WILD FRONTIER ECOLOGY

Proposed Class Q Renovation of Single Barn at Redhouse Farm, Little Waldingfield, Suffolk.

Ecology Report

July 2023

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The data which we have prepared and provided is accurate, and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that any opinions expressed are our best and professional bona fide opinions.

This report conforms to the British Standard 42020:2013 Biodiversity – Code of practice for planning and development.

CONTENTS

1. Non-technical Summary

Wild Frontier Ecology Ltd. was commissioned to complete an ecological assessment of a proposed Class Q conversion of a barn at Redhouse Farm, Little Waldingfield, Suffolk, CO10 0TQ. The assessment involved a desk study, an Extended Habitat Survey and a visual inspection of the building for roosting bats. Subsequently, a bat emergence survey was conducted on the building. The proposed development is for renovation of the barn into a single residential property with associated parking.

The habitats survey found the site to be mostly the existing building, hardstanding with a small area of 'modified grassland' and a small area of 'other neutral grassland' with scrub encroachment. The wider site is surrounded by hard standing and agricultural fields to the south and west, a neighbouring property to north with associated curtilage and Lavenham Road (B1071) to the east. An inspection of the barn found some minor niches which may be suitable for roosting bats and therefore the building was assessed as having low potential to support roosting bats.

A subsequent bat emergence survey was undertaken on the barn and the survey found no bats emerging from the building. Low bat activity was recorded on site with small numbers of common species found.

The site will support nesting birds and mitigation is advised to avoid destruction of/damage to active bird nests, which would constitute a legal offence. This will involve checking the building prior to works to ensure there are no active nests, or alternatively, commencing works outside of the main bird nesting season. All neighbouring hedgerows and trees are outside the development boundary and will be retained. If removal of any woody vegetation on site is required, this will take place outside the nesting bird season. Compensation is also advised for the loss of nesting habitat in the barn.

The potential for impacts on other protected and valued species such as reptiles, amphibians, badgers and small mammals has also been assessed and impacts are predicted to be neutral, negligible or minor negative. Predicted impacts can be addressed through best practice mitigation measures. Assuming these mitigation measures are implemented in accordance with the given advice, potential minor negative impacts will be reduced to neutral or negligible for all protected and valued species.

There are no statutory or non-statutory designated sites within 2km of the site and due to the separation distance, impacts to these sites have been assessed as negligible.

Additional enhancement advice is provided including the incorporation of bird and bat boxes into the fabric of the new building. The new garden of the property also has potential to be enhanced through the sowing of wildlife friendly lawn mixes and native tree planting. Should these be followed, net benefits to these species are predicted.

2. Background and Objectives

2.1 Background

Wild Frontier Ecology Ltd. (WFE) was commissioned by Bidwells to conduct an ecological assessment of a proposed renovation at Redhouse Farm, Little Waldingfield, Suffolk, CO10 0TQ (centred on National Grid Reference: TL 91236 45892). The proposal is for the renovation of the existing barn into a single residential property with an associated garden and parking.

The site location and site aerial photograph are provided in Figures 1 and 2, below. The proposed development plan is provided in Figure 3.

2.2 Objectives

The purpose of this ecological report is to describe the habitats, protected and valued species potential, any designated nature conservation sites, and any other ecological issues within the potential zone of influence of the proposed development. This has allowed for an ecological assessment of the proposed development to be completed. Avoidance measures, mitigation, compensation and ecological enhancements are specified with the intention of achieving net gain as specified within the National Planning Policy Framework (NPPF).

2.3 Basis for Assessment

This assessment is based on plans (Figure 3) provided by the client in March 2023.

Figure 1. Site Location

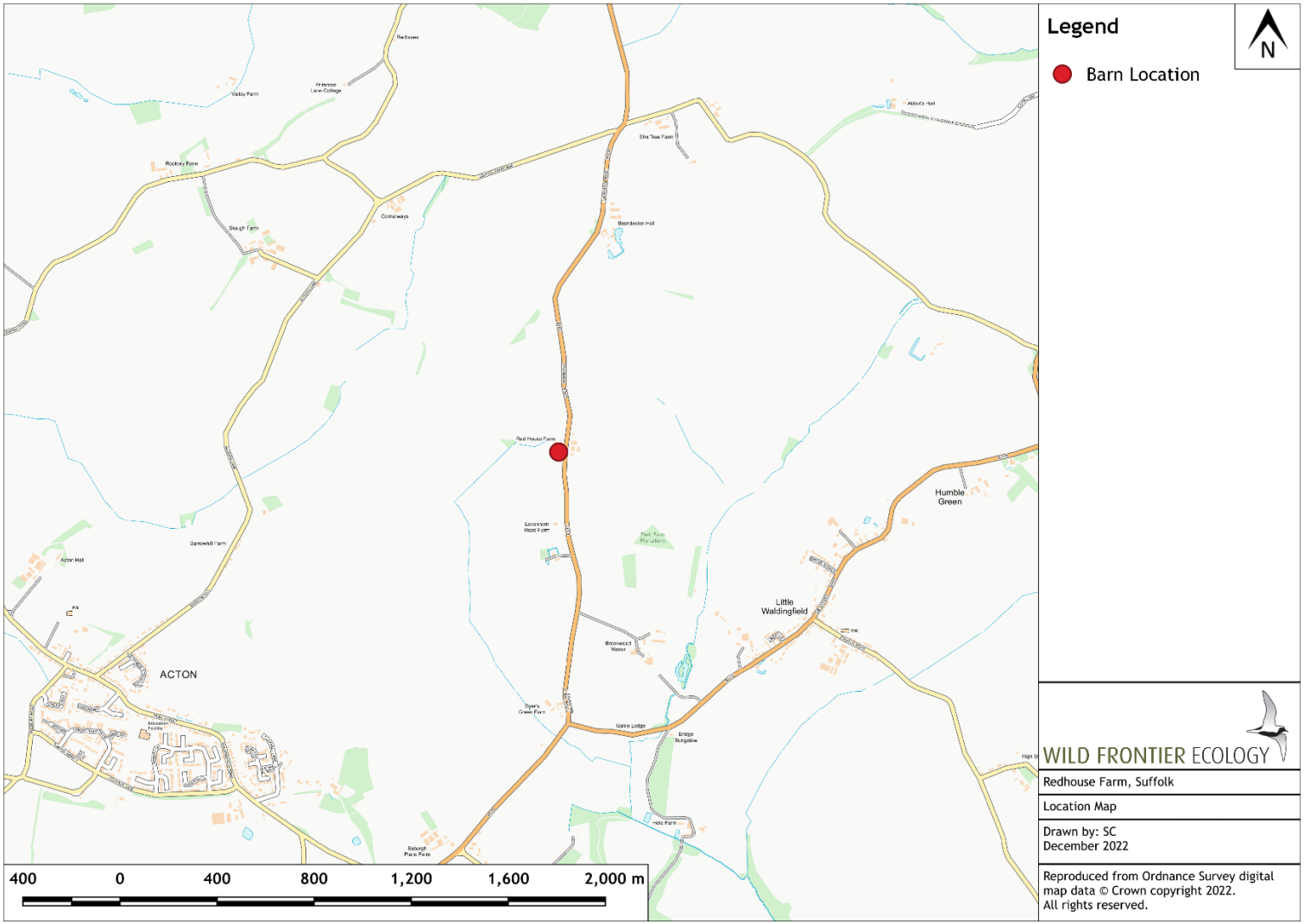


Figure 2. Aerial image (as taken by Google Earth on 22/04/2021)

