

Preliminary Ecological Appraisal (PEA) Report

Holden, P.

Priory Barn, Alvescot

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REVISION HISTORY

Rev	Description of change	Date	Initials
1	Original report	28/01/2022	RJ
2	Report Amendments	22/03/2022	RJ

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DISCLAIMER

It should be noted that the information above provides details of the Site's current ecological situation. In the event that the proposed development does not commence within 12 months of the date of this report, further advice should be sought from a suitably qualified ecologist as to whether the information provided requires updating in light of changing ecological conditions.

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1. EXECUTIVE SUMMARY

- 1.1 Lockhart Garratt Ltd was commissioned by Holden, P. to carry out a Preliminary Ecological Appraisal (PEA) Survey including desk study for land at Priory Barn, Alvescot (referred to hereafter as “the Site”) in regard to the proposed development of the Site.
- 1.2 The Site itself is not subject to any statutory or non-statutory designation. There is one statutory designation within 2km of the Site, and three non-statutory designations. The closest statutory site is Alvescot Meadows Site of Special Scientific Interest (SSSI) located approximately 1km to the north-east of the Site. The closest non-statutory site is Manor Farm Meadow Local Wildlife Site (LWS) located approximately 0.9km north of the Site. A range of protected species were identified within 2km of the Site by the desk study.
- 1.3 The Preliminary Ecological Appraisal (PEA) Survey was undertaken on 18th January 2022. The habitat within the Site consisted of buildings and hardstanding, improved grassland, hedgerows, tall ruderal and scattered trees.
- 1.4 The report considers the ecological conditions within the Site in the context of the erection of one residential property and free-standing garage with associated landscaping, parking and access.
- 1.5 Recommendations, in this context, are as follows:
 - Clearance and construction works should be scheduled outside of the main bird breeding season (March to August inclusive). If in the event works need to proceed within this period, then specialist advice from a suitably qualified ecologist should be sought.
 - Any landscape planting should incorporate native species, including those species known to provide foraging opportunities for breeding birds and nectar sources for invertebrates.
 - Enhancements in the form of bird and bat boxes are also recommended.

2. INTRODUCTION

Terms of Instruction

2.1 Lockhart Garratt Ltd has been commissioned by Holden, P. to undertake an ecological assessment of land at Priory Barn, Alvescot (“the Site”) in respect of the proposed development.

Aim of the study

2.2 The purpose of this report is to provide an assessment of ecological features present within the Site, to identify any ecological constraints and provide appropriate avoidance, mitigation and compensation measures to minimise any loss in biodiversity as a result of the proposals.

Documents Provided

2.3 As background information, the following documentation was provided:

- Proposed Site Plan: 2135, SK03, Rev P03; Thinking Buildings, February 2022

Site Description

2.4 The Site is located at SP 27063 04183. The assessment covered the whole of the Site, which is approximately 0.5ha in area.

2.5 At the time of the assessment the Site comprised buildings and hardstanding, improved grassland, hedgerows, tall ruderal and scattered trees within a rectangular field primarily used for sheep grazing.

2.6 The Site was surrounded by a construction site to the north, private residences to the east and south and pasture used for horse grazing to the west.

2.7 The wider landscape encompasses the village of Alvescot and associated private residences to the north and east, mixed farmland and fields used for animal grazing with small woodland blocks to the west.

2.8 The Site location plan is provided below at **Figure 1** and a survey boundary plan is provided below at **Figure 2**.

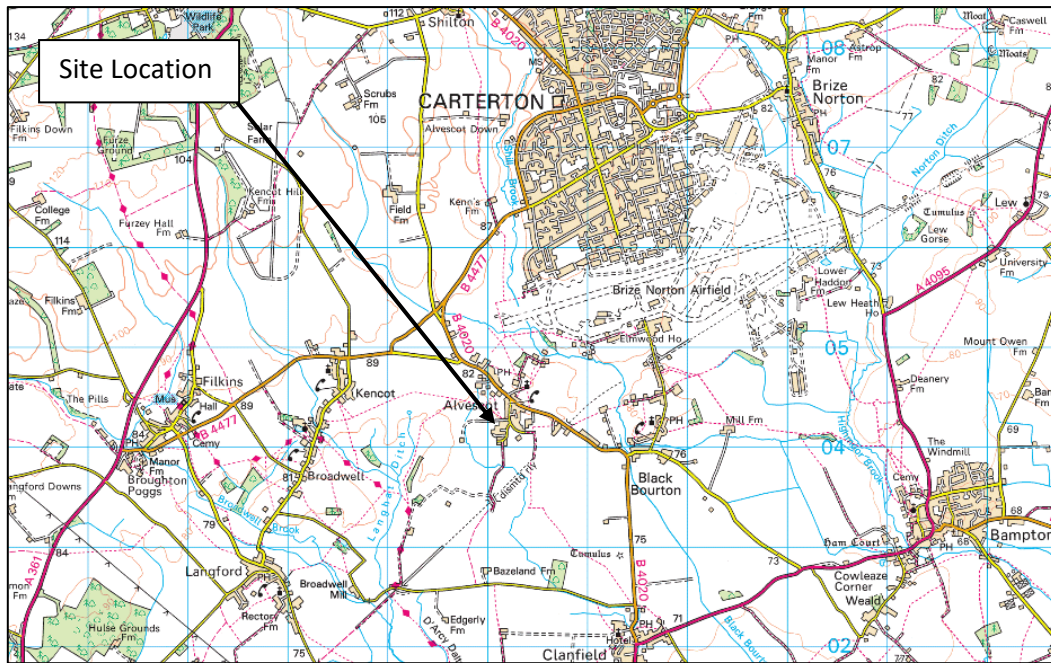


Figure 1: Site Location Plan

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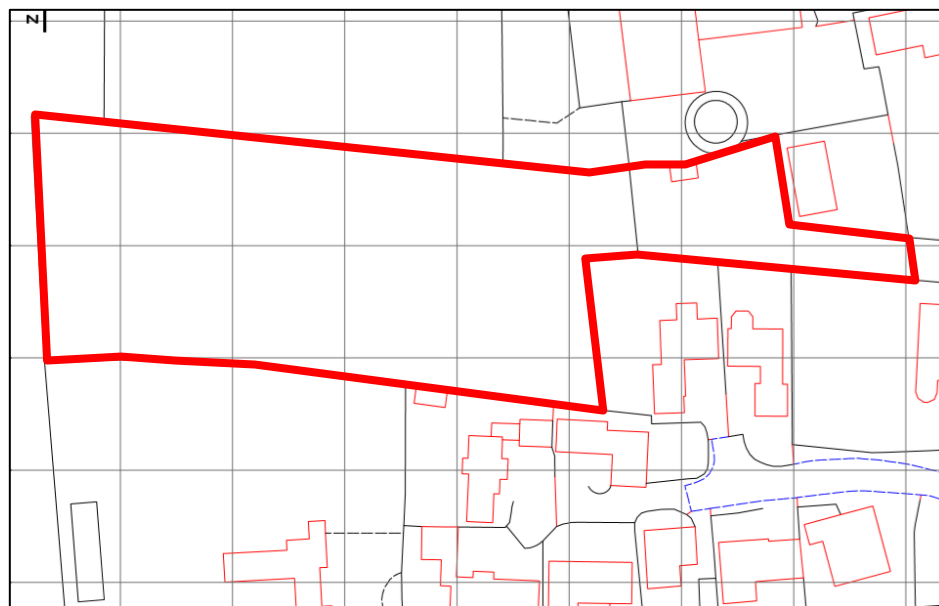


Figure 2: Survey boundary

Proposed Development

2.9 One residential property and detached garage are to be constructed with associated garden space, landscaping and access (referred to hereafter as the “Proposed Development”).

3. METHODOLOGY

- 3.1 The methodology for the ecological assessment was split into three main areas: a desk study, habitat survey and faunal survey. These are discussed in more detail below.

