitat measurements were undertaken on georeferenced plans using QGIS, then consolidated and incorporated into the metric using the Natural England Biodiversity Metric 4.0 GIS import tool. Areas for proposed trees were calculated in accordance with guidance (Natural England 2023a) using the integrated Metric 4.0 Individual tree helper.

Due to the illustrative nature of the layout design, assumptions about the proportions of the proposed habitats within the development were made; these assumptions are detailed on the Post-development Metric Habitat Retention, Creation and Enhancement Plan (Figure A12.2), and described in the Metric Excel document.

Due to the illustrative nature of the layout design, precise tree planting specifications are not shown on the Illustrative Layout plan, but was assumed that 50 ‘small’ and 20 ‘medium’ ‘individual trees’ will be planted within the POS for the purpose of the BNG Metric calculations; the precise locations of these trees are not displayed on the Post-development Metric Habitat Retention, Creation and Enhancement Plan, but would be scattered throughout all areas of public open space (Figure A12.2).

Interventions proposed to achieve the conditions specified in the Metric are detailed in Table A12.2. It is considered that all measures and targeted habitat conditions are realistic and achievable; refer to Figure A12.2, Table A12.6 and separate Biodiversity Metric spreadsheet. Determination of expected post-development habitat condition is based on the relevant habitat condition criteria in Defra 4.0 (Natural England 2023c), and assumes implementation of a Construction Ecological Management Plan (CEMP)

providing planting specification and establishment requirements for habitats, and an Ecological Management Plan (LEMP), detailing the long-term management of retained and created habitats.

The BNG assessment has been based on the assumption that landscape creation will be undertaken within 36 months of an area of habitat being removed. Therefore, a two-year delay in starting habitat creation has been applied within the Metric spreadsheet.

Strategic Significance / Delivery
The Strategic Significance of both Baseline and Post Construction habitats applied to the Metric have been assigned in accordance with the Metric guidance (Natural England 2023a), with reference to site-specific information. The Site is located immediately adjacent to Grand Western Canal Country Park Local Nature Reserve, which is designated for its local wildlife abundance including otter and scarce chaser dragonfly, and as such, the adjacent hedgerows, both existing and proposed, were categorised as being 'Location ecologically desirable but not in local strategy' for strategic significance.

2 Biodiversity Net Gain

The pre-development biodiversity value of the Site is 31.48 'Habitat Units', and 15.95 'Hedgerow Units'; refer to Table A12.1.

The post-development biodiversity value of the Site, based on an assessment of the illustrative layout detailed in Figure 2 would be 32.97 'Habitat Units', and 17.58 'Hedgerow Units'; refer to Figure A12.2. The proposed development would therefore, demonstrate a net gain of 1.49 Habitat Units (+4.73%), and a net gain of 1.63 Hedgerow Units (10.24%); refer to Table A12.1.

The areas and conditions of the baseline habitats, hedgerows, and trees currently located on the Site are provided in Tables A12.2, A12.3 and A12.4. The indicative post-construction 'Site habitat creation' Biodiversity Units for habitats and hedgerows are provided in Table A12.7 and A12.8 respectively.

Table A12.1: BNG Metric Summary [5]

Onsite baseline pre-development	Habitat units	31.48
	Hedgerow units	15.95
Onsite post-development (Habitat retention & creation)	Habitat units	32.97
	Hedgerow units	17.58
Onsite net % change (Habitat retention & creation)	Habitat units	4.73%
	Hedgerow units	10.24%
Total net unit change (Habitat retention & creation)	Habitat units	1.49
	Hedgerow units	1.63

Trading rules
Trading rules are met for all habitat distinctiveness groups.

[5] Headline figures reflect metric outputs which include built in rounding to two decimal places.

Additionality
Dormouse mitigation is being proposed onsite so has been considered as part of this BNG assessment. Protected species mitigation can only contribute to the BNG calculations up to no-net loss; additional habitat creation over and above what is required for protected species mitigation is required to deliver net gain. In this instance, the proposed 'other neutral grassland'/wildflower meadow creation delivers area-based non-protected species mitigation solely for the delivery of net gain, as it does not represent dormouse habitat. The 'other neutral grassland'/wildflower meadow alone would deliver an additional 9.02 Habitat Units, solely for the purpose of BNG. Additionality requirements are therefore addressed by the current proposals.

For hedgerows, it is considered that delivery of the requisite amount of non-mitigation hedgerow would be possible within the parameters of the illustrative layout, although due to the illustrative nature of the proposals, it is proposed that a further BNG assessment would be undertaken at the Reserved Matters stage using detailed landscape planting plans to confirm this. However, on the basis of the current illustrative design, the approximately 138m section of proposed 'Species-rich native hedgerow with trees - associated with bank or ditch' in the south of the Site, that is disconnected from the surrounding dormouse habitat and thus not considered to be mitigation habitat, would deliver 1.51 Hedgerow Units, which is just under 10% of the hedgerow baseline.

3 Conclusions

The Biodiversity Net Gain calculations based on the outline landscape strategy demonstrate that the proposed development would deliver a net gain of 4.73% in Habitat Units, and a 10.24% net gain in Hedgerow Units. The trading rules would be met for habitat distinctiveness groups. The proposed hedgerow creation would offset and compensate for the small loss of hedgerow associated with the proposed Site access.

A Construction Ecological Management Plan (CEMP) and Landscape and Ecological Management Plan (LEMP) would set out the habitat protection, enhancement, establishment and management strategies together with a framework for monitoring to provide certainty for the achievement and long-term maintenance of the predicted units for onsite post-intervention habitats and hedgerows.

4 References

Natural England (2023). *The Biodiversity Metric 4.0 Auditing and accounting for biodiversity calculation tool.* ISBN: 978-1-7393362-0-2

Natural England (2023a) *Biodiversity Metric 4.0 User Guide*. Natural England Joint Publication JP039.