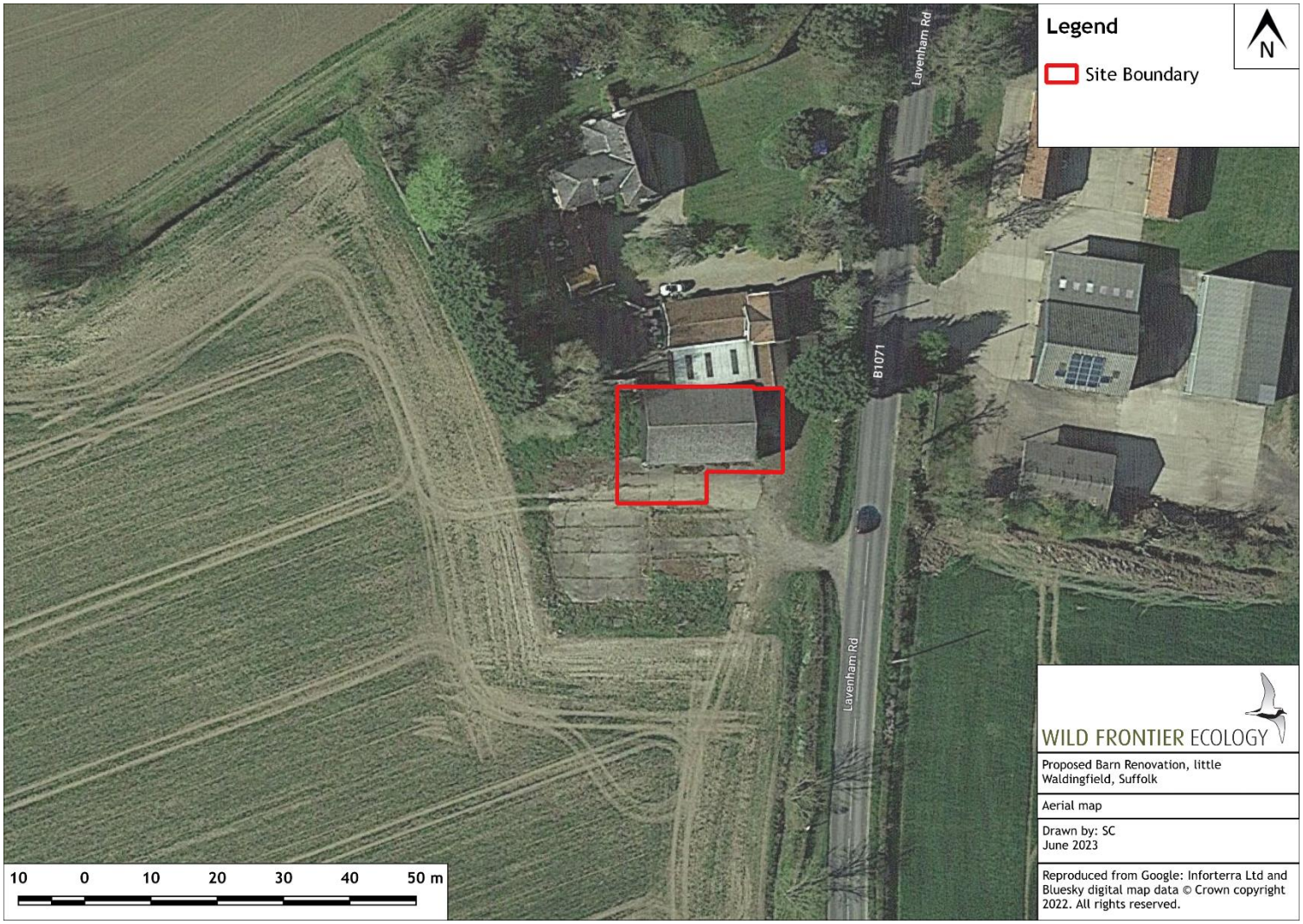
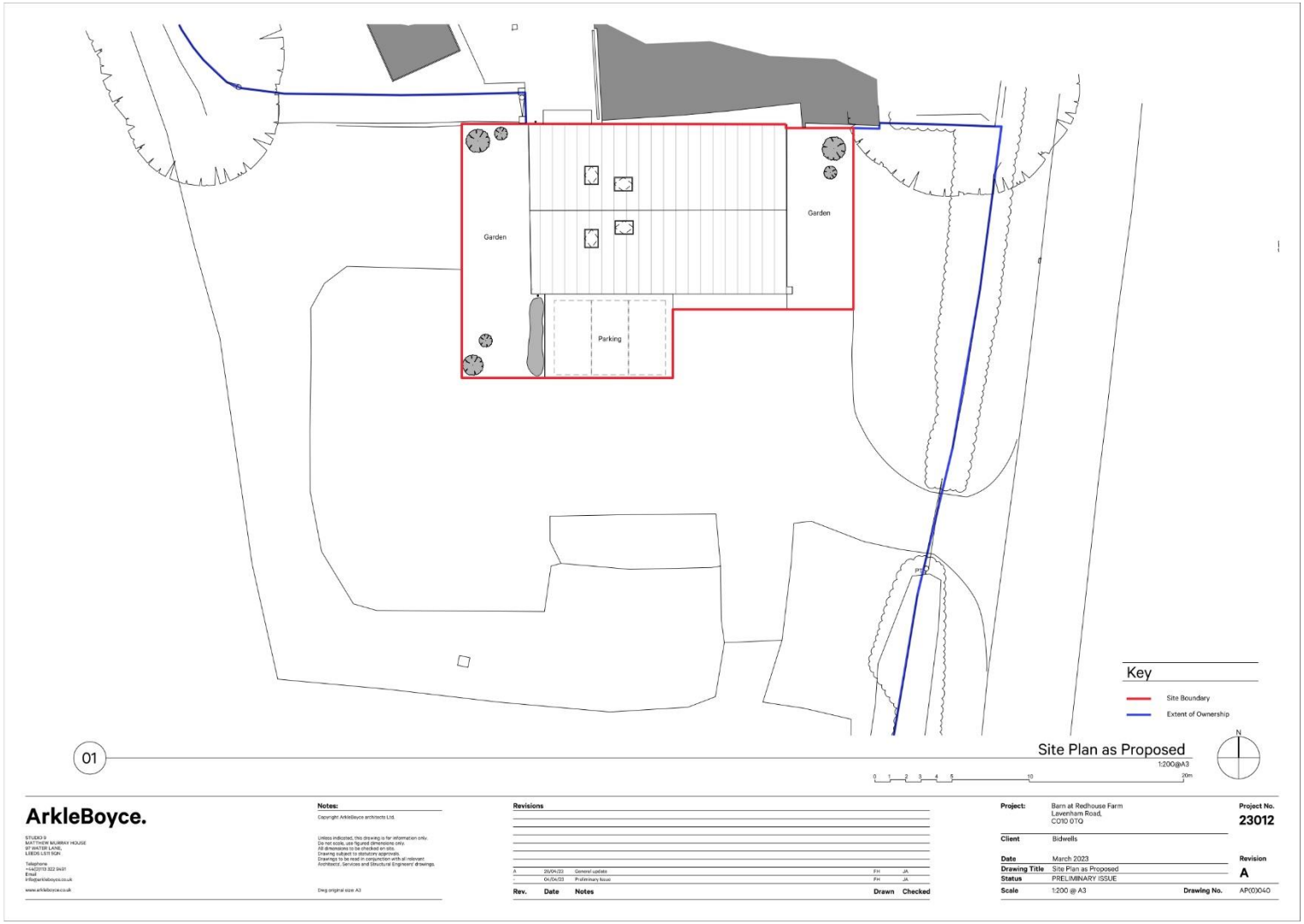


Figure 3. Proposed development plans (as provided by Bidwells)



3. Relevant Legislation and Policy

3.1 Statutory and Non-statutory Site Designations

3.1.1 Statutory Site Designations

The European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) as amended directs the designation of important wildlife sites through the European Community as Special Areas of Conservation (SACs), and gives statutory protection to habitats and species listed in the Directive as being threatened or of community interest. Sites identified as candidate SAC (cSAC) are provided with the same level of protection as SAC.

Annex I of 92/43/EEC as amended lists habitat types which are regarded as being of European importance. Included within these are a number of 'priority habitat types' which are habitats regarded as being in danger of disappearance and whose natural range falls broadly within the European Union. This European law had been transposed into UK legislation by The Conservation (Natural Habitats) &c Regulations 1994, now replaced by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Habitats of European-wide importance for birds are listed under the EC Wild Birds Directive (79/409/EEC) as amended. Habitats designated under this Directive are notified as Special Protection Areas (SPAs) and are identified for holding populations > 1% of the reference population as defined in Appendix 4 of the SPA review of bird species listed in Annex 1 of the same Council Directive. Sites identified as potential SPA (pSPA) are provided with the same level of protection as SPA. This has also been transposed into UK legislation by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

SACs and SPAs, post Brexit, are referred to as "National Site Network Sites" and retain the same level of protection as when the UK was an EU member state.

Wetlands of International Importance are designated under the Ramsar Convention.