Desk Study

- 3.2 Existing ecological information on the Site and surrounding area was requested from the Thames Valley Environmental Records Centre (TVERC). The purpose of the desk study was to collect baseline information to identify statutory and non-statutory designated sites, legally protected species and species of conservation concern within a 2km radius of the Site in line with CIEEM Guidelines for Preliminary Ecological Appraisal (2017).
- 3.3 A review of online resources, including the Multi Agency Geographic Information for the Countryside (MAGIC) database was also undertaken to establish the ecological context for the Site (accessed 17th January 2022). The MAGIC website was also reviewed to identify any designated sites of European Importance within 2km of the Site.
- 3.4 In addition, Ordnance Survey and aerial mapping was reviewed to identify any ponds within 500m of the Site.

Phase 1 Habitat Survey

- 3.5 A Phase 1 habitat survey was undertaken by Rachel Jackson on 18th January 2022 in reasonable weather conditions (100% cloud cover, Beaufort Scale 3) in order to ascertain the general ecological value of the Site and to determine the need for further assessment.
- 3.6 The Phase 1 habitat survey was undertaken in accordance with standard methodology (JNCC, 2010¹). The Phase 1 methodology involves the classification of habitat types based on vegetation present. The Site was classified into areas of similar botanical community types, with a representative species list provided for each habitat type identified. In addition, invasive weeds were also searched for during the Phase 1 habitat survey, as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 3.7 The information is presented in accordance with the standard Phase 1 habitat survey format with habitat descriptions and a habitat map, provided at **Appendix 1**. In addition, target notes providing supplementary information, for example relating to species, habitat composition, structure and management are also presented on the habitat map.

Field Limitations

- 3.8 All of the species that occur within each habitat type would not necessarily be detectable during survey work carried out at any given time of year. The botanical work was undertaken outside of the optimal survey period, however given the habitat types present, it is considered that a robust assessment was undertaken.

Faunal Surveys

- 3.9 General faunal activity was recorded during the PEA field survey, including mammals and birds observed or heard. Specific attention was also paid to the potential presence of any protected, rare or notable species, as described below.

¹ Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit.

Badger Appraisal

- 3.10 During the walkover survey any incidental signs of current badger *Meles meles* activity were recorded within the Site and within 30m of the Site where access could be obtained. The survey method was based on a standard approach as in 'The history, distribution, status and habitat requirements of the Badger in Britain, (Cresswell, P. 1990)'.
- 3.11 The appraisal involved a systematic search of the survey area for all signs of badger activity including badger setts, worn pathways in vegetation and/or across field boundaries, footprints, hairs, dung pits/latrines, bedding and evidence of foraging activity including snuffle holes. Particular attention was paid to habitats of suitable topography or supporting suitable vegetation for sett-building as well as to those features particularly favoured by badgers including hedgerows, areas of dense scrub, woodland, ditches and banks.

Bats

Tree Assessment

- 3.12 A preliminary ground-based assessment of all suitable trees located on or immediately adjacent to the study area was undertaken to determine their potential to support roosting bats (for details on the location of trees with bat roost potential refer to highlighted trees on the habitat map in **Appendix 1**).
- 3.13 All suitable features such as cracks and splits in limbs, hollows and cavities, natural holes, woodpecker holes, loose bark and dense ivy were assessed using binoculars and high-powered torches where appropriate. Evidence of bat roost themselves, including droppings, feeding remains and urine staining were also searched for during the assessment.

Building Inspection

- 3.14 All buildings within the Site were subject to external and internal inspection to search for evidence of bat activity where safe to do so.
- 3.15 Internal voids within the structure(s) were subject to an internal inspection, whereby the surveyor used ladders, high-powered torches and mirrors to search for evidence of current or historic use by bats. Particular attention was paid to gaps between rafters and beams. Specific searches were undertaken for bat droppings, which can indicate current or past use by bats and indicate the extent of use.
- 3.16 An exterior inspection was undertaken in order to search for any signs of use by bats, such as droppings or staining, and to identify any potential access points. Binoculars were used to inspect any inaccessible areas more closely.
- 3.17 Where no direct or indirect evidence of roosting bats were confirmed, trees and buildings were categorised as being of high, moderate, low or negligible suitability to support roosting bats based on the type and number of suitable bat features present, in accordance with best practice guidance, Bat Conservation Trust (2016) *Bat Surveys: Good Practice Guidelines 3rd Edition*.
- High suitability – one or more potential roosting features present within a structure, with enough suitable surrounding commuting and foraging habitat, which is large enough to be able to shelter a large number of bats on a regular basis. These include maternity and hibernation roosts.

- Moderate suitability – one or more potential roosting features present within a structure that is likely to shelter a number of bats, but unlikely to support a roost of conservation status.
- Low suitability – one or more potential roost features present within a structure yet is not surrounded by suitable commuting and foraging habitat and does not provide enough protection and space to shelter a large number of bats. This also includes trees with no visible potential roost features but is of adequate age and structure to offer limited roosting potential.
- Negligible suitability – whereby no evidence of bats was observed and no suitable features for bats are supported, such that their presence is considered negligible.

Great Crested Newt

3.18 Accessible ponds within 250m of the Site were assessed for their suitability to support great crested newt (GCN) *Triturus cristatus*. The assessment was undertaken in accordance with the methodology and criteria set out by Oldham *et al* (2000), which assesses the likely presence of GCN in ponds based on a number of parameters, such as pond size, location, shading, presence of fish and wildfowl and macrophyte cover.

3.19 Data from the field assessment are used to calculate a Habitat Suitability Index (HSI), represented by a number from zero to one, as demonstrated in **Table 1**:

Table 1: HSI Categories of Pond Suitability

HSI Score	Pond Suitability for GCN
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

Principles of Ecological Evaluation

- 3.20 The evaluation of ecological features and an assessment of likely impacts should be based on available resources and the professional judgement of the ecologist concerned. Ecological value of features should be undertaken in accordance with the approach outlined in the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018).
- 3.21 A five-point evaluation scale has been applied to assist with the identification of key features of ecological significance in relation to the proposed development. This is an arbitrary scale based upon characteristics of ecological importance as listed in CIEEM (2018), which experience has shown is effective at this level of assessment.
- 3.22 In evaluating ecological features and resources, geographic frame of reference is considered. The value of an ecological feature is determined within a defined geographical frame of reference as detailed in **Table 2**:

Table 2: Classification of the value of ecological features and resources

Value	Importance	Species	Habitat
Very High	International	A regularly occurring population of an internationally important species, which is threatened or rare in the UK, where the population is a critical part of a wider population or where a species is at a critical phase in its life cycle at this scale.	An internationally designated site including SAC, SPA, Ramsar, or one proposed for designation. Sites supporting areas of priority habitats which are scarce at an international level of where it is needed to maintain the viability of a larger area at that level.
High	National	A regularly occurring population / number of a nationally important species which is threatened, or rare, where the population is a critical part of wider population or where a species is at a critical phase in its life cycle at this scale. A regularly occurring population of a nationally important species on the edge of its natural range. A species assemblage of national significance.	A nationally designated site ie SSSI, or one that meets the published criteria. Sites supporting areas of priority habitats which are scarce at a national level or where it is needed to maintain the viability of a larger area at that level.
Medium	Regional / County	A regularly occurring locally significant population of a species listed as being nationally scarce or a county Red Data book or BAP on account of its rarity. A regularly occurring, locally significant number of a regionally / county important species or where the population is a critical part of a wider population or where a species is at a critical phase in its life cycle at this scale. A species assemblage of regional or county significance.	Sites supporting a viable area of a priority habitat which is scarce at a regionally or county level or where is needed to maintain the viability of a larger area. A County designated site or one that meets published criteria. Local Nature Reserves, Local Wildlife Sites / potential Local Wildlife Sites at that level.
Low	Local	A population of a species that is listed in a district BAP because of its rarity in the locality and a species assemblage of local or district significance. A regularly occurring, locally significant number of district importance or where the population is a critical phase in its life cycle at this scale.	Sites / features that are scarce within the local area or district. Areas of habitat considered enriching appreciably the habitat resource within the context of the locality or which buffer those of a more important nature.
Site	Site Only	Species, which are not protected or rare in the local area and are not at a critical phase in its life cycle at this scale.	Habitats of very low importance and rarity but of ecological importance within the Site.

