

WILD FRONTIER ECOLOGY

The Reading Room, Langham
Road, Binham



Ecology Report

March 2019

Report produced by	Submitted to
<p>Written by: Mary Goddard BSc MSc Checked by: Seth Lambiase BSc MRes MSc MCIEEM Authorised by: </p>	
<p>Wild Frontier Ecology Unit 2, Cold Blow Farm Great Snoring Fakenham Norfolk NR21 0HF Tel: 01328 864633 mary@wildfrontier-ecology.co.uk</p>	<p>Jerry Stone Planning and Development Consultancy 4 Redisham Close Lowestoft Suffolk NR32 2SS</p>

© All rights reserved, Wild Frontier Ecology Ltd 2019. No part of this document to be copied or re-used without the permission of the copyright holder.

Company Registered in England and Wales No 4942219. VAT Reg No. 887 4692 54

Registered Office - Saxon House, Hellesdon Park Road, Drayton High Road, Norwich NR6 5DR

Director Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM.

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	3
2. Background.....	4
3. Relevant Legislation and Policy	6
4. Methods.....	12
5. Results	14
6. Impact Assessment	21
7. Mitigation.....	26
8. Ecological Enhancements	29
9. Conclusions.....	30
Appendix 1. Photographs	31



1. Non-technical Summary

Wild Frontier Ecology was commissioned by Jerry Stone on behalf of his client to undertake an ecological assessment of land at The Reading Room on Langham Road in Binham, Norfolk. The proposal is for the construction of a single new dwelling and associated cart shed on the site. An extended Phase 1 Habitat Survey was conducted by Mary Goddard BSc MSc (NE great crested newt survey licence number 2018-34046-CLS-CLS) on 14th March 2019, in order to classify the habitats present on site and identify any signs of or suitable habitat for protected and valued species.

The predominant habitat within the site is short-mown improved grassland, which holds comparatively low ecological value. A large pond, which is considered to hold potential for great crested newts, is located approximately 65 metres to the west of the proposal site. The terrestrial habitat immediately surrounding the pond (i.e. within 50 metres) is of high suitability for great crested newts, providing potential foraging, refuge and hibernating opportunities. Although great crested newts could feasibly occur within and around this pond, the terrestrial habitat within the proposal site is considered to be of negligible value to newts, and so they are not likely to occur with any regularity on site. As such, the development is likely to have a neutral impact on this species.

The existing building on site is constructed from timber and corrugated tin, and is currently in very poor condition. The structure was investigated for signs of use by bats, and for potential bat roost niches. The results of the investigation indicate that the building holds negligible bat roost potential, and therefore its demolition would have neutral impacts to roosting bats. Several mature sycamore trees along the northern boundary are considered to hold low but credible bat roost potential. As such, the felling of these trees would require “soft felling” techniques, although the current plans for the site include the retention of all trees.

A stream, which is a tributary of the River Stiffkey, runs along the northern boundary of the proposal site. It is considered feasible that water voles may occur within this water course; therefore it is advised that all development works must be kept at least 5 metres from the bank of the stream. If this precautionary working method is employed, no further surveys for water voles will be required.



2. Background

WFE was commissioned by Jerry Stone (agent) on behalf of his client to undertake an ecological assessment of a proposed development on land at The Reading Room, Langham Road, Binham, NR21 0DN (Figure 1). The proposal is for the demolition of an existing timber and tin structure and the construction of a single new dwelling with associated cart shed (Figure 2). The dwelling will be a two-storey house with four bedrooms.