National ecological designations, such as Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) are also afforded statutory protection. SSSIs are notified and protected under the jurisdiction of the Wildlife and Countryside Act 1981 (as amended). SSSIs are notified based on specific criteria, including the general condition and rarity of the site and of the species or habitats supported by it.

3.1.2 Non-Statutory County Site Designations

Local authorities may designate certain areas as being of local conservation interest. The criteria for inclusion may vary between areas. Most individual counties have a similar scheme; within Suffolk such sites are designated as County Wildlife Sites (CWS). Designation of such sites does not itself confer statutory protection, but they are a material consideration when planning applications are being determined.

3.2 Species Designation and Protection

3.2.1 Bats

All bat species are listed under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Bats and their roosts also receive protection from disturbance from by the Wildlife and Countryside Act 1981 (as amended). This

protection extends to both the species and roost sites. It is an offence to kill, injure, capture, possess or otherwise disturb bats. Bat roosts are protected at all times of the year (making it an offence to damage, destroy or obstruct access to bat roosts), regardless of whether bats are present at the time.

3.2.2 Badgers

The Protection of Badgers Act 1992 makes it unlawful to knowingly kill, capture, disturb or injure an individual badger *Meles meles*, or to intentionally damage, destroy or obstruct an area used for breeding, resting or sheltering by badgers (i.e. a sett).

3.2.3 Riparian Mammals

The water vole *Arvicola amphibius* is protected in accordance with Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or to disturb water voles whilst they are using such a place. It is also an offence to kill, injure, capture or possess water voles.

The otter *Lutra lutra* is protected in accordance with Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. It is an offence to intentionally kill, injure or take an otter from the wild, or to intentionally or recklessly damage, destroy or obstruct access to any habitat used by otters or to disturb the otters which make use of those habitats.

3.2.4 Birds

All bird species are protected under the Wildlife and Countryside Act 1981 (as amended). This prevents killing or injuring any bird or damaging or destroying nests and eggs. Certain species (including barn owl *Tyto alba*) are also listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which prohibits intentionally or recklessly disturbing the species at, on or near an 'active' nest.

The British Trust for Ornithology (BTO) lists Birds of Conservation Concern (BoCC), which fall into three categories: Red-listed - species of high concern; Amber-listed - species of medium concern; and Green-listed - species of lower concern[1]. Species are placed on these lists based, among other criteria, on the percentage decline of breeding or wintering populations in recent years. These lists do not indicate rarity for the species concerned, and many listed species are currently common and widespread.

3.2.5 Reptiles

All native reptiles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and are afforded protection under Sections 9(1) and 9(5). For the reptile species occurring in East Anglia, adder *Vipera berus*, grass snake *Natrix helvetica*, slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara*, this protection prohibits deliberate or reckless killing and injury but does not include habitat protection.

[1] Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win, I. (2021). Birds of Conservation Concern 5: the status of our bird populations: the fifth birds of conservation concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain, available online at https://britishbirds.co.uk/sites/default/files/BB_Dec21-BoCC5-IUCN2.pdf

3.2.6 Great Crested Newts

The great crested newt *Triturus cristatus* is listed under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The species is also protected by Sections 9(4) and 9(5) of the Wildlife and Countryside Act 1981 (as amended). It is an offence to knowingly or recklessly kill, injure, disturb, handle or sell the animal, and this protection is afforded to all life stages. It is unlawful to deliberately or recklessly damage, destroy, or obstruct the access to any structure or place used for shelter or protection; this includes both the terrestrial and aquatic components of its habitat.

3.2.7 White Clawed Crayfish

White clawed crayfish *Austropotamobius pallipes* are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) but only receive protection under Sections 9(1) and 9(5). This makes it an offence to take or sell white-clawed crayfish. Section 9 applies to all stages in their life cycle.

3.2.8 Plants

Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists plant species which are afforded special protection. It is an offence to pick, uproot or destroy any species listed on Schedule 8 without prior authorisation, and all plants are protected from unauthorised uprooting (i.e. without the landowner's permission) under Schedule 13 of the Wildlife and Countryside Act 1981 (as amended).

A Vascular Plant Red List for England[2] provides a measure of the current state of England's flora measured against standardised IUCN criteria. Any taxon that is threatened – Critically Endangered (CR), Endangered (EN), Vulnerable (VU) – or Near Threatened (NT) does not have statutory protection but should be regarded as a priority for conservation in England. It should be noted that 'threat' is not synonymous with 'rarity'; some of the species concerned remain relatively common and widespread.

It is an offence to plant or cause to spread in the wild of certain plant species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Plant species relevant to the East of England are as follows:

Himalayan balsam *Impatiens glandulifera*
Variegated yellow archangel *Lamiastrum galeobdolon* ssp *argentatum*
Virginia creeper *Parthenocissus quinquefolia*
False acacia *Robinia pseudoacacia*
Water fern *Azolla filiculoides*
Giant hogweed *Heracleum mantegazzianum*
Knotweed species including Japanese knotweed *Fallopia japonica*
Parrot's feather *Myriophyllum aquaticum*
Floating pennywort *Hydrocotyle ranunculoides*
Rhododendron *Rhododendron ponticum*
Giant rhubarb *Gunnera tinctoria*
New Zealand pigmyweed *Crassula helmsii*
Waterweeds *Elodea* spp.
All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990 and is classified as controlled waste.

[2] Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. and Taylor, I. (2014). *A Vascular Plant Red List for England*. Botanical Society of Britain and Ireland, Bristol.

3.3 Biodiversity Net Gain

The principle of net gain has been enshrined in law within the Environment Act 2021. There will be a two year transitional period before net gain becomes mandatory; this is expected to mean implementation in winter 2023. The Act sets the minimum net gain at 10%, and makes provision for offsetting both on and off site. Sites where activity occurs, without planning permission, which lowers the biodiversity value of a site between 30th January 2020 and the implementation date will be expected to rely on the site's value prior to that activity. This is to avoid destruction of biodiverse sites in anticipation of the implementation of net gain. Calculations of net gain rely on a metric; there is a simplified metric for smaller sites.

3.4 Priority Species and Habitats

Other priority species and habitats are a consideration under the National Planning Policy Framework (NPPF) 2019, placing responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments. There is a general biodiversity duty in the Natural Environment and Rural Communities (NERC) Act 2006 (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the Habitats and Species of Principal Importance.

Section 41 of the NERC Act lists a number of species and habitats as being Species/Habitats of Principal Importance. These are species/habitats in England (commonly known as Priority Habitats/ Species) which had been identified as requiring action under the UK BAP, and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. The protection of either Priority Species or Habitats is not statutory, but "specific consideration"[3] should be afforded by Local Planning Authorities when dealing with them in relation to planning and development control. Also, there is an expectation that public bodies would refer to the Section 41 list when complying with the Section 40 duty.

Widespread Priority Habitats in East Anglia include:

Arable field margins
Traditional orchards
Hedgerows
Eutrophic standing waters
Ponds
Rivers
Lowland calcareous grassland
Lowland dry acid grassland
Lowland heathland
Lowland meadows
Lowland fen
Coastal and floodplain grazing marsh
Reedbeds
Lowland mixed deciduous woodland

[3] JNCC (2015). UK BAP priority species and habitats
http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

Wet woodland
Wood-pasture and parkland

Widespread Priority Species in East Anglia (which have no specific legal protection) include:

Common toad *Bufo bufo*
Hedgehog *Erinaceus europaeus*
Brown hare *Lepus europaeus*
Harvest mouse *Micromys minutus*
Small heath butterfly *Coenonympha pamphilus*
Wall butterfly *Lasiommata megera*
Cinnabar moth *Tyria jacobaeae*
Polecat *Mustela putorius*

Many red-listed bird species are also Priority Species.

3.5 National Policy

The overarching policy guidance for biodiversity is included within the National Planning Policy Framework (NPPF). Section 15 of this document (Conserving and Enhancing the Natural Environment) outlines the approach that Local Authorities should adopt when considering ecological issues within the planning framework, including the principles of the Mitigation Hierarchy. This espouses that in addressing impacts on valued features, avoidance should be the first option considered, followed by mitigation (minimising negative impacts). Where avoidance and mitigation are not possible, compensation for loss of features can be used as a last resort. Paragraph 180(d) of the NPPF requires opportunities to incorporate biodiversity improvements in and around development as part of the design, especially where this can secure measurable **net gains** for biodiversity or enhance public access to nature where this is appropriate. Paragraph 179 specifies that plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including locally designated sites (such as CWS). It also promotes the conservation, restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

3.6 Local Policy

The Suffolk Biodiversity Partnership (SBP) has published Habitat and Species Action Plans for selected species occurring within Suffolk. Each Action Plan lists current actions and defines objectives and targets. The SBP has also published a Suffolk Planning Biodiversity Action Plan[4]. This document sets out the key considerations relating to wildlife and biodiversity that should be taken into account for all Suffolk development proposals.