Natural England (2023b) *Biodiversity Metric 4.0 Short Data Input Guide*. Natural England Joint Publication JP039.

Natural England (2023c) *The Biodiversity Metric 4.0 -Technical Annex 1: Condition Assessment Sheets and Methodology*. Natural England Joint Publication JP039. ISBN 978-1-7393362-2-6.

Figure A12.1: Pre-development (Baseline) Habitat Condition Assessment Plan

ROAD
LLETT ROAD
ROAD
RYDER
CL
COMBE LANE
WARNICOMBE LANE

F1
F2
F3
F4
F5
F6
F7
W1
A1
A 2

H1- Good
H2 - Good
H4- Moderate
H5- Moderate
H6- Moderate
H7- Moderate
H8- Moderate
H9- Good
Null- Good

Key

Individual Trees
- Existing Large Rural Tree
- Existing Medium Rural Tree
- Existing Small Rural Tree

Individual tree Condition
- Moderate
- Good

Hedgerows
- Non-native and ornamental hedgerow
- Native hedgerow
- Species-rich native hedgerow
- Species-rich native hedgerow - associated witl
- Species-rich native hedgerow with trees - assc

Habitats
- Bramble scrub
- Cereal crops
- Developed land; sealed surface
- Introduced shrub
- Other neutral grassland
- Other woodland; broadleaved
- Ponds (non-priority habitat)
- Vacant or derelict land

Habitat Condition
- Good
- Moderate
- Poor
- N/A - Other
- Condition Assessment N/A

0 30 60 m

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Baseline Habitat Condition Plan

Date: 17/11/2023

Figure A12.2: Post-development Metric Habitat Retention, Creation and Enhancement Plan

WARNICOMBE LANE

LETT ROAD

RYDER CL

Retained-Good
Retained-Good
Retained-Good
Lost-N/A
Retained-Good
Retained-Good
Lost-N/A
Lost-N/A
Retained-Moderate
Retained-Moderate
Retained-Moderate
Lost-N/A
Lost-N/A
Retained-Moderate
Retained-Poor
Retained-Moderate
Created-Good
Retained-Moderate
Created-Good
Created-Good
Created-Good
Created-Good
Retained-Moderate

Key

- Proposed Large Rural Tree
- Proposed Medium Rural Tree
- Proposed Small Rural Tree

Hedgerows

- Non-native and ornamental hedgerow
- Native hedgerow
- Species-rich native hedgerow
- Species-rich native hedgerow - associated with bank or ditch
- Species-rich native hedgerow with trees - associated with bank or ditch
- Lost

Habitats

- Allotments
- Bioswale
- Built linear features
- Development parcels (70% developed land; sealed surface, 30% vegetated garden)
- Southern POS (50% other neutral grassland, 20% modified grassland, 30% mixed native scrub)
- Northern POS (70% other neutral grassland, 20% modified grassland, 10% broadleaved woodland)
- Other woodland; broadleaved
- Ponds (non-priority habitat)
- Sustainable drainage system
- Traditional orchards

Habitats Condition

- Good
- Moderate
- N/A - Other

0 30 60 m

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Tidcombe Hall, Tiverton

Post-development Habitat Condition Plan

Date: 21/11/2023

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
-	Cropland – cereal crops	5.0517	N/A	N/A	Area / compensation not in local strategy/ no local strategy
F1	Grassland – other neutral grassland	0.1140	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present. Passes condition criteria B: Sward height is varied creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Fails condition criteria C: Cover of bare ground is less than 1%. Fails condition criteria D: Cover of bracken is less than 20%, however cover of scrub (including bramble) is more than 5%. Fails condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for more than 5% of the total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	Area / compensation not in local strategy / no local strategy
F2	Grassland – other neutral grassland	0.0895	Moderate	Passes condition criteria A: The grassland is a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland). Passes condition criteria B: Sward height is varied creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Passes condition criteria C: Cover of bare ground is between 1% and 5%. Fails condition criteria D: Cover of bracken is less than 20%, however cover of scrub (including bramble) is more than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	Area / compensation not in local strategy / no local strategy

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
F3	Grassland – other neutral grassland	0.1257	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present. Passes condition criteria B: Sward height is varied creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Fails condition criteria C: Cover of bare ground is less than 1%. Fails condition criteria D: Cover of bracken is less than 20%, however cover of scrub (including bramble) is more than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	Area / compensation not in local strategy / no local strategy
F4	Grassland – other neutral grassland	0.1079	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present. Fails condition criteria B: Sward height is not varied and lacks microclimates which provide opportunities for insects, birds and small mammals to live and breed. Fails condition criteria C: Cover of bare ground is less than 1%. Passes condition criteria D: Cover of bracken is less than 20% and cover of scrub is less than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	Area / compensation not in local strategy / no local strategy
F5	Grassland – other neutral grassland	0.0535	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present.	Area / compensation not

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
				Fails condition criteria B: Sward height is not varied and lacks microclimates which provide opportunities for insects, birds and small mammals to live and breed. Fails condition criteria C: Cover of bare ground is less than 1%. Passes condition criteria D: Cover of bracken is less than 20% and cover of scrub is less than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	in local strategy / no local strategy
F6	Grassland – other neutral grassland	0.0865	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present. Passes condition criteria B: Sward height is varied creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Fails condition criteria C: Cover of bare ground is less than 1%. Fails condition criteria D: Cover of bracken is less than 20%, however cover of scrub (including bramble) is more than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	Area / compensation not in local strategy / no local strategy
F7	Grassland – other neutral grassland	0.0743	Poor	Fails condition criteria A: The grassland is not a good representation of the habitat type it has been identified as (g3c5 Arrhenatherum neutral grassland) – cover of forbs is low and indicator species listed by UKHab for the habitat type are not consistently present. Passes condition criteria B: Sward height is varied creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Area / compensation not in local strategy / no local strategy