Figure 1: Site location (red line)

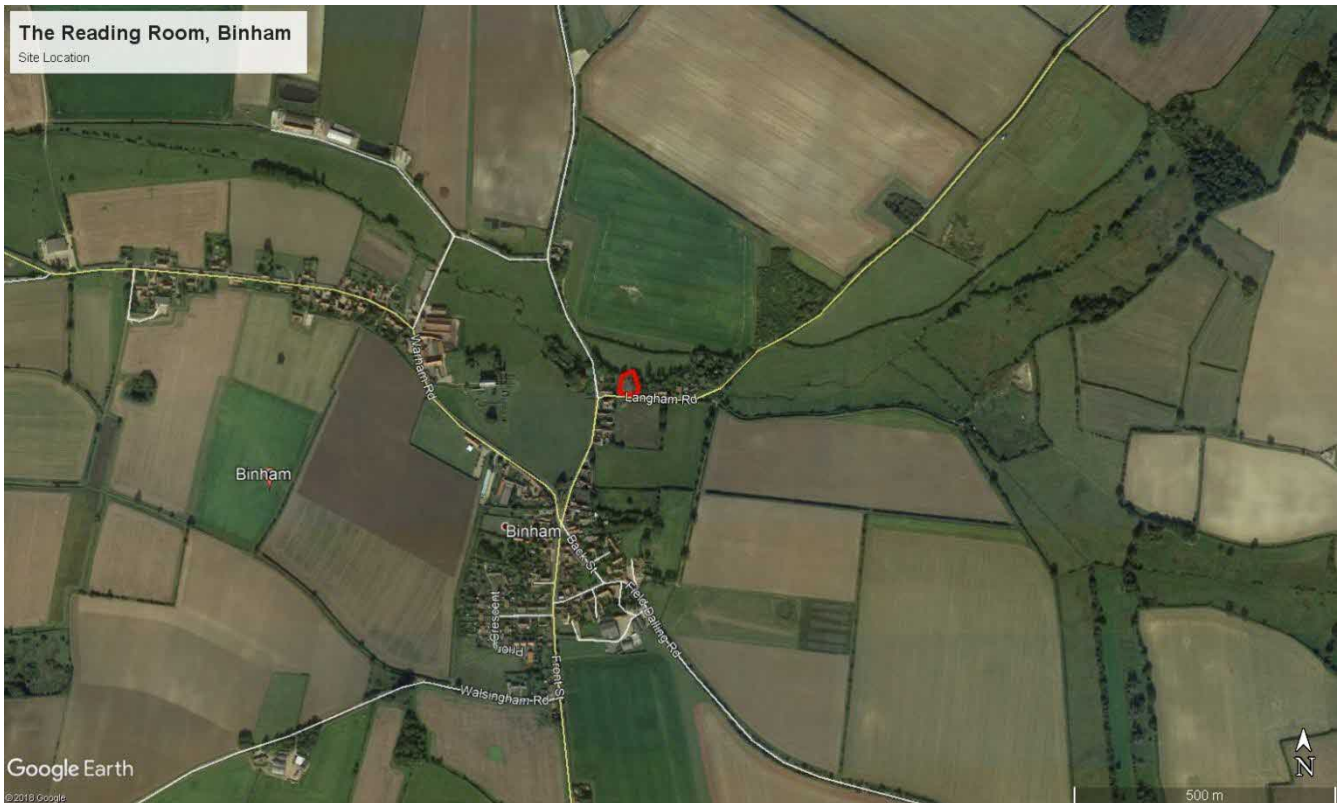