3.23 Ecological features may also be deemed to be of negligible value if they are deemed to be of very low ecological importance and / or rarity.

3.24 Ecological features may be defined as:

- Statutorily protected (Natura 2000, national Nature Reserves, Sites of Special Scientific Interest and Local Nature Reserves) or locally designated sites (local Wildlife Sites or Sites of Importance to Nature Conservation);
- Sites and features of biodiversity value not designated in this way such as ancient woodland;
or
- Species of biodiversity value or other significance, including those protected and controlled by law.

4. LEGISLATION AND PLANNING POLICY OVERVIEW

4.1 A summary of the legislative and planning context which has been used to inform this ecological assessment is provided below.

Legislation

4.2 A number of tiers of legislation protect wildlife and habitats within England and Wales, the highest of which being European legislation. A summary of relevant legislation is provided below:

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

Policy

4.3 The planning policy framework that relates to nature conservation in Combe is provided at two levels: nationally through the National Planning Policy Framework (NPPF) and locally through policies in the West Oxfordshire Local Plan 2031.

Local Policy – West Oxfordshire Local Plan 2031

4.4 Policy EH3: Biodiversity and Geodiversity:

“The biodiversity of West Oxfordshire shall be protected and enhanced to achieve an overall net gain in biodiversity and minimise impacts on geodiversity, including by:

- *giving sites and species of international nature conservation importance and nationally important sites of special scientific interest the highest level of protection from any development that will have an adverse impact;*
- *requiring a Habitats Regulations Assessment to be undertaken of any development proposal that is likely to have a significant adverse effect, either alone or in combination, on the Oxford Meadows SAC, particularly in relation to air quality and nitrogen oxide emissions and deposition;*
- *protecting and mitigating for impacts on priority habitats, protected species and priority species, both for their importance individually and as part of a wider network;*
- *avoiding loss, deterioration or harm to locally important wildlife and geological sites and sites supporting irreplaceable habitats (including ancient woodland, Plantations on Ancient Woodland Sites and aged or veteran trees), UK priority habitats and priority species, except in exceptional circumstances where the importance of the development significantly and demonstrably outweighs the harm and the harm can be mitigated through appropriate measures and a net gain in biodiversity is secured;*
- *ensuring development works towards achieving the aims and objectives of the Conservation Target Areas (CTAs) and Nature Improvement Areas (NIAs);*

- *promoting the conservation, restoration and recreation of priority habitats, ecological networks and the protection and recovery of priority species populations, particularly within the CTAs and NIAs;*
- *taking all opportunities to enhance the biodiversity of the site or the locality, especially where this will help deliver networks of biodiversity and green infrastructure and UK priority habitats and species targets and meet the aims of CTAs;*
- *ensuring that all applications that might adversely affect biodiversity are accompanied by adequate ecological survey information in accordance with BS 42020:2013 unless alternative approaches are agreed as being appropriate with the District Council's ecologist;*
- *all major and minor applications demonstrating a net gain in biodiversity where possible. For major applications this should be demonstrated in a quantifiable way through the use of a Biodiversity Impact Assessment Calculator (BIAC) based on that described in the DEFRA Biodiversity Offsetting guidance or a suitably amended version. For minor applications a BIAC will not usually be required but might be requested at the Council's discretion;*
- *all development incorporating biodiversity enhancement features.*

All developments will be expected to provide towards the provision of necessary enhancements in areas of biodiversity importance."

Biodiversity Action Plan (BAP) and 2006 NERC Act Habitats and Species of Principal Importance

- 4.5 In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for species and habitats in the UK. The UK Post-2010 Biodiversity Framework succeeds the UK BAP. The Framework continues the conservation work initiated by the UK BAP following the establishment of the Convention on Biological Diversity in 1992.
- 4.6 The purpose of the Framework is to set a broad structure for conservation across the UK until 2020. In summary:
- To set out a shared vision and priorities for UK-wide activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute;
 - To identify priorities at a UK scale which will help deliver biodiversity targets and the EU Biodiversity Strategy;
 - To facilitate the aggregation and collation of information on activity and outcomes across all countries of the UK; and
 - To streamline governance arrangements for UK-wide activities.
- 4.7 The habitats and species are identified as Habitats and Species of Principal Importance for the conservation of biological diversity in England under Section 41 of the 2006 Natural

Environment and Rural Communities (NERC) Act. The NERC Act and NPPF make these species and habitats a material consideration in the planning process.

- 4.8 The Oxfordshire Local Biodiversity Action Plan (LBAP) lists woodland, hedgerows, species-rich grassland and wetlands as priority habitats. The LBAP also prioritises the biodiversity and conservation goals of Conservation Target Areas (CTAs).
- 4.9 The LBAP contains objectives and targets habitats and sites identified above. They should be considered in regard to the Proposed Development in order to identify opportunities for avoidance, mitigation, compensation and enhancement.

5. DESK STUDY RESULTS

5.1 The full information collected during the desk study from TVERC is summarised below.

Sites of Nature Conservation Interest

5.2 The Site itself is not subject to any statutory or non-statutory designations.

5.3 The records search identified one statutory protected site and three non-statutory sites within 2km of the Site, as summarised in **Table 3**:

Table 3: Summary of Ecology Designations

Designated Site Name	Designation	Proximity to Project	Description
Alvescot Meadows	SSSI	1km north-east	Alvescot Meadows consists of two discrete areas of hay meadow situated on the alluvial soils next to the Shill Brook between Alvescot village and Brize Norton airfield. The larger westerly meadow contains an intimate mixture of botanically rich unimproved grassland and fen communities, whilst the easterly area is a small diverse area of unimproved neutral grassland. Such habitat types have become increasingly rare in Britain due to agricultural improvements through drainage, re-seeding, fertilisation and conversion to arable crops.
Manor Farm Meadow	LWS	0.9km north	Northeast of the public footpath which crosses this field diagonally is an area of species-rich unimproved neutral grassland. The field is used as a grazing pasture for horses (and occasionally also sheep), and sometimes for taking a hay cut. At the northern end of the field, a wet area containing a pond has been fenced off. About 50 southern marsh orchids and a few common spotted orchids were found in the grassy area inside the enclosure west of the pond. An early marsh orchid and two further specimens of southern marsh orchid were found outside the enclosure in the meadow.
Willow Meadows	LWS	1.3km north	Willow Meadows is an area of wet grassland beside the Shill Brook on the western edge of Carterton. The grassland is species-rich with a range of wet grassland, swamp and marsh species including purple moor-grass with records for uncommon meadow thistle which is unusual in Oxfordshire. Eight species of sedge have been recorded from Willow Meadows including brown sedge, carnation sedge, tawny sedge, common sedge and slender-tufted sedge. Unimproved lowland meadows such as Willow Meadow are a priority for conservation in Britain.

Designated Site Name	Designation	Proximity to Project	Description
South Cotswolds Valleys	CTA	0.3km north-east	An area covering 271 ha within the Shill Brook Valley from Black Bourton in the south to Holwell and Signet in the north. Habitats of importance included within the CTA include lowland meadow at Alvescot Meadows SSSI, fen meadow at Willow Meadows, and limestone grassland at Carterton.
Key:			
SSSI: Site of Special Scientific Interest			
LWS: Local Wildlife Site			
CTA: Conservation Target Area			

Protected Species

- 5.4 Below provides a summary of protected species which have been recorded within 2km of the Site. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area.
- 5.5 Records of amphibians, badgers, bats, birds, invertebrates, otter, invasive plants, and water vole were recorded within 2km of the Site. No notable protected species were recorded within or adjacent to the Site.