[4] Suffolk Biodiversity Partnership (2012), 'Suffolk Local Biodiversity Action Plan'. Available at http://www.suffolkbis.org.uk/sites/default/files/biodiversity/priorityspecieshabitats/actionplans/Planning_BAP_Final%2018%20May%202012.pdf

4. Assessment Methods

4.1 Desk Study

The proposed development site and nearby surrounding area were reviewed using Ordnance Survey (OS) maps and aerial photographs from Google Earth™ with the aim of identifying potential ecological issues or sensitive habitats, such as nearby ponds or connected hedgerows. National Character Area profiles[5] were consulted for site context where appropriate.

The Multi-Agency Geographic Information for the Countryside (MAGIC) website[6], managed by Natural England, was consulted for information on statutory designated nature conservation sites and granted European Protected Species (EPS) Mitigation Licences within 2 kilometres (km) of the proposal site. This service was also used to search for great crested newt (GCN) survey data from District Level Licence surveys, published by Natural England.

A data search with Suffolk Biodiversity Information Service (SBIS) was not considered necessary for this assessment, given the small footprint of the development proposal, and the sufficiency of the information available from other sources including the site surveys, MAGIC website, historical aerial imagery and maps.

4.2 Preliminary Bat Roost Appraisal

A visual inspection of the barn was conducted on the 3rd March 2023 by Alice Petherick BA MA (NE bat survey licence 2022-10911-CL18-BAT). The visual inspection was completed on a mild day with 100% cloud cover, winds at Beaufort Scale 1, no rain and air temperature of 15˚C. Photographs were taken to record key features and are presented in Appendix 1.

The structure was investigated for evidence of bat use and evaluated for bat roosting potential. The search for bat roosts was not only for bats in situ, but also for the more likely droppings, urine and body oil stains, and accumulations of feeding remains (insect parts). Torches, ladders, binoculars and cameras were all on-hand for use. Signs of use by birds were also searched for including nesting sites, feathers, droppings and pellets.

4.3 Extended Habitat Survey

An Extended UK Habitat (UKHab) survey of the site was undertaken during the initial site visit on 3rd March 2023 by A. Petherick. The survey method followed UKHab methodology[7], with the methods being 'extended' to include a general evaluation of potential habitats for any protected or valued species. Photographs were taken to record key features/views.

Only habitats on the landholding were available to survey. Any relevant habitats outside of the landholding were appraised as far as possible by viewing from the landholding, public footpaths, and roads, as well as by using publicly accessible aerial photographs.

[5] https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles#ncas-in-the-east-of-england
[6] https://magic.defra.gov.uk/MagicMap.aspx
[7] UK Habitat Classification Working Group (2018). UK Habitat Classification User Manual. Ecountability Ltd, Kentisbeare

The hedgerows are rated against the criteria for Priority Habitats[8], which is as follows:

"All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this priority habitat, where each UK country can define the list of woody species native to their respective country."

For the purposes of the Hedgerow Regulations (1997)[9], hedgerows may also be referred to as 'species rich' if they meet the following criteria:

"Species-rich hedgerows may be taken as those which contain 5 or more native woody species on average in a 30 metre length, or 4 or more in northern England, upland Wales and Scotland. Hedges which contain fewer woody species but a rich basal flora of herbaceous plants should also be included but practical criteria for identifying them have yet to be agreed. Many of the thin straight hawthorn hedges which characterise later parliamentary enclosures, as well as most hedges which consist mainly of beech, privet or yew or non-native trees, are excluded. Recently planted species-rich hedges are included".[10]

4.4 Bat Emergence Surveys

4.4.1 Dusk Emergence Survey - 23/05/2023

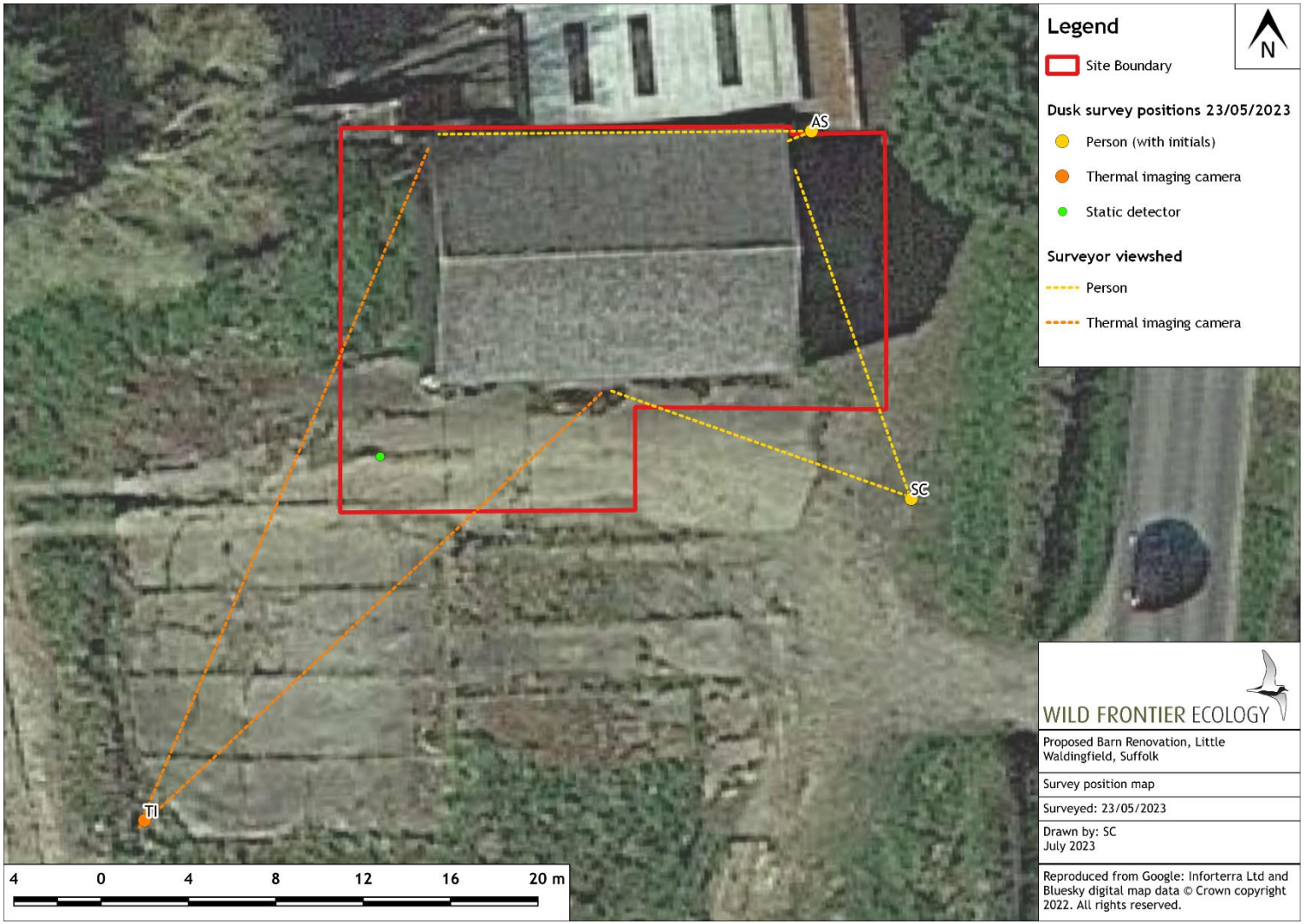
The dusk emergence survey was undertaken in accordance with the Bat Conservation Trust (BCT) guidance[11] and Thermal Imaging Guidance[12]. The survey was completed by Adam Stickler MSc BSc ACIEEM (NE bat survey class licence registration 2023-11136-CL17-BAT) and Samuel Collin MSc BSc Qualifying Member of CIEEM, who monitored the exterior of the building with recording devices (an AnaBat SD1 and an Echo Meter Touch) to detect any bats emerging from the building. The surveyors were assisted by a HIK Owl thermal imaging camera digitally recording and paired with an AnaBat SD1 detector. A secondary HIK Lynx Pro was also used as a survey aid. Survey positions are shown in Figure 4, below.