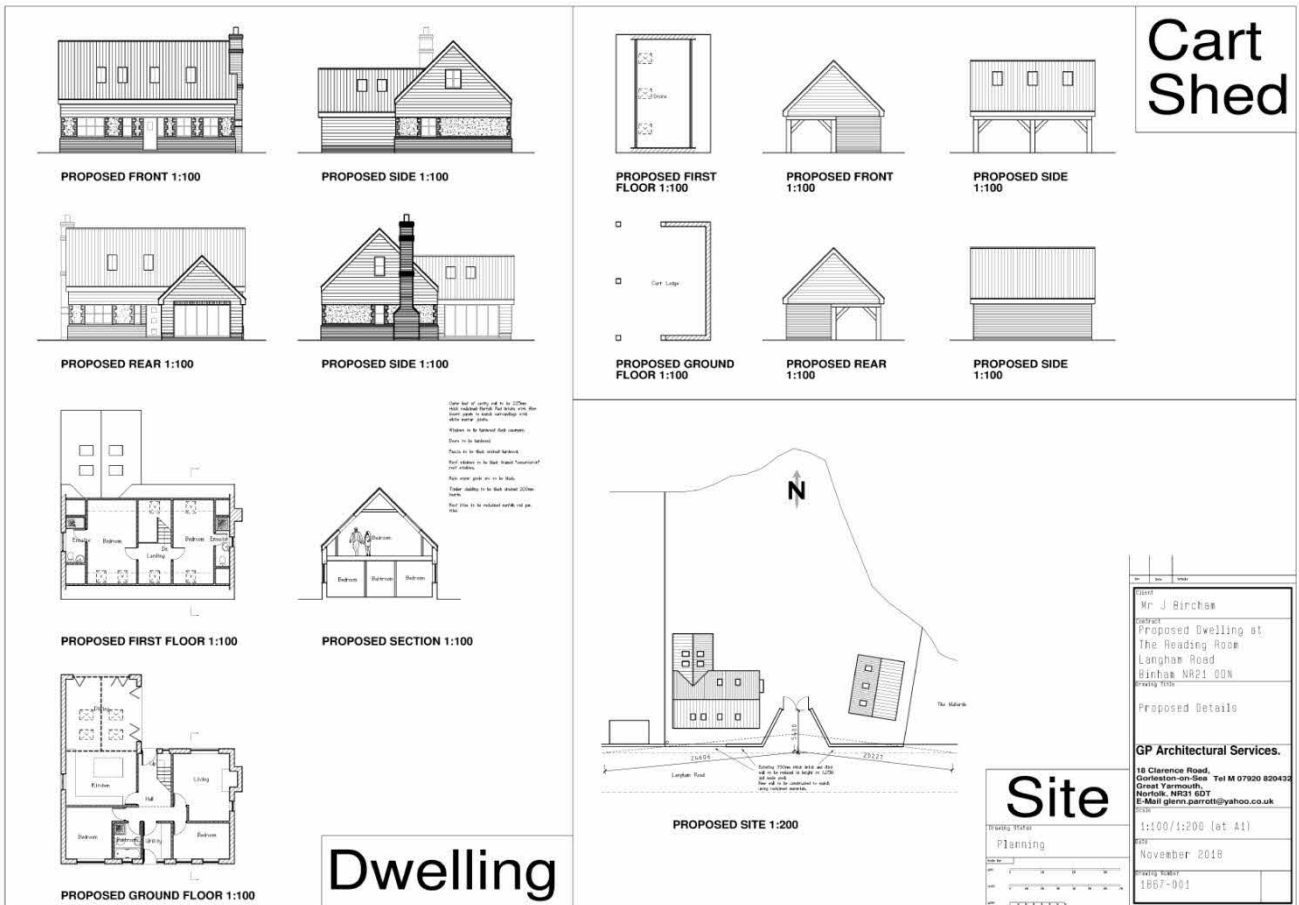