Amphibians

- 5.6 Results of 13 records of great crested newt were received for within 2km of the Site. The closest record, dated 2016, is located approximately 1km north-east of the Site. Other amphibians recorded within 2km of the Site included common frog *Rana temporaria*. No records of amphibians were received for within or adjacent to the Site.
- 5.7 A review of Ordnance Survey maps identified two potentially suitable waterbodies for GCN (D1 and D2) within 250m of the Site with two more waterbodies (P1 and P2) also identified just outside the 250m buffer. These waterbodies were located to the north-west of the Site and connectivity to the Site would be possible via combination of grassland fields and hedgerows. The Site is also located within an amber-red zone for GCN based on data from NatureSpace.

Badgers

- 5.8 Three records of badgers were received for within 2km of the Site. The closest record pertained to a confidential location. No records of badgers were received for within or adjacent to the Site.

Bats

- 5.9 Ten species of bat have been recorded within 2km of the Site, namely common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Leisler's *Nyctalus leislerii*, serotine *Eptesicus serotinus*, Natterer's *Myotis nattereri*, whiskered bat *Myotis mystacinus*, Brandt's *Myotis brandtii* and

barbastelle *Barbastella barbastellus*. The closest record, dated 2018, relates to sighting of a noctule, soprano pipistrelle and barbastelle located approximately 0.15km north-east of the Site within the village of Alvescot. No records of bats were received for within or adjacent to the Site.

Birds

5.10 Records of 16 protected or notable species of bird were received for within 2km of the Site. The majority of records related to Broadwell Barns. No records of protected or notable bird species were received for within or adjacent to the Site.

5.11 **Table 4** summarises the species of birds recorded within 2km of the Site:

Table 4: Bird species recorded within 2km of the Site

Species / Group	Legislation / Conservation Status
Bullfinch <i>Pyrrhula pyrrhula</i>	NERC S.41
Bunting, Reed <i>Emberiza schoeniclus</i>	NERC S.41
Cuckoo <i>Cuculus canorus</i>	NERC S.41, BoCC_red
Dunnock <i>Prunella modularis</i>	NERC S.41
Hobby <i>Falco subbuteo</i>	CRoW, WCA 1i
Kingfisher <i>Alcedo atthis</i>	BDIR1, CRoW, WCA 1i
Kite, Red <i>Milvus milvus</i>	BDIR1, CRoW, WCA 1i
Lapwing <i>Vanellus vanellus</i>	NERC S.41, BoCC_red
Owl, Barn <i>Tyto alba</i>	CRoW, WCA 1i
Plover, Golden <i>Pluvialis apricaria</i>	BDIR1
Redstart, Black <i>Phoenicurus ochruros</i>	CRoW, WCA 1i, BoCC_red
Sparrow, House <i>Passer domesticus</i>	NERC S.41, BoCC_red
Starling <i>Sturnus vulgaris</i>	NERC S.41, BoCC_red
Thrush, Song <i>Turdus philomelos</i>	BoCC_red
Wagtail, Grey <i>Motacilla cinerea</i>	BoCC_red
Yellowhammer <i>Emberiza citrinella</i>	NERC S.41, BoCC_red
Key: BDIR1: The Birds Directive – Annex 1 BoCC_red: Birds of Conservation Concern – Red Listed CRoW: Countryside and Rights of Way Act 2000 NERC S.41: Natural Environment and Rural Communities Act WCA 1i: Wildlife and Countryside Act 1981 Schedule 1	

Invertebrates

5.12 One notable/protected species of invertebrate was historically recorded within 2km of the Site. Small heath *Coenonympha pamphilus* was recorded approximately 0.5km south of the Site (from a 4-figure grid reference) dated 1991. This species is protected under Section 41 of the

NERC Act 2006, as amended. No notable or protected invertebrates were recorded within or adjacent to the Site.

Otter and Water Vole

- 5.13 Five records of otter *Lutra lutra* and 11 records of water vole *Arvicola amphibius* were received for within 2km of the Site. The closest record of otters, dated 2016, pertains to an otter spraint recorded approximately 0.8km north-east of the Site. The closest record of water vole, dated 2016, was located approximately 1.2km east of the Site. No records of otter or water vole were received for within or adjacent to the Site.

Plants

- 5.14 No records of protected or notable plants were received for within 2km of the Site.
- 5.15 In addition to the above, record of Japanese knotweed *Fallopia japonica* and Canadian waterweed *Elodea canadensis* have been recorded within 2km of the Site. These species are invasive non-native species included on Schedule 9 of the Wildlife Countryside Act (1981), as amended. It is an offence to release, plant or cause to grow in the wild any plant included on this schedule of the Act.

Other Species

- 5.16 Other notable species recorded within 2km of the Site included bullhead *Cottus gobio*, brown hare *Lepus europaeus*, polecat *Mustela putorius* and hedgehog *Erinaceus europaeus*. Bullhead is protected under Annex 2 of the Habitats Directive, polecat is protected under Annex 5 of the Habitats Directive, Schedule 4 of the Habitat Regulations (2010), and all of these species are protected under Section 41 of the NERC Act (2006) with the exception of bullhead. None of these species were recorded within or adjacent to the Site.

6. PHASE 1 HABITAT SURVEY RESULTS

Habitat Descriptions

6.1 The full Phase 1 Habitat Survey Map detailing the location of the below habitats and other features of ecological interest with Target Notes (TN) is presented at **Appendix 1**. The habitat descriptions below should be read in conjunction with this plan and any associated Target Notes.

6.2 Habitats identified during the Phase 1 Habitat Survey are detailed below in alphabetical order (not in order of ecological importance):



- Buildings
- Hedgerows
- Improved Grassland
- Scattered Trees
- Tall Ruderal
- Waterbodies (Offsite)

Buildings

6.3 Two buildings were recorded within the Site which are further detailed in **Table 5**.

Table 5: Descriptions of Buildings surveyed within the Site

Building No.	Description	Potential Suitability for Roosting Bats
B1	<p>External: One-storey detached garage used for storage measuring approximately 3m in height. B1 was of breezeblock construction with a pitched slate tile roof which was heavily covered in ivy <i>Hedera helix</i> around the northern aspect of the roof. The roof was in good condition and no lifted or missing tiles were observed. Timber fascias were present on the east and west gable ends. The fascias were in poor condition and were rotting in parts, creating small gaps and allowing limited access into the building.</p> <p>Internal: No loft space. Roof is well sealed with no visible gaps. Heavily cobwebbed throughout the interior.</p> <p>No evidence of bats recorded.</p>	Low

Building No.	Description	Potential Suitability for Roosting Bats
	 <p data-bbox="667 810 963 837">Figure 3: Exterior view of B1</p>	
B2	<p data-bbox="472 860 1166 1178"> External: One-storey disused out-building measuring approximately 2m in height of timber shiplap construction with glass windows and a pitched bitumen felt roof. Single pane windows were recorded on the north-east and south-east elevations and were well sealed. A small section of bitumen felt on the south-east elevation was ripped, creating a gap measuring approximately 2cm wide and 10cm in length, allowing access into the interior of B2. The interior of the roof was lined with timber sarking, providing limited opportunities for roosting bats. </p> <p data-bbox="472 1216 799 1243">No evidence of bats recorded.</p>  <p data-bbox="667 1769 963 1796">Figure 4: Exterior view of B2</p>	<p data-bbox="1193 860 1246 887">Low</p>



Building No.	Description	Potential Suitability for Roosting Bats
	 <p data-bbox="587 815 1043 842">Figure 5: Damaged section of the roof on B2</p>	