The survey commenced approximately 15 minutes before sunset and continued until 90 minutes post-sunset.

Sunset was at 20:56 and the conditions were suitable for surveying: cloud cover was estimated at around 40%, there was no precipitation, there was a light breeze and the air temperature started at 11.5˚C at the beginning of the survey, falling to 9.5˚C by the end.

[8] JNCC (November 2016). UK Biodiversity Action Plan Priority Habitat Descriptions. Available at: https://jncc.gov.uk/our-work/uk-bap-priority-habitats/.
[9] The Hedgerow Regulations 1997. Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents/made
[10] Biodiversity: The UK Steering Group Report - Volume II: Action Plans (December 1995, Tranche 1, Vol 2, p243).
[11] Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.)*. Bat Conservation Trust, London.
[12] Fawcett Williams, K. (2019) Thermal Imaging: Bat Survey Guidelines

Figure 4. Dusk emergence survey positions - 23/05/2023



5. Results

5.1 Desk study

5.1.1 Local Landscape Description

The site is located off the Lavenham Road. The site is approximately 1.2km west of the village of Little Waldingfield, a small linear settlement in Suffolk. The immediate surroundings of the site comprise a residential property adjacent to the north of the site boundary, hard standing and arable fields to the south and west and an agricultural barn complex to the east. From the review of OS maps data, there are no known ponds within 250 metres (m) of the proposal site.

On a wider scale, the landscape surrounding the site is dominated by arable fields separated by hedgerows and ditches. Overall, the landscape has a network of interconnecting hedgerows and frequent small areas of woodland.

According to this area's landscape's National Character Area Profile (86 South Suffolk and North Essex Clayland[13]) the area is described as being "an ancient landscape of wooded arable countryside with a distinct sense of enclosure. The overall character is of a gently undulating, chalky boulder clay plateau, the undulations being caused by the numerous small-scale river valleys that dissect the plateau. There is a complex network of old species-rich hedgerows, ancient woods and parklands, meadows with streams and rivers that flow eastwards."

5.1.2 Pre-existing Information on Designated Sites

There are no statutory designated sites within a 2km radius of the proposed development site. The nearest statutory designated site is Brent Eleigh Woods SSSI, which is at the nearest point approximately 2.4km northeast of the proposal.

WFE in-house records indicate that there are no known County Wildlife Sites (CWS) within close proximity (estimate the nearest such site is located over 1km from the proposed development site.

5.1.3 Pre-existing Information on Protected and Valued Species

A search of the MAGIC database revealed no EPS mitigation licences within a 2km search area of the site. The nearest result was for a licence approximately 2.6km south of the site. 2018-37606-EPS-MIT (12/11/2018 - 30/11/2023) is for the destruction of a resting place and lists the following species: common pipistrelle *Pipistrellus pipistrellus,* brown long-eared bat *Plecotus auratus* and barbastelle bat *Barbastella barbastellus.*

There are two records of great crested newts displayed on the MAGIC website. These records indicate the presence of the species in 2014 and are both Natural England survey licence returns. Both are approximately 900m east of the site.

[13] https://publications.naturalengland.org.uk/publication/5095677797335040?category=587130

5.2 Site Survey

5.2.1 Visual Inspection of Building

The external walls of the barn are constructed of red brick (Photo 1), cement fibre sheeting and wooden cladding (Photo 2). The internal walls are constructed of breeze blocks (Photo 3). The interior wall is separated from the exterior wall, leaving a 20 centimetre (cm) interstitial gap (Photo 4). The roof is constructed of cement fibre sheeting supported by modern machine-cut timbers (Photo 5). There is a single weatherboard along the west elevation (Photo 6). Access to the barn is through a large metal door on the east elevation (Photo 7). There are several deep cracks in the brickwork (Photo 8) and access to the barn for bats and birds is possible through access points in the roof and around the door frame (Photo 9). There is considerable ivy *Hedera helix* growth on the east elevation. At the time of the survey, the barn was empty.

There was no evidence of bats using the structure. Due to the presence of some suitable niches and access points the barn was categorised as having 'low' potential to support roosting bats.

5.2.2 Extended UK Habitat Survey

The site comprises the barn, hard standing to the south, a small patch of modified grassland to the east of the building and ruderal/ephemeral vegetation to the west. The sward of the modified grassland (Photo 10) is dominated by fast growing grasses including perennial rye grass *Lolium perenne* and cock's foot *Dactylis glomerata* which are dominant. Red fescue *Festuca rubra* and smooth meadow-grass *Poa pratensis* are occasional. Forbs within this grassland include frequent dove's-foot crane's-bill *geranium molle*, common nettle *Urtica dioica* and herb robert *Geranium robertianum*. Occasional forbs include creeping thistle *Cirsium arvense* and bramble *Rubus fruticosus* agg.

The vegetation to the west of the barn (Photo 11) is dominated by bramble and common nettle. There are occasional grasses including cock's foot and Yorkshire fog *Holcus lanatus*. This grassland is categorised as 'other neutral grassland' under UKHab, although there is significant scrub encroachment.

The site is separated from the neighbouring property to the north by a wooden fence (Photo 12) and from Lavenham Road (B1071) to the east by a native-species hedgerow (Photo 13). This hedgerow is dominated by hawthorn *Crataegus monogyna*, with abundant ivy, dog rose *Rosa canina* and bramble. This hedgerow is approximately 2m outside the site boundary. Directly south of the building is an area of hard standing (Photo 14).

5.3 Bat Emergence Survey

A single emergence survey was conducted on the barn. The survey found no bats emerging from the building.

During the survey, the surveyors noted the activity of bats flying around the site. Low level activity was recorded with a maximum of three recordings of common pipistrelle made by any surveyor over the whole evening.

5.4 Protected & Valued Species Potential

There is considerable nesting opportunity for birds within the barn and the ivy on the exterior. It is considered that the structure offers the potential to support nesting swallow *Hirundo rustica*, as well as other Birds of Conservation Concern such as house sparrow *Passer domesticus* and swift *Apus apus*. The boundary hedgerow also provides suitable nesting habitat for various nesting bird species.

Given the site's surroundings are predominantly arable and the lack of suitable on-site habitat, the site is not considered suitable for reptiles. Likewise, given the unsuitable habitats and the lack of any known ponds within 250m of the site, great crested newts are expected to be absent.

In general, there is limited potential for other protected species in the habitats on site, although there is potential for protected species to occur in many of the surrounding habitats. It is feasible that protected and Priority Species such as badger, hedgehog and common toad could occur occasionally within adjacent habitats and occasionally traverse through the site.