Figure 2: Proposed site layout (as provided by client)





3. Relevant Legislation and Policy

3.1 Statutory and Non-statutory Site Designations

3.1.1 International (European) 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 Regulations 2017.

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.

Wetlands of International Importance are designated under the Ramsar Convention.

3.1.2 National (UK) Site Designations

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 (WCA 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.

3.1.3 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 Norfolk 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 Annex IV (and certain species also under Annex II) of the European Union's Council Directive 92/43/EEC (The Habitats Directive), and are given UK protected status by Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Bats and their roosts also receive protection from disturbance from by the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). 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 WCA 1981. 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.

Otters *Lutra lutra* are protected in accordance with Schedule 5 of the WCA 1981. The otter is also a protected species included in Annex II of 92/43/EEC, and is protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. 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, 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 concern¹. 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, and are afforded protection under Sections 9(1) and 9(5). For the reptile species occurring in Norfolk, 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.

3.2.6 Great Crested Newts

The great crested newt *Triturus cristatus* is fully protected in accordance with both national and international legislation. The species is listed under Annexes IV and II of European Directive 92/43/EEC, and Schedule 2 of The Conservation of Habitats and

¹ Eaton, M. Et al (2015). Birds of Conservation Concern 4. The Population Status of Birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.



Species Regulations 2017. 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 are listed on Schedule 5 of the Wildlife and Countryside Act 1981 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 WCA 1981 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 WCA 1981.

A Vascular Plant Red List for England² 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 are still 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. Plant species relevant to the East of England are as follows:

Himalyan 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.

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. & Taylor, I. 2014. A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.



All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990 and is classified as controlled waste.

3.3 Priority Species and Habitats

Other priority species and habitats which are a consideration under the National Planning Policy Framework (NPPF) 2018, 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 (also 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 meadows
- Coastal and floodplain grazing marsh
- Reedbeds
- Lowland mixed deciduous woodland
- Wet woodland
- Wood-pasture and parkland

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



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*

Many Birds of Conservation Concern Red-listed bird species are also Priority Species.

3.4 Policy

The overarching policy guidance for biodiversity is included within the National Planning Policy Framework (NPPF⁴). 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 170 of the NPPF gives policy support to the provision of measurable net gains in biodiversity.

⁴ MHCLG (2018). National Planning Policy Framework. UK Government.



4. Methods

4.1 Report 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 NPPF.

4.2 Desk Study

The Multi-Agency Geographic Information for the Countryside (MAGIC) website was reviewed to identify any statutory nature conservation sites (such as SSSIs) within 2 kilometres of the proposed development site.

A data search was carried out with Norfolk Biodiversity Information Service (NBIS) to obtain biological records and details of County Wildlife Sites within a 2 kilometre radius of the proposed development footprint.

4.3 Field Survey

4.3.1 Phase 1 Habitat Survey

A Phase 1 habitat survey of the site was undertaken on 14/03/2019 by Mary Goddard BSc MSc (NE great crested newt survey licence number 2018-34046-CLS-CLS). The survey method followed the Joint Nature Conservancy Council (JNCC) guidelines⁵, 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. 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.

Assessments were also carried out on water-bodies within and adjacent to the site. suitability for great crested newt breeding ponds was categorised using the Habitat Suitability Index (HSI) as per Oldham et al. (2000)⁶ and the classification guide defined by the Amphibian and Reptile Groups of the United Kingdom (2010)⁷.

The HSI is an indicative tool used to rate the suitability of water-bodies for great crested newts. A total of ten characteristics and features of water-bodies, such as their size, water quality, shading and vegetation cover are assessed and classified according to prescribed criteria. These scores allow the HSI to categorise water-bodies into one of five ratings which indicate their suitability for occupation by great crested newts. The five categories are excellent, good, average, below average and poor.

⁵ Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey. Joint Nature Conservation Committee, Peterborough

⁶ Oldham, R., Keeble, J., Swan, M. and Jeffcote, M. (2000). Evaluating the suitability of Habitat for Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10: 143-155.

⁷ ARG UK. (2010). ARG UK Advice Note 5, Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom

4.3.2 Building Inspection

The site inspection was performed on 14/03/2019 by Mary Goddard acting as an accredited agent under the licence of Robert Yaxley BSc CEcol CEnv MCIEEM (NE bat survey licence number WML A34 2015-11368-CLS-CLS). The buildings were investigated for evidence of bat use and 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). A torch, ladder, binoculars, and a digital endoscope were all on-hand for use. Signs of building use by barn owls and other birds were also searched for including nesting sites, feathers, droppings and pellets.

5. Results

5.1 Desk Study

5.1.1 Local Landscape Description

The proposal site is situated in the north-east of Binham, a small rural village, on Langham Road. The landscape surrounding site is dominated by grazing pasture and arable land criss-crossed by hedges, around the built environment of the village, with some small pockets of woodland. A tributary of the River Stiffkey runs immediately adjacent to the north of the proposal site. A large pond approximately 65 metres to the west of the proposal site was historically used by monks of the nearby Binham Priory for farming carp to eat. Few other ponds exist within the vicinity, and none others within 250 metres of the site.