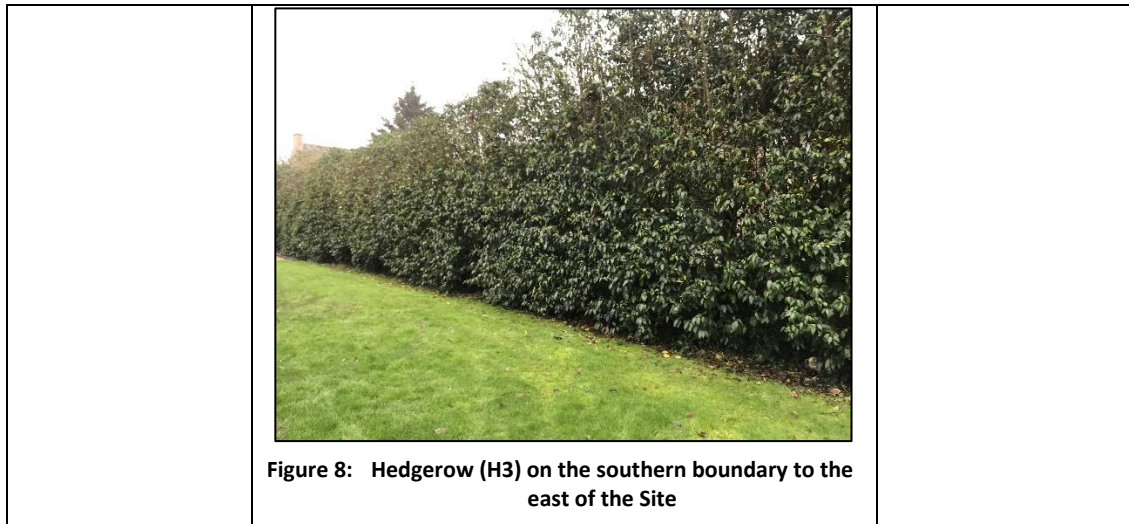
Hedgerows

6.4 Three hedgerows were recorded within the Site, mostly in association with the Site boundaries and garden features to the east of the Site. Detailed descriptions of the hedgerows are provided in **Table 6**.

Table 6: Descriptions of hedgerows Surveyed within the Site

Hedgerow No. (Map Reference)	Description	Overall Ecological Value
H1	A species-poor intact hedgerow dominated by beech <i>Fagus sylvatica</i> was recorded on the northern boundary of the Site. H1 measured approximately 2-2.5m in height, 1m in width and 16m in length (within the Site; 35m in total). H1 was subject to regular management by flailing and little ground flora was present, with small patches of ivy and cleavers <i>Galium aparine</i> recorded near the base of H1 covering less than 5m of the total length of the hedgerow. This habitat was not considered to be a Habitat of Principal Importance for biodiversity (HPI) under Section 41 of the NERC Act 2006.	Low

	 <p>Figure 6: Hedgerow (H1) on the northern boundary to the east of the Site</p>	
H2	<p>Recently planted immature beech hedgerow measuring approximately 0.5m in height, 0.5m in width and 10m in length.</p>  <p>Figure 7: Recently planted hedgerow (H2)</p>	Site only
H3	<p>Species-poor intact laurel <i>Laurus sp.</i> hedgerow located along the southern boundary to the east of the Site measuring approximately 3-4m in height, 1-2m in width and 32m in length (within the site; 70m in total). H3 was subject to regular management by flailing and little ground flora was present, with small patches of ivy, common nettle <i>Urtica dioica</i> and cow parsley <i>Anthriscus sylvestris</i> recorded near the base. This habitat was not considered to be an HPI.</p>	Low



Improved Grassland

- 6.5 This habitat covered the majority of the Site and was subject to regular management including sheep grazing. The sward was short at approximately 10cm with at least 10% sparse with bare patches.
- 6.6 This habitat was dominated by cock's-foot *Dactylis glomerata* and perennial ryegrass *Lolium perenne*, with other species recorded including common bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus*, selfheal *Prunella vulgaris*, black medick *Medicago lupulina*, ground ivy, *Glechoma hederacea*, cleavers, common nettle, dwarf nettle *Urtica urens*, creeping buttercup *Ranunculus repens*, hairy bittercress *Cardamine hirsuta*, cow parsley, common daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata*, chickweed *Stellaria media*, shepherds purse *Capsella bursa-pastoris*, spear thistle *Cirsium vulgare*, sow thistle *Sonchus oleraceus* and encroaching bramble *Rubus fruticosus* agg.
- 6.7 Overall, this habitat was considered to be of ecological value at a Site level only, with opportunities present for foraging birds, invertebrates, small mammals, and limited opportunities for amphibians and reptiles. This habitat did not meet the criteria for an HPI.



Figure 9: Improved grassland habitat

Scattered Trees

- 6.8 Several immature scattered trees were recorded within the Site, mostly along the southern boundary to the south-west of the Site within the grassland habitat. None of these trees had potential roosting features (PRFs) suitable for roosting bats.
- 6.9 Species recorded included hawthorn *Crataegus monogyna*, elm *Ulmus procera* and elder *Sambuca nigra*.
- 6.10 Overall, this habitat was determined to be of ecological value at a Site level only and did not meet the criteria for an HPI. However, this habitat has the potential to provide foraging, nesting and sheltering opportunities for birds as well as foraging opportunities for bats.



Figure 10: Scattered trees habitat

Tall Ruderal

- 6.11 A large soil and rubble bund (TN1) was present within the grassland habitat. This feature was dominated with tall ruderal species with some encroachment from scrub species.
- 6.12 Species recorded included common nettle, sow thistle, bristly oxtongue *Helminthotheca echioides*, cleavers, broadleaf dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, ivy, ribwort plantain, field bindweed *Convolvulus arvensis*, mugwort *Artemisia vulgaris* and encroaching bramble.
- 6.13 Overall, this habitat was considered to be of ecological value at a Site level only, with limited refugia opportunities for amphibians and reptiles. This habitat did not meet the criteria for an HPI.



Figure 11: Tall ruderal habitat on the large rubble/soil bund (TN1)



Waterbodies (Offsite)

6.14 Two waterbodies were recorded within 250m of the Site (D1 and D2) and an additional two waterbodies (P1 and P2) were located just outside of the 250m buffer from the Site. These waterbodies were all subject to an HSI assessment with the exception of P1 which could not be accessed at the time of assessment. A description of the waterbodies is detailed in **Table 7** and presented on the map at **Appendix 1**.

Table 7: Descriptions of waterbodies surveyed within 300m of the Site

Waterbody	Description	HSI ² Score
Ditch 1	Wet ditch measuring approximately 0.5m in width, 1m in depth and approximately 600m in length. The ditch was situated within a hedgerow boundary between two rough grassland fields used for pastoral grazing. The water depth was approximately 20-30cm and the water was flowing slowly with some parts stationary due to dense vegetation around the banks. This ditch converges with D2 and feeds into Clanfield Brook downstream.	0.86 (Excellent)

² HSI – the HSI score for each of the ponds within the survey area was calculated based on the scoring system and guidance published by Oldham *et al* (2000). The HSI represents a measurement of habitat suitability and as such does not represent a substitute for full survey involving a range of methods including trapping and torching.

Waterbody	Description	HSI ² Score
	 <p data-bbox="691 779 935 804" style="text-align: center;">Figure 12: Wet ditch D1</p>	
Ditch 2	<p data-bbox="469 826 1171 1077">Wet ditch fed by a spring measuring approximately 0.5m in width, 1m in depth and approximately 50m in length. The water depth was approximately 30cm and the water was flowing slowly with some parts stationary due to blockages such as fallen branches or leaf litter and dense vegetation around the banks. The ditch separated a small woodland block from a wet grassland field used for pastural grazing. D2 feeds into and joins D1 downstream.</p>  <p data-bbox="691 1615 935 1639" style="text-align: center;">Figure 13: Wet ditch D2</p>	0.85 (Excellent)
Pond 2 (outside of 250m buffer)	<p data-bbox="469 1659 1171 1780">Small pond measuring approximately 40m² within a small woodland copse adjacent to D2. The pond was heavily shaded and full of leaf litter and detritus with little macrophyte cover recorded.</p>	0.64 (Average)

Other Habitats

- 6.15 Several rubble and brash piles (TN1, TN2, TN3) were recorded within the main grassland field within the Site, the largest of which was TN1 which had been colonised by tall ruderal species. In addition, a compost heap (TN4) was also located adjacent to B1. These features were

considered to be of Site level ecological value only, however, they have potential to provide refugia and egg-laying opportunities for grass snake and would be suitable habitats for hibernation for amphibians and reptiles.