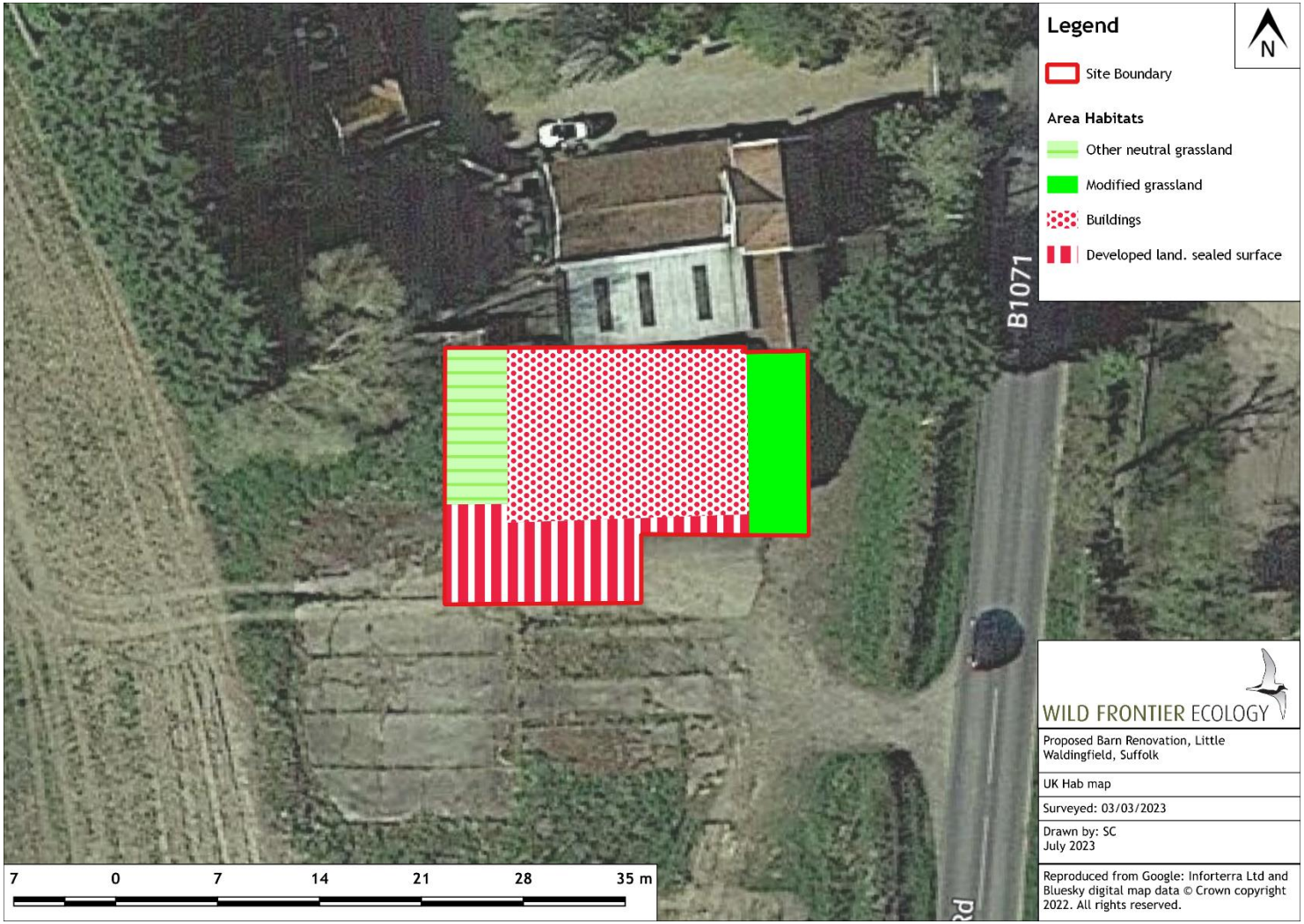
5.5 Constraints and Limitations of Survey

There were no notable constraints or limitations on the survey.

5.6 Further Survey Requirements and Expiry Dates

No further surveys are required for this ecological impact assessment. The Extended UK Habitat Survey, roost assessment and protected species survey data will be valid for at least one year.

Figure 5. UKhab Map



6. Impact Assessment

6.1. Potential impacts on ecological receptors

Impact assessment is made with reference to the CIEEM EcIA Guidelines[14].

Throughout, italicised words are used in the technical sense defined within the CIEEM guidance. This refers to the geographical context of the impact or effect. Hence, the following geographical frame of reference will be used to describe the ecological impacts and effects, or adapted to suit local circumstances:

- International and European
- National
- Regional
- County
- District*
- Local

*District level is not listed in the EcIA guidance, but is included within WFE reports as it is a useful and readily identifiable geographic unit.

The local geographical context for the proposal site is defined here as the civil parish of Little Waldingfield, in which the site is situated. The district context is Babergh, the county context is Suffolk and the region is East Anglia.

6.1.1. Impact Magnitude

The EcIA guidelines espouse a quantification of impact/effect magnitude where possible. Where this is not available or uncertain, impact magnitude categories and criteria are defined based on Byron (2000)[15]. These categories are often also used as shorthand to summarise magnitude.

- *Major negative* – that which has a harmful effect on the integrity of a conservation site or the conservation status of a population of a species within a defined geographical area; e.g., fundamentally reduces the capacity to support wildlife for the entirety of a conservation site, or compromises the persistence of a species' population at a defined locality.

- *Intermediate negative* – that which has no adverse effect on the integrity of a conservation site or the conservation status of a species' population, but does have an important adverse effect in terms of achieving certain ecological objectives; e.g., sustaining target habitat conditions and levels of wildlife for a conservation site, or maintaining population growth for a species.

- *Minor negative* – some minor detrimental effect is evident, but not to the extent of the above.

- *Neutral* – that which has no predictable effect.

[14] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: 3rd edition. Chartered Institute of Ecology and Environmental Management, Winchester
[15] Byron H. (2000). Biodiversity Impact - Biodiversity and environmental impact assessment: a good practice guide for road schemes. The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy

6.1.2 Positive or Negative Impacts/ Effects

The nature of a predicted impact is as per CIEEM definition:

> *"Positive impact – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment.*
>
> *Negative impact – a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution."*

6.2 Duration of Impact/ Effect

Impacts/ effects are described as short, medium or long-term, and as either permanent or temporary.

6.3 Impact/ Effect Reversibility

Reversibility is judged per the CIEEM Guidelines for Ecological Impact Assessment description: "*An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.*"

6.4 Impact/ Effect Significance

The CIEEM Guidelines for Ecological Impact Assessment provide a working definition of 'significant effects' which includes the statements:

"For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general." and "In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)."

In this assessment, a significant impact is not attributed to any effect on a receptor which is predicted to occur at no greater than minor negative magnitude. Similarly any impact, regardless of magnitude, is not regarded as significant if its geographic scale of importance is lower than a local/ parish level.

6.5 Description of Impacts/ Effects

A number of impacts/ effects on ecological receptors may result from the proposed development.

6.5.1. Change of land use

The development will result in a change of land use. The site is currently disused but was previously used as storage. The barn will be renovated through a Class Q Renovation Licence resulting in a change of use to a residential development. Areas of hardstanding, 'modified grassland' and 'other neutral grassland' will be cleared to accommodate the curtilage and associated parking. Vehicle access will remain through the current site access.

6.5.2. Construction activities

The activity, noise and other general disturbance from construction machinery and personnel could temporarily disturb and displace species using the site and nearby surrounding area. Some site clearance and construction activities could directly harm or kill animals on site. The context of the site is a relevant consideration when assessing the potential impact; as the site is located adjacent to a farm complex, arable fields and a residential property, there will already be a low to moderate baseline level of human disturbance in this location which is likely to be increased during the construction.

6.5.3. Operational activities

Once constructed, it is assumed that the property would accommodate at most a single family, which according to the Office of National Statistics would constitute 2.4 people[16] on average. There is potential for disturbance impacts from increased human populations, and their need for recreational activities and associated use of adjacent open spaces, increased vehicle use and other indirect impacts such as pet predation and light pollution. These impacts need to be viewed in the context of an addition to housing within the existing settlement (population 364 in 2021[17]). The development would therefore likely lead to an increase in the local population of 0.65%.

6.6 Designated Sites

There are no statutory designated sites located within 2km of the proposed development site. Local non-statutory designated sites in the locality are likely but, all designated sites are beyond the range at which direct impacts from the construction phase (pollution, fragmentation, introduction of non-native plants and disturbance) of the proposed development are likely to have any measurable effect. *Negligible* impacts are therefore certain during the construction phase. The new residential dwelling will accommodate a small increase in population but given the small number of residents and separation distance from valued sites, recreational impacts are expected to be *negligible*.

6.7 Habitats

On the development site there will be a small loss of modified grassland and other neutral grassland, to accommodate the curtilage of the renovated property. However, as the modified grassland is a common habitat and the other neutral grassland is in a deteriorated state, the loss of a small area is expected to have a *negligible* impact on the local resources of these habitats.

6.8 Protected Species

6.8.1 Roosting Bats

There was no evidence of roosting bats found at the barn so impacts of the proposed conversion works on roosting bats will be *neutral*. A European Protected Species (EPS) mitigation licence will therefore **not** be required to proceed with the conversion.

16 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2021

17 https://www.citypopulation.de/en/uk/eastofengland/admin/babergh/E04009109__little_waldingfield/

However, bats are small and highly mobile mammals which can use a range of roosting sites, some of which can be small and used infrequently; therefore, best practice measures are advised.