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
				Fails condition criteria C: Cover of bare ground is less than 1%. Fails condition criteria D: Cover of bracken is less than 20%, however cover of scrub (including bramble) is more than 5%. Passes condition criteria E: Combined cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of total area. Fails condition criteria F: There are fewer than 10 vascular plant species per m2 present.	
-	Heathland and shrub – bramble scrub	0.127	N/A	One species (bramble) comprising more than 75% coverage.	Area / compensation not in local strategy / no local strategy
P2	Lakes – Ponds (non-priority habitat)	0.0172	Moderate	Passes condition criteria A: The pond is of good water quality, with clear water indicating no obvious signs of pollution. Passes condition criteria B: There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter. Passes condition criteria C: Less than 10% of the water surface was covered with duckweed or filamentous algae. Passes condition criteria D: The pond was not artificially connected to other waterbodies. Passes condition criteria E: Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams, pumps or pipework. Passes condition criteria F: There was an absence of listed non-native plant and animal species. Passes condition criteria G: The pond did not contain fish.	Area / compensation not in local strategy / no local strategy

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
				Passes condition criteria H: Emergent, submerged or floating plants (excluding duckweed) cover at least 50% of the pond area which is less than 3 m deep. Fails condition criteria I: More than 50% of the pond surface was shaded by adjacent scrub.	
-	Urban – developed land; sealed surface	0.2254	N/A- Other	N/A	Area / compensation not in local strategy / no local strategy
-	Urban – introduced shrub	0.1364	N/A- Other	N/A	Area / compensation not in local strategy / no local strategy
-	Urban – vacant or derelict land	0.0422	Good	Passes condition criteria A: Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area. Passes condition criteria B: The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year. Passes condition criteria C: Invasive non-native plant species (listed on Schedule 9 of WCA) and others which are to the detriment of native wildlife cover less than 5% of the total vegetated area.	Area / compensation not in local strategy / no local strategy
W1	Woodland and forest – other woodland; broadleaved	0.4679	Moderate	Criteria A – scores 3: Three age-classes present. Criteria B – scores 3: No significant browsing damage evident in woodland. Criteria C – scores 1: Rhododendron present in the woodland. Criteria D – scores 3: Five or more native tree or shrub species found across woodland parcel. Criteria E – scores 2: 50 - 80% of canopy trees and understory shrubs are native.	Area / compensation not in local strategy / no local strategy

Table A12.2. Baseline Habitat Condition Assessment Results (June 2023); refer to Figure A12.1.

Parcel code	Habitat type	Area (Ha)	Condition	Condition assessment notes	Strategic significance
				Criteria F – scores 3: Woodland is <10ha, in which case 0 - 20% temporary open space is permitted. Criteria G – scores 2: One or two classes only present in woodland regeneration. Criteria H – scores 1: A high-risk disease is present (ash dieback). Criteria I – scores 1: No recognisable woodland NVC plant community at ground layer present. Criteria J – scores 3: Three storeys across all survey plots. Criteria K – scores 1: No veteran trees present in woodland. Criteria L – scores 2: Between 25% and 50% of all survey plots within the woodland parcel have deadwood. Criteria M – scores 2: Less than 1 hectare in total of nutrient enrichment across woodland area and less than 20% of woodland area has damaged ground. Overall score: 27/39	

Table A12.3 Baseline Hedgerow Condition Assessment Results; refer to Figure A12.1.

Hedge Ref	A1. Height (>1.5m average)	A2. Width (>1.5m average)	B1. Gap under canopy (<0.5m average)	B2. Canopy gaps (<10%, 5m max)	C1. Undisturbed ground (1m width at least 1 side)	C2. Nutrient-enriched perennial vegetation (<20% cover of the area of undisturbed ground.)	D1. Invasives/ Neophytes (non-natives) (<10%)	D2. Damage (<10%)	E1. One mature tree / 20-50m and more than 1 age class present	E2. Tree health (>95% in healthy condition)	Bank or ditch	Sp. rich	Length (km)	Condition
H1	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	0.0126	Good
H2	✓	✓	✓	✓	✓	X	✓	✓	N/A	N/A	X	X	0.067	Good
H3	✓	✓	✓	✓	X	X	✓	✓	N/A	N/A	✓	✓	0.149	Moderate
H4	✓	✓	✓	✓	X	X	✓	✓	N/A	N/A	✓	✓	0.239	Moderate
H5	✓	✓	✓	✓	X	X	✓	✓	N/A	N/A	✓	✓	0.168	Moderate
H6	✓	✓	✓	✓	X	X	✓	✓	✓	X	✓	✓	0.144	Moderate
H7	✓	✓	✓	✓	X	X	✓	✓	✓	X	✓	✓	0.029	Moderate
H8	✓	✓	✓	✓	✓	X	✓	X	✓	X	✓	✓	0.073	Moderate
H9	✓	✓	✓	✓	✓	✓	X	✓	N/A	N/A	X	✓	0.08	Good
Ornamental Hedge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			0.043	Good