Figure 14: Brush and rubble pile within the improved grassland field (TN2)



Figure 15: Small rubble pile within the grassland field (TN3)



Figure 16: Compost heap and brash pile (TN4)

Evidence of Protected Species and Other Faunal Interest.

6.16 Notable species recorded within the Site included red kite and house sparrow, with wren *Troglodytes troglodytes*, blackbird *Turdus merula* and buzzard *Buteo buteo* also recorded.

7. EVALUATION OF ECOLOGICAL CONTEXT

The Site

- 7.1 The Site was surrounded by a construction site to the north, private residences to the east and south and pasture used for horse grazing to the west.
- 7.2 The wider landscape encompasses the village of Alvescot and associated private residences to the north and east, mixed farmland and fields used for animal grazing with small woodland blocks to the west.
- 7.3 Connectivity to the Site would be primarily from the grassland habitat to the west of the Site, which would provide connectivity and dispersal opportunities for small mammals, reptiles and amphibians to and around the Site. Connectivity from the east and south would be limited by the surrounding residential properties.

Statutory Sites

- 7.4 The Site itself is not subject to any statutory designations.
- 7.5 The nearest designated nature conservation site is Alvescot Meadows SSSI located approximately 1km north-east of the Site. This site is designated for its diverse hay meadow and fen species communities.
- 7.6 Impact Risk Zones (IRZs) are a tool developed by Natural England to provide an initial assessment of the potential risks to SSSIs. The Site falls within one IRZ for the Alvescot Meadows SSSI, however the IRZ does not apply to residential developments and as such further advice need not be sought.

Non-statutory Sites

- 7.7 The Site itself is not subject to any non-statutory designations.
- 7.8 The nearest non-statutory designated site is Manor Farm Meadow LWS located 0.9km to the north of the Site. This site is designated for its unimproved grassland meadow which is traditionally grazed.

Other Sites of Importance Locally

- 7.9 The South Cotswolds Valley CTA is located 0.3km north-east of the Site. The CTA targets include management, restoration and creation of habitats such as lowland meadow. Due to the scale of the Proposed Development and the habitats currently present on Site it is not considered to be necessary for these targets to be included as part of the Proposed Development.

8. HABITAT EVALUATION

- 8.1 At the time of the assessment the Site comprised buildings and hardstanding, improved grassland, hedgerows, tall ruderal and scattered trees. The grassland field was primarily used for sheep grazing and regularly managed.
- 8.2 These habitats ranged from Site to Low ecological value in terms of their habitat suitability to support a range of protected and notable species. All of the above habitats were considered to be well represented locally and were not of local, regional or national ecological value.
- 8.3 Parts of the improved grassland, tall ruderal and features TN1-TN4 are to be removed as part of the Proposed Development. Building B1, hedgerows H1-H3 and the scattered trees are to be retained and B2 is to be relocated.
- 8.4 All habitats within the Site were determined to be of Site only to Low ecological value. All other habitats (including TN1-TN4) were considered to be of Site only ecological value; the loss of which would not be significant at a Site-wide, local or wider scale, and are not discussed further.
- 8.5 The offsite waterbodies (P2, D1 and D2) were considered to be of 'average' to 'excellent' suitability for GCN. However, these waterbodies are not to be affected by the Proposed Development and potential indirect impacts caused by the works phase would be unlikely due to the distance from the Site.

9. FAUNAL EVALUATION

- 9.1 The desk study located a variety of protected species records for the local area.
- 9.2 The Site has been assessed on the suitability of the habitats to support such protected species and the likelihood of those species being present. **Table 9** provides a summary account of protected species within the Site and local area.
- 9.3 In the absence of mitigation and further assessment the impacts on each species have been assessed using the following scale:

Table 8: Impact Levels and Criteria

Classification	Criteria
Negative (Significant)	Likely to create a significant effect, including loss, or long-term irreversible damage on the integrity / status of a valued ecological feature
Negative (non-significant)	Likely to create a negative effect without causing long-term or irreversible damage on the integrity / status of a valued ecological feature
Neutral	Effects are either absent or such that no overall net change to the ecological feature occurs.
Positive (non-significant)	Likely to create a beneficial effect on an ecological feature, or providing a new (lower value) ecological feature, without improving its conservation status markedly
Positive (significant)	Activity is likely to create a significant beneficial effect, including long-term enhancement and favourable condition of an existing valued ecological feature, or creation of a new valued ecological feature.

Table 9: Summary of Protected Species Associated with the Site

Species	Recorded in Desk Study	Evidence on Site	Potential on Site to Support Presence	Description of likely Impact on Species	Likely Impact
Amphibians	Yes – 13 records of GCN within 2km of the Site. Records of common frog were also received.	None	Yes – the grassland, hedgerows, tall ruderal habitats and features TN1-TN4 would provide limited opportunities for GCN, particularly for hibernation and refugia. Two waterbodies (D1 and D2) located within 250m of the Site were considered to be of 'excellent' suitability for GCN, with one pond (P2) considered to be of 'average' suitability just outside the 250m buffer.	Approximately half of the grassland habitat, all of the tall ruderal and features TN1-TN4 are to be removed as part of the Proposed Development, reducing refugia and hibernation opportunities for amphibians.	Negative (non-significant)
Badgers	Yes – three records were received within 2km of the Site.	None	Yes – the improved grassland habitat would provide foraging opportunities for badgers.	Approximately half of the improved grassland habitat is to be removed as part of the Proposed Development, reducing foraging opportunities for badgers.	Negative (non-significant)
Bats	Yes – 10 species were recorded within 2km of the Site. Species included common pipistrelle, soprano pipistrelle, brown long-eared, noctule, Leisler's, serotine, natterer's bat, whiskered bat, Brandt's bat and barbastelle.	None	Yes – buildings B1 and B2 have features of low suitability for roosting bats. The hedgerows would provide limited commuting and foraging opportunities for bats.	Building B1 and the hedgerows are to be retained as part of the Proposed Development. B2 is to be relocated, yet still retained. Foraging and commuting bats using the site may be disturbed from lighting or noise associated with the construction phase and operational phase of the Proposed Development.	Negative (non-significant)
Birds	Yes – a large number of farmland and garden birds.	Yes – an assemblage of common and notable bird species. Notable species included	Yes – the grassland habitat, hedgerows and scattered trees would provide limited foraging, sheltering and nesting opportunities for birds.	The hedgerows and scattered trees are to be retained as part of the Proposed Development. The grassland habitat is to be partially removed, slightly reducing sub-optimal foraging opportunities for birds.	Negative (non-significant)

Species	Recorded in Desk Study	Evidence on Site	Potential on Site to Support Presence	Description of likely Impact on Species	Likely Impact
		red kite and house sparrow.			
Crustaceans	No – no records were received within 2km of the Site.	None	No – there are no suitable waterbodies within the Site	N/A	Neutral as there is no potential on Site
Dormouse	No – no records were received within 2km of the Site.	None	No – there are no suitable habitats within the Site.	N/A	Neutral as there is no potential on Site
Reptiles	No – no records were received within 2km of the Site.	None	Yes – the grassland, tall ruderal habitats, hedgerows and features TN1-TN4 would provide limited refugia, basking and egg-laying opportunities for reptiles. However, opportunities would be limited due to the use of the field for sheep grazing.	Approximately half of the grassland habitat, all of the tall ruderal and features TN1-TN4 are to be removed as part of the Proposed Development. This would reduce sub-optimal refugia, basking and egg-laying opportunities for reptiles within the Site.	Negative (non-significant)
Otter	Yes – five records were received within 2km of the Site.	None	No – there is no running water on Site.	N/A	Neutral as there is no potential on Site.
Water vole	Yes – 11 records were received within 2km of the Site.	None	No – there is no running water on Site.	N/A	Neutral as there is no potential on Site
Other faunal interest (e.g. fox, hare)	Yes – recorded of bullhead, brown hare, polecat and hedgehog were received within 2km of the Site.	None	Yes – the grassland, tall ruderal, hedgerows and features TN1-TN4 would provide foraging and sheltering opportunities for small mammals such as hedgehog.	The grassland habitat is to be partially removed and the tall ruderal and features TN1-TN4 are to be removed as part of the Proposed Development, reducing foraging and sheltering opportunities for small mammals within the Site.	Negative (non-significant)

10. RECOMMENDATIONS, FURTHER SURVEYS AND ENHANCEMENTS

Overview

- 10.1 Recommendations have been provided within this report that will safeguard the existing ecological interest features within the Site. Wherever possible, measures to enhance ecological and biodiversity value have also been set out.
- 10.2 Based on the survey undertaken to date and the recommendations for further surveys, the presence and potential presence of protected species has been given due regard.
- 10.3 In conclusion, implementation of the measures provided within this report enable the proposals to accord with national and local planning policy for nature conservation.