5.1.2 Pre-existing Information on Designated Sites

No statutory designated nature conservation sites exist within 2 kilometres of the proposal site. The nearest statutory designated site is Cockthorpe Common SSSI, located approximately 2.6 kilometres to the north of the proposal site.

Four non-statutory designates sites lie within the 2 kilometres search radius. Three of these are County Wildlife Sites (CWS), designated for their habitats and associated plant assemblages; the nearest is Binham Valley CWS (ref #1315) approximately 590 metres east of the proposal site, followed by Louseybush Meadow CWS (ref #1313) roughly 1,140 metres south-west of the proposal site, and Binham Sewage Works CWS (ref #1314) 1,180 metres north-east of the site. A single Roadside Nature Reserve (ref #101) exists within the search area, approximately 240 metres south-west of the proposal site. This RNR is designated for the wall bedstraw *Galium parisiense* that it supports, which grows out of the priory wall alongside the road.

5.1.3 Pre-existing Information on Protected and Valued Species

The data search with NBIS returned 1231 records of 143 species of conservation concern, some of which are legally protected. The majority of records (1175) are of bird species, including a diverse mix of farmland species, raptors and waterfowl.

45 records were returned for mammal species, with 17 records for bats including barbastelle *Barbastella barbastellus*, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared bat *Plecotus auritus*. Other mammals recorded in the search area include hedgehog *Erinaceus europaeus* (17 records), harvest mouse *Micromys minutus* (four records) and brown hare *Lepus europaeus* (five records), all of which are Priority Species.

Of the remaining records, four are for wall bedstraw *Galium parisiense* (a flowering plant) and seven are of insects. No records of reptiles or amphibians, including of great crested newts, were returned.

In addition to the NBIS records returned in the data search, at least one badger sett is known to occur within 2 kilometres of the proposal site.

A search of the MAGIC database showed no European Protected Species licences within 2km of the site.



5.2 Site Survey

5.2.1 Phase 1 Habitats

The habitats noted on and around the proposal site are mapped in Figure 3 below.

The majority of the site is comprised of short-mown grassland (Photo 1), with a sward dominated by grass species such as perennial rye-grass *Lolium perenne* and Yorkshire fog *Holcus lanatus*, with a low abundance and diversity of herbaceous species. Forbs present within the grassland include the following species: cow parsley *Anthriscus sylvestris*, lesser celandine *Ficaria verna*, ground ivy *Glechoma hederacea*, ground elder *Aegopodium podagraria*, spear thistle *Cirsium vulgare*, cleavers *Galium aparine*, broad-leaved dock *Rumex obtusifolium*, alexanders *Smyrnum olusatrum* and common nettle *Urtica dioica*. This type of sward is typical of improved grassland, and is considered to hold relatively low ecological value.

A stream running immediately adjacent to the north of the site (Photos 2 and 3) is a tributary of the River Stiffkey. This water course is considered to hold potential for protected and valued species, including water vole *Arvicola amphibius* and possibly other species known to occur in the Stiffkey, such as bullhead *Cottus gobio*, brook lamprey *Lampetra planeri* and white-clawed crayfish *Austropotamobius pallipes*.

Several mature sycamore *Acer pseudoplatanus* trees currently exist along the northern boundary of the site, on the bank of the stream (Photos 4 and 5). These trees were substantially ivy-covered at the time of the survey, obscuring the identification of any potential bat roost features such as holes and cavities. Given the maturity of these sycamores they are considered likely to hold a low level of bat roost potential.

An area in the central-north of the site is currently used for burning waste such as deadwood (Target Note 1 in Figure 4; Photo 6). Bonfires are typically lit every one to two weeks (personal communication with owner). Although piles of materials such as dead wood can attract small terrestrial animals, the frequency of the stacking and disposal of materials on this site makes it very unlikely that such animals would occur within the pile.