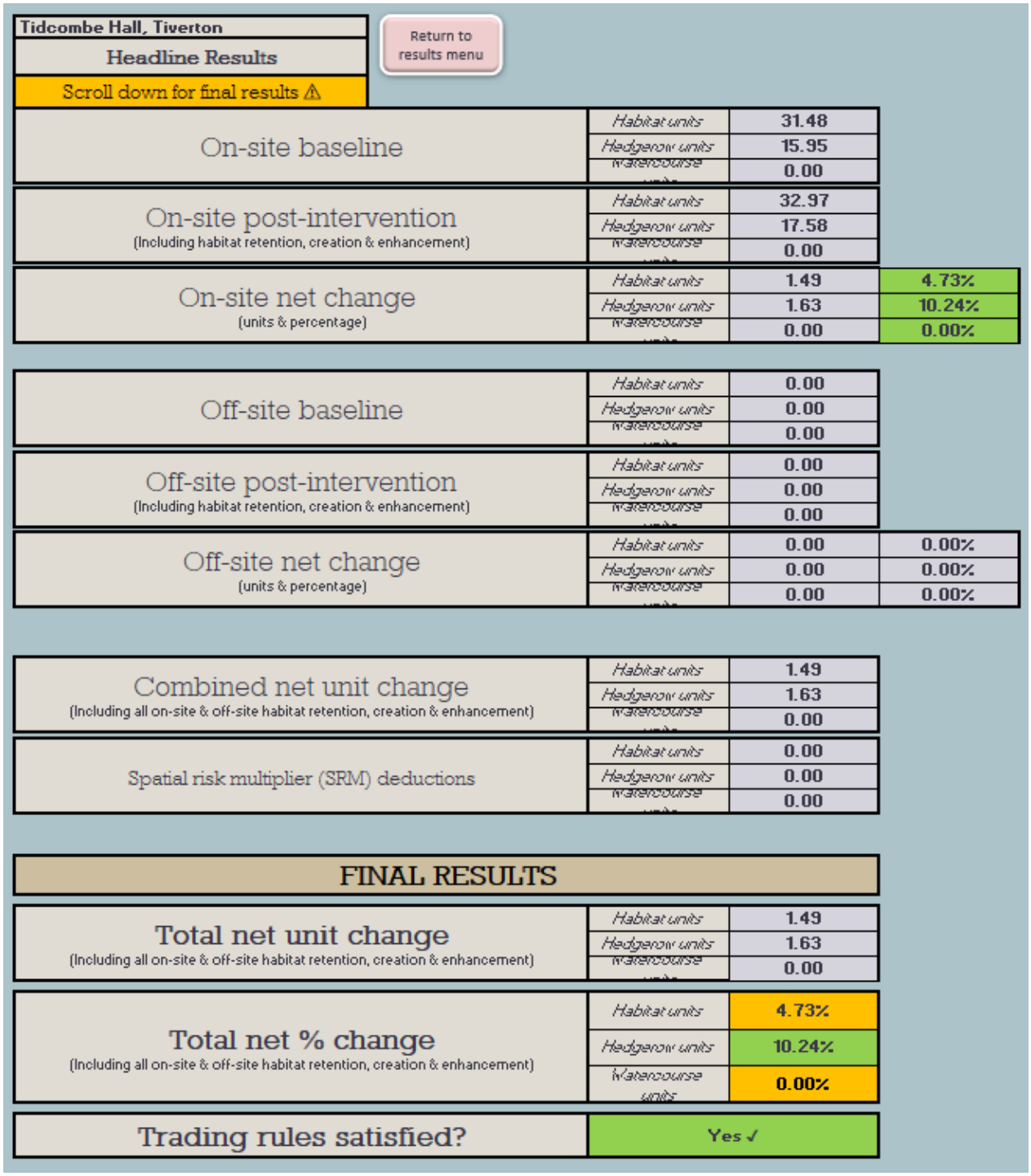
Table A12.4 Baseline Individual Trees Condition Assessment Results; refer to Figure A12.1.

Tree Reference	Size	Condition	Condition criteria A: The tree is a native species (or at least 70% within the block are native species).	Condition criteria B: The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Condition criteria C: The tree is mature (or more than 50% within the block are mature).	Condition criteria D: There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	Condition criteria E: Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	Condition criteria F: More than 20% of the tree canopy area is oversailing vegetation beneath.
T1	Medium	Good	✓	✓	✓	X	✓	✓
T2	Medium	Good	✓	✓	✓	✓	X	✓
T3	Medium	Good	✓	✓	✓	✓	X	✓
T5	Medium	Moderate	✓	X	✓	X	✓	✓
T6	Medium	Good	✓	✓	✓	✓	✓	✓
T6a	Medium	Good	✓	✓	✓	✓	✓	✓
T7	Medium	Moderate	X	✓	✓	✓	X	✓
T7a	Medium	Moderate	X	✓	✓	✓	X	✓
T8	Medium	Good	✓	✓	✓	✓	X	✓
T 9	Medium	Moderate	X	✓	✓	✓	X	✓
T 10	Medium	Good	✓	✓	✓	✓	X	✓
T11	Medium	Good	✓	✓	✓	✓	X	✓
T12	Medium	Good	X	✓	✓	✓	✓	✓
T13	Medium	Good	✓	✓	✓	✓	X	✓
T14	Medium	Good	✓	✓	✓	✓	✓	✓
T14a	Medium	Good	✓	✓	✓	✓	✓	✓
T15	Large	Moderate	X	✓	✓	✓	X	✓
T16	Medium	Good	✓	✓	✓	✓	✓	✓
T17	Large	Good	✓	✓	✓	✓	✓	✓
T18	Medium	Moderate	✓	X	✓	✓	X	✓

Table A12.4 Baseline Individual Trees Condition Assessment Results; refer to Figure A12.1.

Tree Reference	Size	Condition	Condition criteria A: The tree is a native species (or at least 70% within the block are native species).	Condition criteria B: The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Condition criteria C: The tree is mature (or more than 50% within the block are mature).	Condition criteria D: There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	Condition criteria E: Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	Condition criteria F: More than 20% of the tree canopy area is oversailing vegetation beneath.
T19	Large	Good	✓	✓	✓	✓	✓	✓
T20	Small	Moderate	✓	✓	X	✓	X	✓
T21	Small	Moderate	✓	✓	X	✓	X	✓
T22	Small	Moderate	✓	X	X	X	✓	✓
T23	Small	Moderate	✓	X	X	X	✓	✓
T24	Small	Moderate	✓	X	X	X	✓	✓
T25	Small	Moderate	✓	✓	X	✓	X	✓
T26	Small	Moderate	✓	✓	X	✓	X	✓
T27	Medium	Good	✓	✓	✓	✓	X	✓
T28	Medium	Moderate	X	✓	X	✓	X	✓
T29	Small	Moderate	X	✓	X	✓	X	✓
T30	Small	Moderate	✓	✓	X	✓	X	✓
T31	Small	Moderate	✓	✓	X	✓	X	✓
T32	Large	Good	✓	✓	✓	✓	✓	✓
T33	Small	Moderate	✓	✓	X	✓	X	✓
T34	Small	Moderate	✓	✓	X	✓	X	✓
T35	Medium	Moderate	X	✓	✓	✓	X	✓
T36	Medium	Moderate	X	✓	✓	✓	X	✓
T37	Medium	Good	✓	✓	✓	✓	X	✓
T38	Small	Moderate	✓	✓	X	✓	X	✓