Designated Sites

- 10.4 A review of the Impact Risk Zones (IRZ) for Alvescot Meadows SSSI does not apply to developments of this type and scale and as such further advice need not be sought.
- 10.5 Due to the distance between the Site and designated nature conservation sites in the local area it is considered highly unlikely that there will be any significant adverse effects on these sites as a result of the works. Therefore, no recommendations in relation to the designated sites are made.

Habitats

- 10.6 The tall ruderal, features TN1-TN4 and approximately half of the improved grassland are to be removed as part of the Proposed Development.
- 10.7 It is recommended that the boundary features including the intact hedgerows and associated scattered trees, should be retained as far as possible. It is believed that buildings B1, hedgerows H1-H3 and the scattered trees are to be retained as part of the Proposed Development and B2 is to be relocated, but still retained. If B1 and B2 are to be permanently lost as part of the Proposed Development, then further survey works will be required. If the hedgerows and scattered trees are to be permanently lost as part of the Proposed Development, then it is recommended that these habitats be replaced with similar habitats of the same or higher biodiversity value.
- 10.8 To increase the biodiversity value of the Site as part of the development any landscape planting should incorporate native species of local provenance, including those species known to provide foraging opportunities for breeding birds and nectar sources for invertebrates.

Species

Amphibians

- 10.9 The Site offers limited refugia and habitats suitable for hibernation, however two waterbodies of 'excellent' suitability for GCN were located within 250m of the Site. It is recommended that the following phased-clearance method statement be followed to reduce risk of injury or death to any amphibians that may be using the Site.

Amphibian Phased Vegetation clearance

- 10.10 It is recommended that the amphibian method statement given below is implemented to safeguard any common amphibians and reptiles which may use the Site on occasion:

- Suitable refugia present within the proposed works area including rubble and log piles is to be searched and removed by hand.
- Any amphibians or reptiles captured as part of this will be relocated to an area of habitat away from the construction area.
- Any areas of longer vegetation including the tall ruderal to be lost will be strimmed initially to a height of 150mm.
- After a 5-day period this area is then to be strimmed to a height of 50mm before being soil stripped.

Bats

- 10.11 Night working should be avoided where possible, and lighting used during the construction phase must be directed away from the boundaries of the Site. Any lighting post-construction should be designed with reference to standard guidelines for bats and lighting (BCT & ILP, 2018) and should also be directed away from the boundary features and into the centre of the Site. It is recommended that any lighting scheme should be designed with ecologist input.
- 10.12 The existing scattered trees and hedgerows should be retained where possible so the foraging and commuting opportunities which this habitat currently offers for bats will be maintained.
- 10.13 Construction practices should follow best practice in terms of dust and noise and control.

Badger

- 10.14 No evidence of Badger activity was found within or immediately adjacent to the Site. Badgers readily establish new setts, therefore should any evidence of badger activity be found prior to construction, a member of the Lockhart Garratt ecology team contacted for advice.

Mammal Safeguards

- 10.15 General construction safeguards should also be implemented as a precaution, which will also act to safeguard mammals, such as fox or hedgehog:
- All contractors and Site personnel will be briefed on the potential presence of mammals such as badger within the Site.
 - Any trenches or deep pits within the Site are to be left open overnight will be provided with a means of escape should an animal enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water.
 - Any trenches will be inspected each morning to ensure no animals have become trapped overnight.
 - Food and litter should not be left within the working area overnight.
 - Should badgers be encountered during the works or a new sett found, the Ecologist should be contacted for advice.

Nesting Birds

10.16 As the scattered trees and hedgerows offer breeding opportunities for birds, works affecting these habitats should take place outside the bird breeding season (March to August inclusive). If in the event works need to proceed within this period then specialist advice from a suitably qualified ecologist should be sought.

Reptile

10.17 The Site offers some suitable limited habitat for reptiles through the presence of improved grassland, tall ruderal, hedgerows and features TN1-TN4.

10.18 Recommendations provided in respect of amphibians will also act to safeguard any reptiles, which may use the Site on occasion.

Enhancements

10.19 Development proposals should seek to provide enhancement opportunities for species using the Site. This could include the following measures:

- 2 X bat boxes to be integrated into the fabric of the new building. Recommended types include Ibstock 'C'.
- 3 X Ibstock Swift boxes to be integrated into the fabric of the new building;
- Enhancement of hedgerows across the Site infilling with native fruit and nut species;
- Enhancement of grassland areas through planting of wildflower areas and appropriate mowing regimes / establishment of tussocky grassland margins. Recommended seed mix types include Emorsgate EM3;
- Creation of two log piles and one hibernaculum suitable for reptiles and amphibians.

General

10.20 If in the unlikely event any protected species (e.g. amphibians, badgers, bats, reptiles, or nesting birds) are encountered as part of the works, then all works must stop, with advice sought immediately from Lockhart Garratt (01536 408840).

11. REFERENCES AND BIBLIOGRAPHY

Bat Conservation Trust (2016) Bat Surveys: Good Practice Guidelines 3rd Edition.

British Standards Institution (2013). British Standard 42020:2013. Biodiversity – Code of Practice for planning and development.

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

CIEEM (2017) Guidelines for Preliminary Ecological Appraisal (GPEA).

English Nature (2001) Great Crested Newt Mitigation Guidelines.

Froglife (1999) Reptile Survey – Advice Sheet 10.

JNCC (2010). Handbook for Phase 1 Habitat Survey: A technique for environmental audit.

JNCC (1998) The Herpetofauna Worker's Manual.

Langton et al (2001) The Great Crested Newt Conservation Handbook.

Maddock et al (2011) UK Biodiversity Action Plan; Priority Habitat Descriptions.

Mammal Society (2013) How to Find and Identify Mammals, 2nd Edition.