6.8.2 Foraging Bats

The site will likely support a small population of invertebrates which will typically attract low levels of common species of foraging bats. Survey data recorded generally low levels of bat activity on the site. The most frequently encountered bats were common pipistrelles, which were recorded but not seen by the surveyor. It is most likely that these individuals were using the eastern boundary hedgerow for commuting.

Insensitive night-lighting of the site, both during the construction and in-use phase, could, at worst, have *minor negative* disturbance impacts on local populations of foraging bats. Advice for suitably sensitive lighting of the site has been provided (Section 7.2).

6.8.3 Breeding Birds

The building and exterior ivy provides suitable nesting habitat for birds. In addition, the bramble located within the other neutral grassland in summer months will likely provide suitable nesting habitat. The loss of the other neutral grassland, exterior ivy and potential nesting opportunities within the barn will have at worst a *minor negative* impact on local populations of breeding birds in the long-term. However, the works could damage or destroy an active nest which would constitute a legal offence. Therefore, appropriate mitigation is compelled; further advice is provided below (Section 7.3).

6.8.4 Badgers

The survey found no evidence of badger activity at the proposed development site. Given the site's location in a residential area, the lack of suitable habitat and the level of human disturbance surrounding the site, badgers are not expected to be present on-site. A *neutral* impact is expected.

6.8.5 Riparian Mammals

There is no suitable habitat for species such as water voles and otters within close proximity to the site. As such a *neutral* impact to riparian mammals is predicted.

6.8.6 Reptiles

The lack of suitable habitat and the isolated location of the site greatly reduces the potential for reptile presence. Overall, reptiles are expected to be absent from the site and a *neutral* impact is anticipated.

6.8.7 Great Crested Newts

OS maps show no ponds within 250m of the proposed development site, although it is possible that there are unmapped garden ponds within this range. Given this apparent absence of ponds and the lack of suitable terrestrial habitat within the proposal site, the risk of great crested newt occurring within the zone of influence of the proposed development is considered to be minimal and a *neutral* impact is expected.

6.9 Priority Species

It is feasible that Priority Species such as hedgehog and other small animals could occasionally occur on the proposed development site, including during the construction phase. Without mitigation, works would risk harming or killing any such animals on the site. At worst, this could have a *temporary, minor negative* impact on the local populations of these animals. Mitigation is advised during the construction phase to address risks to these species and other terrestrial animals which may be present on the site (Section 7.4).

7. Mitigation

7.1 General Principles

The Mitigation Hierarchy is a key principle, with the sequential strategies given in order. This is interpreted by WFE, as it applies to built development, in Table 1 below.

Table 1. Mitigation Hierarchy

Action and sequential number	Description
1. Avoidance	The first stage is to seek options that avoid impacts/effects on ecological receptors, for example through adjusting the development footprint to avoid valued/sensitive features, or confining works to certain times of the year or the day when a receptor would not be impacted. An example would be adjusting a development footprint to avoid a hedgerow, thereby allowing it to be retained.
2. Mitigation	Where potential adverse impacts cannot be avoided, the next stage is to use measures aimed at reducing/ameliorating the magnitude and/or likelihood of impacts/effects. This can typically be done through the design of the project or adoption of specific working practices. An example would be restricting hedgerow removal to those sections which are of lower ecological value, thereby allowing relatively higher value sections of hedgerow to be retained; this reduces the magnitude of the adverse impact on hedgerow habitat.
3. Compensation	Where significant residual adverse impacts cannot be satisfactorily avoided or mitigated, the next stage is to use appropriate measures which subsequently offset, repair, reinstate or compensate for the predicted impact/effect. An example would be replanting a hedgerow after it has been removed.
Enhancement	The final stage of the Mitigation Hierarchy is distinct in that it does not seek to solely address adverse impacts; it goes over and above requirements for avoidance, mitigation and compensation. In accordance with the NPPF, developments should achieve net gains in biodiversity even if adverse impacts are not anticipated. Enhancement measures are those which seek to provide net benefits for biodiversity, and are advised wherever appropriate; this may include enhancements for receptors which are otherwise expected to experience adverse impacts. An example might be planting an additional hedgerow.

7.2 Bats

Night-lighting of the site during the construction and operational phase will be limited or avoided entirely. Any lighting which is necessary will focus on frequently used areas such as front doors and paths. Lighting will use LED lamps rather than mercury or metal halide options, as these will reduce disturbance to foraging bats and other nocturnal animals. Lamps will use a warm white spectrum of <2,700ºK with peak wavelengths of > 550nm, thereby avoiding the component of light most disruptive to bats (light at the blue end of the spectrum).

The lamps will be fitted with hoods/shields to limit light spills onto the surrounding area. The use of movement sensors (set to a maximum illumination time of one minute) installed on lights ensures that they illuminate only when needed and avoids

unnecessary constant illumination. Positioning lights at angles of not greater than 90° to the ground (i.e. straight downwards) can reduce overspill of light and sky glow, which can disrupt the nocturnal behaviours of bats and insects[18].

7.3 Breeding Birds

The building must be checked by the contractor to establish the absence of active nests prior to demolition work (assuming these works commence between March and August inclusive; if they commence outside this period then no check would be needed). If the removal of any woody vegetation (shrubs or trees) is required, it will be done between September and February in order to avoid the main bird nesting season to ensure that no active bird nests are damaged or destroyed.

If works cannot be timed to occur outside of the main bird nesting season, affected vegetation will need to be thoroughly checked by a suitably qualified ecologist for any active birds' nests, and works will then only be permissible if this check confirms the absence of such nests. If active nests are found, these will need to be retained in-situ and allowed to reach their conclusion without disturbance or interference. In this scenario, the ecologist would be able to advise on appropriate stand-off distances (i.e. buffer zones around any nests) and the period for which the nest needs to be allowed to reach its conclusion before a return visit by the ecologist to recheck the relevant area.

Two 'swift style' bird boxes will be installed on or within the fabric of the converted dwelling. Integral boxes are strongly advised due to relatively superior longevity and thermal insulation; they are also often considered to have a minimal visual impact on the building relative to superficially mounted boxes.

Bird boxes, or nest chambers, will target species of conservation concern such as starling *Sturnus vulgaris*, house sparrow, swift or house martin *Delichon urbicum*. They can be used for nesting or year-round roosting. Nest boxes and chambers are more likely to be used by birds if installed in suitable positions on the buildings. Boxes intended for swifts are well used by other species of conservation concern and can be considered a universal nest chamber[19,20].

In general, bird boxes and chambers should be sited in or on gable ends, or under overhanging eaves, overlooking gardens or other green spaces, and with a clear/unobstructed flight line for easier access and egress. Exposed locations should be well insulated against overheating, by using integrated designs or suitably insulating material such as woodcrete.

The above listed species are loosely colonial nesters, so nest boxes targeting each species will be grouped on the site so as to encourage a colony of nesting birds to become established. Boxes/ chambers will be situated at least one metre apart as there is evidence that chambers situated too close together will not be used[36]. Terrace-style nest boxes are therefore not advised.

Bird nest chambers in buildings may not be used immediately after construction, and it may take several years for the birds to become used to their availability, and for the habitat in the immediate area to become suitable for use by the target species.

[18] Stone, E.L. (2013). Bats and lighting: Overview of current evidence and mitigation guidance
[19] Martins, T (2021). Duchy Report on the Big Duchy Bird Box Survey 2021. https://nansledan.com/duchy-nest-brick-project-boosts-endangered-wild-birds/
[20] Barlow, C., Priaulx, M. et al (2020). Swift Bricks – the "universal" nest brick. https://actionforswifts.blogspot.com/p/sln.html

Nest box designs for these species are commercially available and will be provided with instructions for appropriate installation.

7.4 Best practice measures

Best practice measures are advised for effects which, although often not predicted to be of great magnitude, may affect valued ecological receptors in a way that would be preventable and/or a legal offence. The measures that will be applied to mitigate potential ecological impacts are as follows:

- All building materials and waste materials will be stored above the ground, such as on pallets or in skips respectively. This measure will ensure that such materials do not provide a sheltering opportunity, attractive to invertebrates, amphibians, reptiles and small mammals.

- Bats are small and highly mobile mammals which can use a range of roosting sites, some of which can be small and used infrequently. In the unlikely event that a bat is found during works, construction work will cease until advice has been sought from a professional ecologist and the ecologist has confirmed in writing that it is acceptable for works to restart.