Table A12.5. Headline Summary Results



Tidcombe Hall, Tiverton			
Headline Results			
Scroll down for final results ⚠			
On-site baseline	Habitat units	31.48	
	Hedgerow units	15.95	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	32.97	
	Hedgerow units	17.58	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	1.49	4.73%
	Hedgerow units	1.63	10.24%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	1.49	
	Hedgerow units	1.63	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	1.49	
	Hedgerow units	1.63	
	Watercourse units	0.00	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	4.73%	
	Hedgerow units	10.24%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		

Table A12.6. Site Habitat Baseline

	Existing area habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units	Area retained	Area enhanced	Baseline units	Baseline units enhance	Area habitat lost	Units lost		User comments
1	Cropland	Cereal crops	5.4484	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	10.90	0	0	0.00	0.00	5.45	10.90		
2	Grassland	Other neutral grassland	0.0895	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.72	0	0	0.00	0.00	0.09	0.72		
3	Grassland	Other neutral grassland	0.5564	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	2.23	0	0	0.00	0.00	0.56	2.23		
4	Heathland and shrub	Bramble scrub	0.127	Medium	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.51	0	0	0.00	0.00	0.13	0.51		
5	Lakes	Ponds (non-priority habitat)	0.0172	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.14	0.0172	0	0.14	0.00	0.00	0.00		
6	Urban	Developed land; sealed surface	0.2254	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	0	0	0.00	0.00	0.23	0.00		
7	Urban	Introduced shrub	0.1364	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.27	0	0	0.00	0.00	0.14	0.27		
8	Urban	Vacant or derelict land	0.0422	Low	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.25	0	0	0.00	0.00	0.04	0.25		
9	Woodland and forest	Other woodland; broadleaved	0.4679	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	3.74	0.3965	0	3.17	0.00	0.07	0.57		
10	Individual trees	Rural tree	0.2293614	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	2.75	0.15291	0	1.83	0.00	0.08	0.92		3 large good (1 lost)
11	Individual trees	Rural tree	0.0764538	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.61	0	0	0.00	0.00	0.08	0.61		1 large moderate
12	Individual trees	Rural tree	0.54965305	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	6.60	0.47637	0	5.72	0.00	0.07	0.88		15 medium good (2 lost)
13	Individual trees	Rural tree	0.29314829	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	2.35	0.2565	0	2.05	0.00	0.04	0.29		8 medium moderate (1 lost)
14	Individual trees	Rural tree	0.05292955	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.42	0.00814	0	0.07	0.00	0.04	0.36		13 small moderate (11 lost)
15																
16																
17																
18																
19																
		Total habitat area	8.31					31.48	1.31	0.00	12.98	0.00	7.00	18.50		
		Site Area (Excluding area of Individual trees and Green walls)	7.11													

Total area lost (excluding area of Individual trees and Green walls)	6.70

Table A12.7. Site Hedgerow Baseline

	Existing hedgerow habitats			Distinctiveness		Condition		Strategic significance			Required Action to Meet Trading Rules	Ecological baseline
Baseline ref	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total hedgerow units
1		Native hedgerow	0.067	Low	2	Good	3	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.40
2		Non-native and ornamental hedgerow	0.043	V.Low	1	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.04
3		Species-rich native hedgerow - associated with bank or ditch	0.556	High	6	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like or better	6.67
4		Species-rich native hedgerow with trees - associated with bank or ditch	0.074	V.High	8	Good	3	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like	1.78
5		Species-rich native hedgerow with trees - associated with bank or ditch	0.173	V.High	8	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like	2.77
6		Species-rich native hedgerow	0.08	Medium	4	Good	3	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.96
7		Species-rich native hedgerow with trees - associated with bank or ditch	0.126	V.High	8	Good	3	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Like for like	3.33
8												
9												
10												
11												
12												
			1.12									15.95

Retention category biodiversity value						Comments	
Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	User comments	Consenting body comments
0.067	0	0.40	0.00	0.00	0.00		
0.043	0	0.04	0.00	0.00	0.00		
0.527	0	6.32	0.00	0.03	0.35		
0.059	0	1.42	0.00	0.02	0.36		
0.173	0	2.77	0.00	0.00	0.00		
0.062	0	0.74	0.00	0.02	0.22		
0.126		3.33	0.00	0.00	0.00	Location deemed ecologically desirable because adjacent to Grand Western Canal Country Park Local Nature Reserve	
1.06	0.00	15.02	0.00	0.06	0.92		