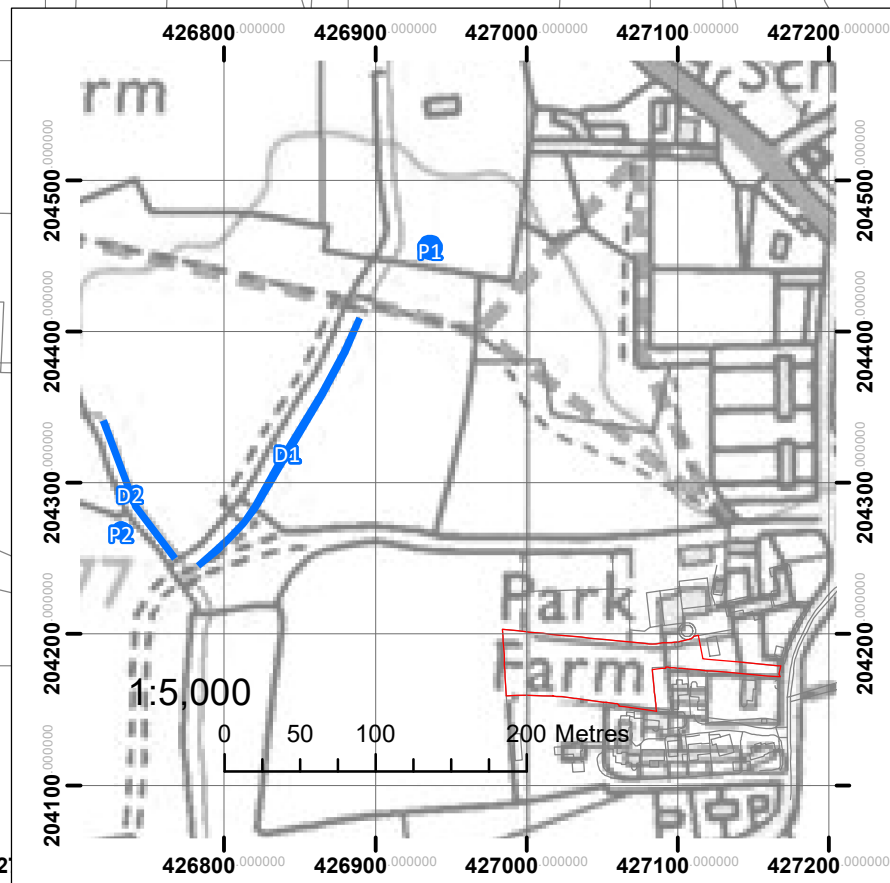
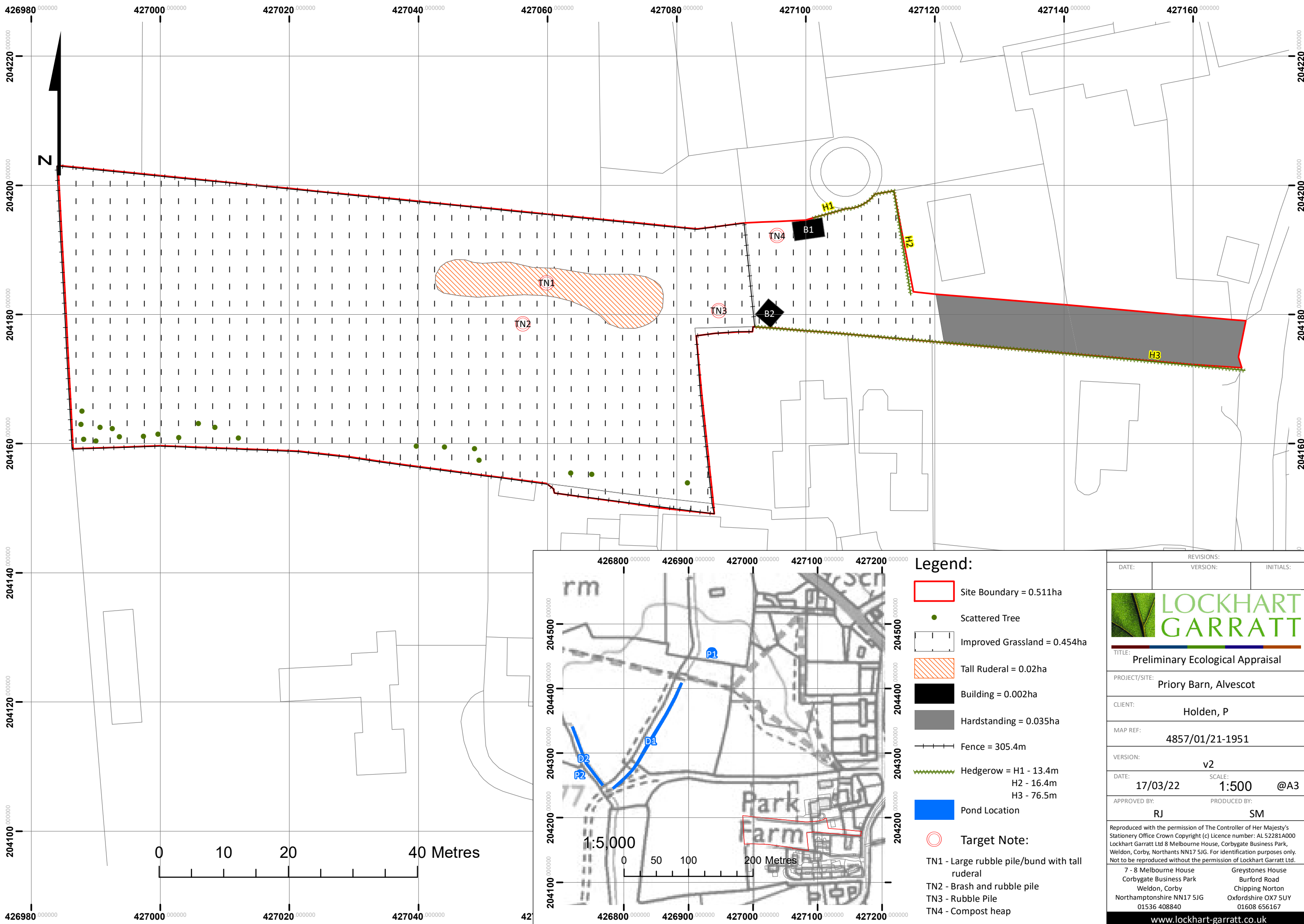
Natural England (2004) Bat Mitigation Guidelines.

Oldham R.S., Keeble J., Swan M.J.S & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155.

12. APPENDICES

Appendix 1: PEA Phase 1 Habitat Map

Ref: 21-1951



- Legend:**
- Site Boundary = 0.51ha
 - Scattered Tree
 - Improved Grassland = 0.454ha
 - Tall Ruderal = 0.02ha
 - Building = 0.002ha
 - Hardstanding = 0.035ha
 - Fence = 305.4m
 - Hedgerow = H1 - 13.4m
H2 - 16.4m
H3 - 76.5m
 - Pond Location
 - Target Note:
- TN1 - Large rubble pile/bund with tall ruderal
 - TN2 - Brush and rubble pile
 - TN3 - Rubble Pile
 - TN4 - Compost heap

REVISIONS:		
DATE:	VERSION:	INITIALS:
TITLE: Preliminary Ecological Appraisal		
PROJECT/SITE: Priory Barn, Alvescot		
CLIENT: Holden, P		
MAP REF: 4857/01/21-1951		
VERSION: v2		
DATE: 17/03/22	SCALE: 1:500	@A3
APPROVED BY: RJ		PRODUCED BY: SM
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AERIAL SURVEYING

SITE SURVEYING | SITE MONITORING | 3D MODELLING | ORTHOMOSAIC | DIGITAL SURFACE MAPPING

ARBORICULTURE

TREES & DEVELOPMENT | TREE RISK MANAGEMENT | ASH DIEBACK ADVICE & MANAGEMENT | TREES & THE LAW | EXPERT WITNESS

DIGITAL MAPPING & GRAPHIC DESIGN

DIGITAL REPRESENTATION AND GIS ANALYSIS | GRAPHIC DESIGN

ECOLOGY

HABITAT & SPECIES SURVEYS AND LICENSING | HABITAT CREATION, RESTORATION AND MANAGEMENT | STAKEHOLDER ENGAGEMENT
| ECOLOGICAL IMPACT ASSESSMENT (EClA)

FORESTRY & WOODLAND MANAGEMENT

FORESTRY MANAGEMENT ADVICE | OPERATIONAL MANAGEMENT | ASH DIEBACK ADVICE & MANAGEMENT | TIMBER SALES | GRANT
APPLICATIONS | NEW WOODLAND DESIGN | CARBON | WOODLAND EVALUATION

LANDSCAPE

LANDSCAPE & VISUAL IMPACT ASSESSMENT | LANDSCAPE DESIGN & SPECIFICATION | LANDSCAPE MANAGEMENT PLANS |
MASTERPLANNING | NATURAL CAPITAL | GREEN INFRASTRUCTURE PLANNING & DESIGN | DESIGN & ACCESS STATEMENTS | DESIGN
CODE | EXPERT WITNESS

SOILS & LAND RESTORATION

PLANNING RATIONALISATION & STAKEHOLDER LIAISON | LAND SURVEY & MANAGEMENT PLANNING | COST ENGINEERED LANDSCAPE
& HABITAT DESIGN | SOIL SURVEY & ADVICE | RESTORATION & AFTERCARE MANAGEMENT PLAN (RAMP) | IMPLEMENTATION
MANAGEMENT & CLERK OF WORKS