- Excavations will not be left open overnight, or else will be fitted with egress boards sloped at a shallow angle (<40˚) or have shallow battered/sloped edges (also <40˚) to allow any animals which fall in to climb out. Preferably all excavations will be backfilled at the end of each working day or covered overnight to prevent animals from falling in.

- Works will be restricted to daylight hours only to prevent disturbance or accidental harm to nocturnal animals such as badgers and hedgehogs. Ideally, night lighting of the site will be minimised to reduce disturbance to other nocturnal animals such as bats and moths. Amphibians typically forage terrestrially at night, so restricting works to occur in daylight hours will minimise the chances of these species encountering the works.

8. Ecological Enhancements

8.1 Species Enhancements

8.1.1 Bats

Bat boxes will be installed on or within the fabric of the new buildings. At least two bat boxes will appropriately enhance the site. Bat boxes are more likely to be used by bats if installed on warmer aspects of the buildings, such as south, west or east sides. Installing boxes on a range of different building aspects provides a range of thermal conditions for bats to use throughout the year. Bat roost boxes will provide superior roosting opportunities if installed in close proximity to gardens and other green spaces, and away from sources of disturbance such as roads, parking spaces and any exterior lighting. Any of the following bat boxes suitable for general use, or similar models (in terms of lifespan and demonstrated effectiveness) will be used:

- *Integral*
  - Habibat boxes
  - Ibstock enclosed bat boxes
  - Built-in woodstone bat box

- *External*
  - Beaumaris woodstone bat box
  - Greenwoods Ecohabitats boxes

8.2 Habitat Enhancements

8.2.1 Grassland

Any new garden areas of the renovated property could be enhanced through a sowing of a wildlife-friendly lawn mix. This mix should be suitable for regular mowing and with at least four grass and eight herb species, for example, Landlife Wildflowers Low Growing Wildflower Seeds LW12M. This will provide an additional pollen and nectar resource for invertebrates and increase the species diversity of amenity grassland areas.

Establishment and maintenance of these areas will be as follows:

- Ground preparation: weeds will be removed and ploughed or dug in to bury surface vegetation. The soil should be of a medium tilth. **The ground will not be pre-fertilised in any way.**

- Sowing: sowing will take place in the autumn or spring when there is sufficient warmth and moisture. After sowing the seed, it will be firmed into the ground by rolling or treading.

- Aftercare – first year management: there will often be a flush of annual weeds in the first growing season; this should be controlled by mowing. The grassland will then be cut in early August. Cuttings will be removed and placed in a designated compost heap. Any residual perennial weeds (e.g. docks or thistles) will be dug out and removed. Mowing will be conducted during warm and dry conditions. This process will allow species sheltering within grasslands to move of their own volition.

At no stage should fertilisers be applied to any of the grassland areas, as a nutrient poor substrate is advantageous for biodiversity. The use of herbicides will also be avoided.

Any colonising bramble *Rubus fruticosus agg*. or bracken *Pteridium aquilinum* will be removed, and any areas of dense 'undesirable' species should be cleared. For this grassland, 'undesirable' species are curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, greater plantain *Plantago major*, white clover *Trifolium repens*, cow parsley *Anthriscus sylvestris*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, creeping thistle *Cirsium arvense* and spear thistle *Cirsium vulgare*. Individual plants of these species are not a problem and can be left, as they add to the diversity of the grassland. Only denser areas where they start to become dominant need to be removed.

8.2.2 Tree Planting.

The plans indicate there is potential for some tree planting within the curtilage of the renovated property. To further increase the value of new trees for wildlife, the following native flowering and fruiting tree species are advised:

Alder *Alnus glutinosa*
Bird cherry *Prunus padus*
Cherry plum *Prunus cerasifera*
Crab apple *Malus sylvestris*
Dogwood *Cornus sanguinea*
Field maple *Acer campestre*
Guelder rose *Viburnum opulus*
Holly *Ilex aquifolium*
Hornbeam *Carpinus betulus*
Oak *Quercus robur*
Rowan *Sorbus aucuparia*
Silver birch *Betula pendula*
Small-leaved lime *Tilia cordata*
Wayfaring tree *Viburnum lantana*
Whitebeam *Sorbus aria*
Wild cherry *Prunus avium*
Wild service tree *Sorbus torminalis*

Non-native species with high wildlife value such as fruit trees, firethorn *Pyracantha* spp. or lilac *Syringa vulgaris* could also be considered but are not preferred. Other commonly used non-native species such as Leyland cypress *Cupressus* x *leylandii* and cherry laurel *Prunus laurocerasus* will not be used because they can have ecologically detrimental impacts such as acidification of underlying soils and overshadowing native vegetation.

Leyland cypress and cherry laurel will not be used anywhere on site due to their ecologically detrimental impacts.

Root-balled or container grown trees will be sourced from a reputable biosecure nursery, and be ready for planting between November and March, inclusive, but not when the ground is frozen. Square tree pits should be dug to twice the diameter of the roots and 1.5 times as deep as the roots, ensuring there is dug over soil at the base of the tree pit for drainage. Each tree must be given enough above ground space to reach its mature size.

Trees should be carefully lowered into the pits and the remainder of the pit filled in with fresh topsoil that is then 'heeled-in'. Care will be taken not to bury the stem under additional soil. A double stake with flexible bracing will be installed to support the tree for 3-4 years while it establishes. A 1m diameter circle around the tree should be mulched to a depth of 50-100mm to keep out competing weeds and grasses. Immediately after planting, a generous watering is advised. Trees will then be watered daily at a rate of 50 litres per week during hot dry periods for the first five summers to reduce the risk of tree mortality. 'Treegator' watering bags are advised to aid watering during this period.

Whilst the use of a small amount of peat free compost is acceptable to ensure tree planting is successful in the long term, at no point should fertilisers or herbicides of any kind be applied to the soil surrounding the planted trees.

Any formative pruning of trees will take place in winter, between December and early February. Any dead or dying trees or shrubs, or those in structurally unstable condition, will be removed and replaced on a like-for-like basis. **Any tree or shrub removal will take place between September and February inclusive, so as to avoid the main bird nesting season**, barring urgent removal due to health and safety reasons (i.e. if it is not possible to fence off an unsafe tree until September).

9. Conclusions

The ecological assessment of the proposed Class Q barn conversion at Redhouse Farm, Little Waldingfield into a single residential property has been completed on the basis of a UKHab Survey of the site, building inspection, desk study and a subsequent bat emergence survey.

The site was found to consist of modified grassland, other neutral grassland and built environment including the barn and hard standing. Given the small area of habitats which would be permanently or even temporarily lost to the development, impacts will be negligible. The assessment has also concluded that there is a negligible risk of impacts to designated nature conservation sites due to the separation distance and low scale of the development.

The bat surveys found no bats roosting within the barn and there was limited foraging activity. Neutral to negligible impacts to bats are predicted, and enhancement options for the site would lead to positive impacts for both roosting and foraging bats.

The risk of impacts to other protected and valued species is considered to be low, and all impact risks can be adequately mitigated by adopting the measures outlined in this report, most of which are considered standard, best-practice measures.

The site has scope to achieve positive impacts for a number of valued ecological receptors such as breeding birds and roosting bats; this report provides advice on suitable enhancement measures for the proposed development, including the installation of bird and bat boxes, sowing wildlife-friendly lawn mixtures and planting native trees. If these measures are adopted, it is reasonable to expect a small net benefit to local wildlife as a result of the development in the medium- to long-term.

Appendix 1. Site Photographs

Photo 1. Brickwork on south elevation of the barn.

Photo 2. Cement fiber sheeting and wooden cladding on north and west elevations of barn.

Photo 3. Internal concrete wall.

Photo 4. Void between the internal and external wall.

Photo 5. Cement fiber sheeting supported by metal beams.

Photo 6. Weatherboard on western elevation.

Photo 7. Metal door access and ivy on eastern elevation.

Photo 8. Example of cracks within the brickwork.

Photo 9. Example of cracks within exterior brickwork and gaps between the door frame.

Photo 10. Small areas of modified grassland directly east of the barn.

Photo 11. Small area of other neutral grassland with bramble encroachment directly west of the barn. Scrub is outside the development boundary.

Photo 12. Wooden fence separating the site from neighboring property.

Photo 13. Eastern boundary hedgerow. Located approximately 2m from the development boundary.

Photo 14. Hard standing south of the barn.