Table A12.8. Site Habitat Creation

Post development/ post intervention habitats												
			Distinctivene	Conditio	Strategic significance	Temporal multiplier		Difficulty		Comments		
Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation	Habitat units delivered	User comments	Consenting body comments	GIS reference number
Grassland	Other neutral grassland	0.60055	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	3.74	Habitat creation measures based on Illustrative layout prepared for the planning application (Ref: 230301 L 02 02 E; Clifton Emery Design 2023). 50% of southern POS; refer to baseline habitat plan		
Grassland	Other neutral grassland	1.11517	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	6.95	70% of Northern POS; refer to baseline habitat plan.		
Grassland	Traditional orchards	0.0474	High	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	22	Low	0.26			
Urban	Allotments	0.0673	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	0.24			
Urban	Bioswale	0.0728	Low	Good	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	5	Medium	0.24			
Urban	Built linear features	1.5386	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00			
Urban	Developed land; sealed surface	1.35891	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00			
Urban	Sustainable drainage system	0.2348	Low	Good	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Medium	0.74			
Urban	Vegetated garden	0.58239	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	1.05			
Grassland	Modified grassland	0.24022	Low	Poor	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	0.43	20% of Southern POS; refer to baseline habitat plan		
Heathland and shrub	Mixed scrub	0.36033	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	7	Low	2.25	30% of Southern POS; refer to baseline habitat plan		
Grassland	Modified grassland	0.31862	Low	Poor	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	3	Low	0.57	20% of Northern POS; refer to baseline habitat plan.		
Woodland and forest	Other woodland; broadleaved	0.15934	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	17	Low	0.70	10% of Northern POS; refer to baseline habitat plan		
Individual trees	Urban tree	0.203575204	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	29	Low	0.58	50 small trees (scattered within POS)		
Individual trees	Urban tree	0.732870734	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	27	Low	2.24	20 medium trees (scattered within POS)		
	Total habitat area	7.63							19.99			
	Site Area (Excluding area of Individual trees and Green walls)	6.70										

Table A12.9. Site Hedgerow Creation

		Proposed habitats		Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multiplier -	Hedge units delivered	Comments	
Baseline ref	New hedge number	Habitat type	Length (km)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation		User comments	Consenting body comments
1		Species-rich native hedgerow with trees - associated with bank or ditch	0.07	V.High	Good	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	22	Low	0.77		
2		Species-rich native hedgerow with trees - associated with bank or ditch	0.023	V.High	Good	Location ecologically desirable but not in local strategy	Check details- Delay in starting habitat in required condition? ⚠	22	Low	0.28	Location deemed ecologically desirable because adjacent to Grand Western Canal Country Park Local Nature Reserve	
3		Species-rich native hedgerow with trees - associated with bank or ditch	0.138	V.High	Good	Area/compensation not in local strategy/ no local strategy	Check details- Delay in starting habitat in required condition? ⚠	22	Low	1.51	Disconnected from adjacent dormouse habitat so not considered mitigation (delivers approximately 10% of hedgerow baseline so additionality not considered likely to be an issue for hedgerows)	
4												
5												
6												
7												
8												
			0.23							2.56		

Appendix 13: Baseline evaluation criteria

Baseline Evaluation criteria

Key evaluation categories are as follows:

- International value (internationally designated sites, or sites meeting criteria for international designation. Sites supporting populations of internationally important species);
- UK value (sites with UK importance);
- National value (nationally designated sites (e.g. SSSIs) or sites meeting SSSI selection criteria. Sites containing viable areas of threatened Priority Habitat or supporting a viable population of Red Data Book species or supplying critical elements of their habitat requirements);
- Regional value (sites exceeding county-level designations but not meeting SSSI criteria. Sites containing viable areas of threatened habitats on the Regional BAP, supporting viable populations of species that are nationally scarce or included in the regional BAP due to rarity);
- County value (sites meeting criteria for county or metropolitan designations. Site containing a viable area of a threatened habitat identified on the county BAP or supporting viable populations of county or metropolitan rarities e.g. county BAP or county 'Red Data Book' species);
- District value (undesignated sites or features that are considered to appreciably enrich the habitat resource within the context of the Borough or District);
- Parish value (areas of habitat considered to appreciably enrich the habitat resource within the context of a parish or neighbourhood);
- Sub-Parish (ecological resource not meeting any of the above criteria).

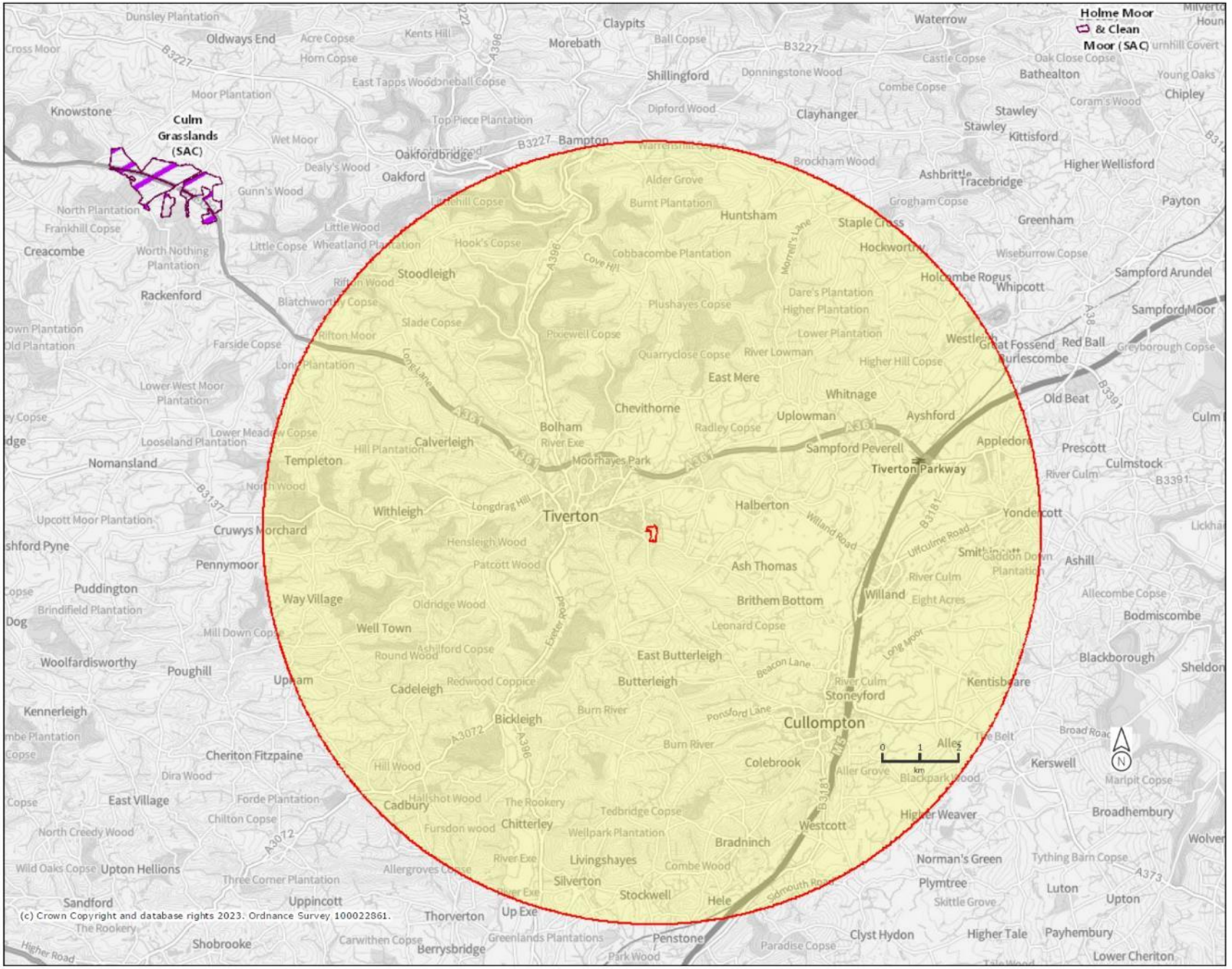
Additional criteria employed were from the following:

- Schedules and Annexes of UK and European wildlife legislation (e.g. Wildlife and Countryside Act (1981) (as amended) and The Conservation of Habitats and Species Regulations 2017 (as amended);
- International conventions on wildlife (e.g. Bern Convention, Bonn convention);
- Habitats and species of Principal Importance.
- Local Biodiversity Action Plans.
- Taxi-specific conservation lists (e.g. Red Data Lists; Red/Amber Lists).

Appendix 14: Designated sites of nature conservation

MAGiC

European designated sites within 10km of Little Tidcombe Hall and Farm



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Legend

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

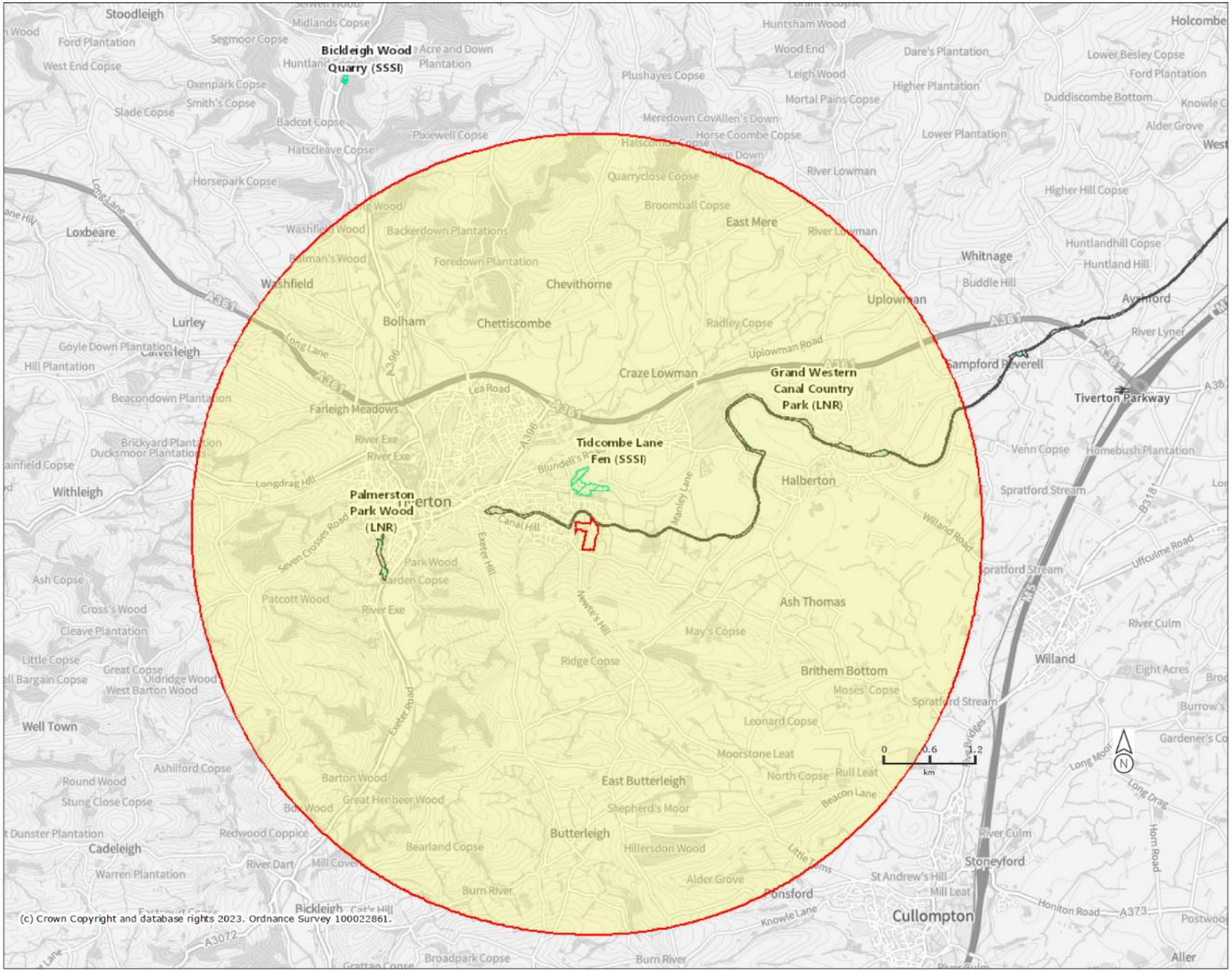
Projection = OSGB36
xmin = 271400
ymin = 100600
xmax = 321800
ymax = 126100

0 2 4 km

Map produced by MAGIC on 20 April, 2023.

MAGiC

Nationally designated sites within 5km of Little Tidcombe Farm



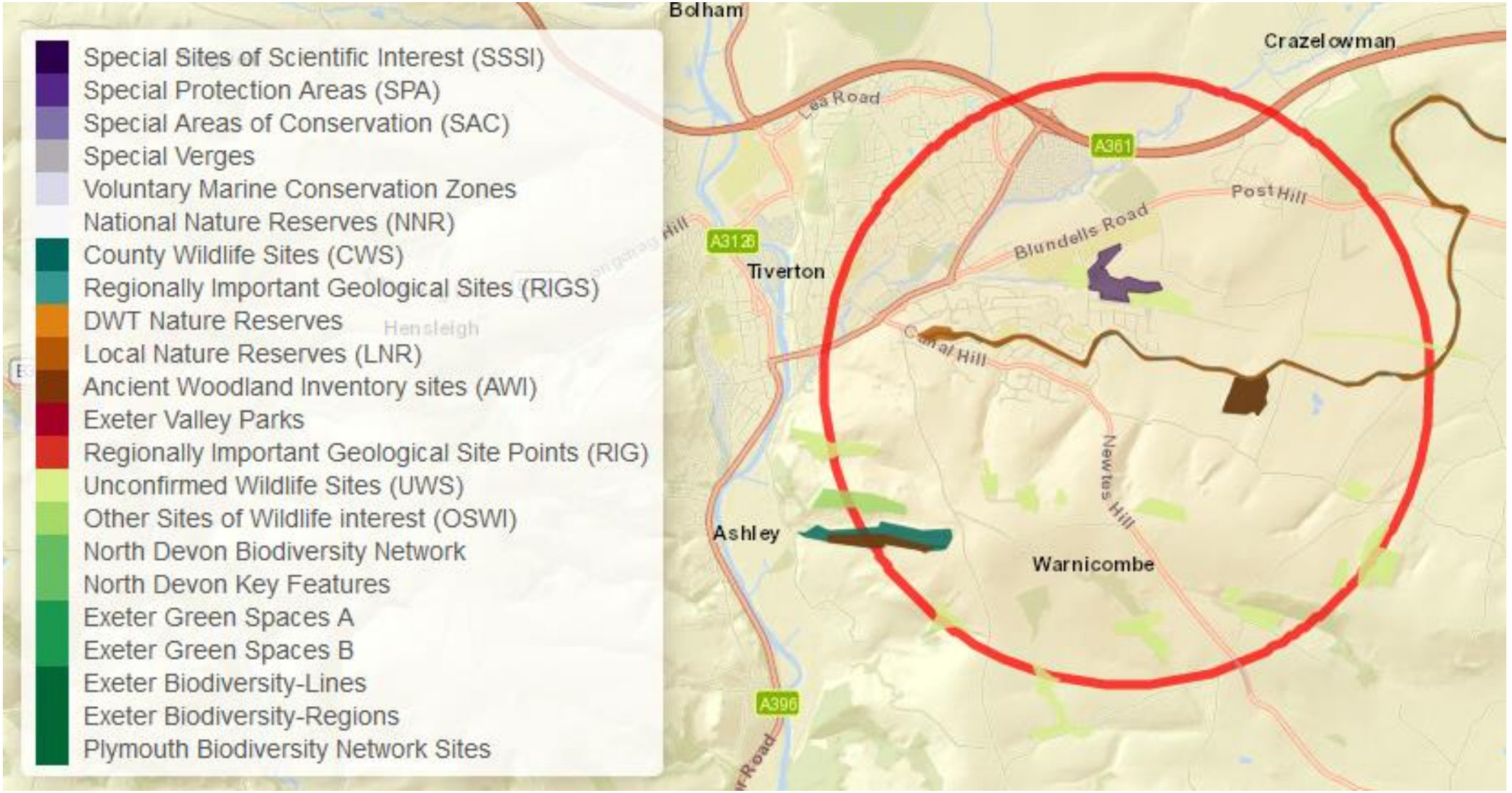
Legend

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

Projection = OSGB36
xmin = 285300
ymin = 106300
xmax = 310500
ymax = 119100

0 1 2 km

Map produced by MAGIC on 20 April, 2023.


Special Sites of Scientific Interest (SSSI)
Special Protection Areas (SPA)
Special Areas of Conservation (SAC)
Special Verges
Voluntary Marine Conservation Zones
National Nature Reserves (NNR)
County Wildlife Sites (CWS)
Regionally Important Geological Sites (RIGS)
DWT Nature Reserves
Local Nature Reserves (LNR)
Ancient Woodland Inventory sites (AWI)
Exeter Valley Parks
Regionally Important Geological Site Points (RIG)
Unconfirmed Wildlife Sites (UWS)
Other Sites of Wildlife interest (OSWI)
North Devon Biodiversity Network
North Devon Key Features
Exeter Green Spaces A
Exeter Green Spaces B
Exeter Biodiversity-Lines
Exeter Biodiversity-Regions
Plymouth Biodiversity Network Sites
Bolham
Crazelowman
Lea Road
A361
Post Hill
Blundells Road
A3126
Tiverton
Canal Hill
Newtes Hill
Ashley
Warnicombe
A396

Armada House, Odhams Wharf, Topsham, Exeter EX3 0PB
t: 01392 260420 e: info@eadecology.co.uk

www.eadecology.co.uk