The southern and eastern boundaries of the proposal site are currently defined by close-board fencing (Photo 7), with a large double-gate built in for access off Langham Road. The western boundary separating the site from the adjacent property (Riverside House) consists of a recently planted hedge of cherry laurel *Prunus laurocerasus* (Photo 8).

5.2.2 Great Crested Newt Habitat Suitability Index Survey

The pond located approximately 65 metres to the west of the proposal site (Figure 5, and Photo 9) was evaluated for its potential to support a breeding population of great crested newts. The pond received a rating of 0.84, which places it in the “excellent” suitability category. Details of the HSI score are shown in Table 1 below.

5.2.3 Building Inspection

The only existing building on site is a structure comprised of timber and corrugated tin, historically used by the community as a sort of village hall. The building is in current use as storage space by the landowner, but is in very poor condition.

The interior surfaces of the building are covered with a kind of timber sarking, including the walls (Photo 10) and ceiling (Photo 11). The structural skeleton of the



building is timber, with metal supports which have been recently added to stabilise the aging structure (Photo 12). The exterior cladding consists of a single skin of corrugated metal sheeting on the walls and roof (Photo 13), some of which is badly rusted, separated from the interior sarking by a relatively large space (Photo 14). A few timber-framed windows are present, however the majority of these have broken glass and have been boarded up (Photo 15). Some wooden fascia boards remain at the eaves of the building, however these are much degraded and some are missing altogether (Photo 16).

The interior surfaces of the building were searched for signs of use by bats, including droppings and feeding remains such as insect wings, and none were found, although there are multiple points of entry into the inside of the building through holes in the walls, roof and windows. The gaps between the single skin of corrugated metal sheeting and the interior timber surface is too large to be considered a suitable roosting niche for bats. In addition, the metal cladding of the building is a poor insulator, meaning that any small gaps underneath would fluctuate substantially in temperature, making them generally unsuitable for bats. The inside of the building is draughty and, in some places, damp, owing to holes in the cladding. Overall this structure is considered to hold negligible bat roost potential.

5.2.4 Protected and Valued Species Potential

The stream immediately adjacent to the north of the site is considered to hold potential for water voles and other species of conservation concern such as bullhead, brook lamprey and white-clawed crayfish.

The trees along the northern boundary of the site hold suitable nesting habitat for a range of breeding bird species, and are likely to hold active nests during the main breeding season (1st March to 31st August). These trees also hold low but credible potential for roosting bats and bats are likely to use the site for foraging, particularly along the northern boundary.

Small terrestrial species such as amphibians and small mammals (e.g. hedgehogs) could feasibly occur on site from time to time, during foraging or commuting.

Table1. Great Crested Newt Habitat Suitability Index Survey Results

HSI Category	Score
Pond ref	1
SI1 - Location	1.00
SI2 - Pond area	0.90
SI3 - Pond drying	0.50
SI4 - Water quality	0.67
SI4 - Shade	1.00
SI6 - Fowl	1.00
SI7 - Fish	1.00
SI8 - Ponds	0.65
SI9 - Terrestrial habitat	1.00
SI10 - Macrophytes	0.90
HSI Score	0.84 - Excellent

5.3 Constraints and Limitations of Survey

The survey was conducted at a time of year in which not all plant species are readily identifiable. However, this is not considered to have significantly constrained the effective classification of habitats within the proposal site.

5.4 Further Survey Requirements and Expiry Dates

5.4.1 Bats

No further surveys for bats are required.

5.4.2 Great Crested Newts

No further surveys are considered necessary.

5.4.3 Water Voles

No further surveys are required, provided that works on site stand off the top of the bank of the adjacent water course by at least five metres. If this is not possible, water vole surveys will be required to establish the presence/absence of this species.

5.4.3 Breeding Birds

Provided that any clearance of woody vegetation (trees or shrubs) is done outside of the breeding bird season (1st March to 31st August), no further surveys for bird will be required. If vegetation clearance is necessary outside of this time period, it will need to be preceded by a check for active nests by an appropriately qualified ornithologist.

Figure 3: Designated Sites (as provided by NBIS)

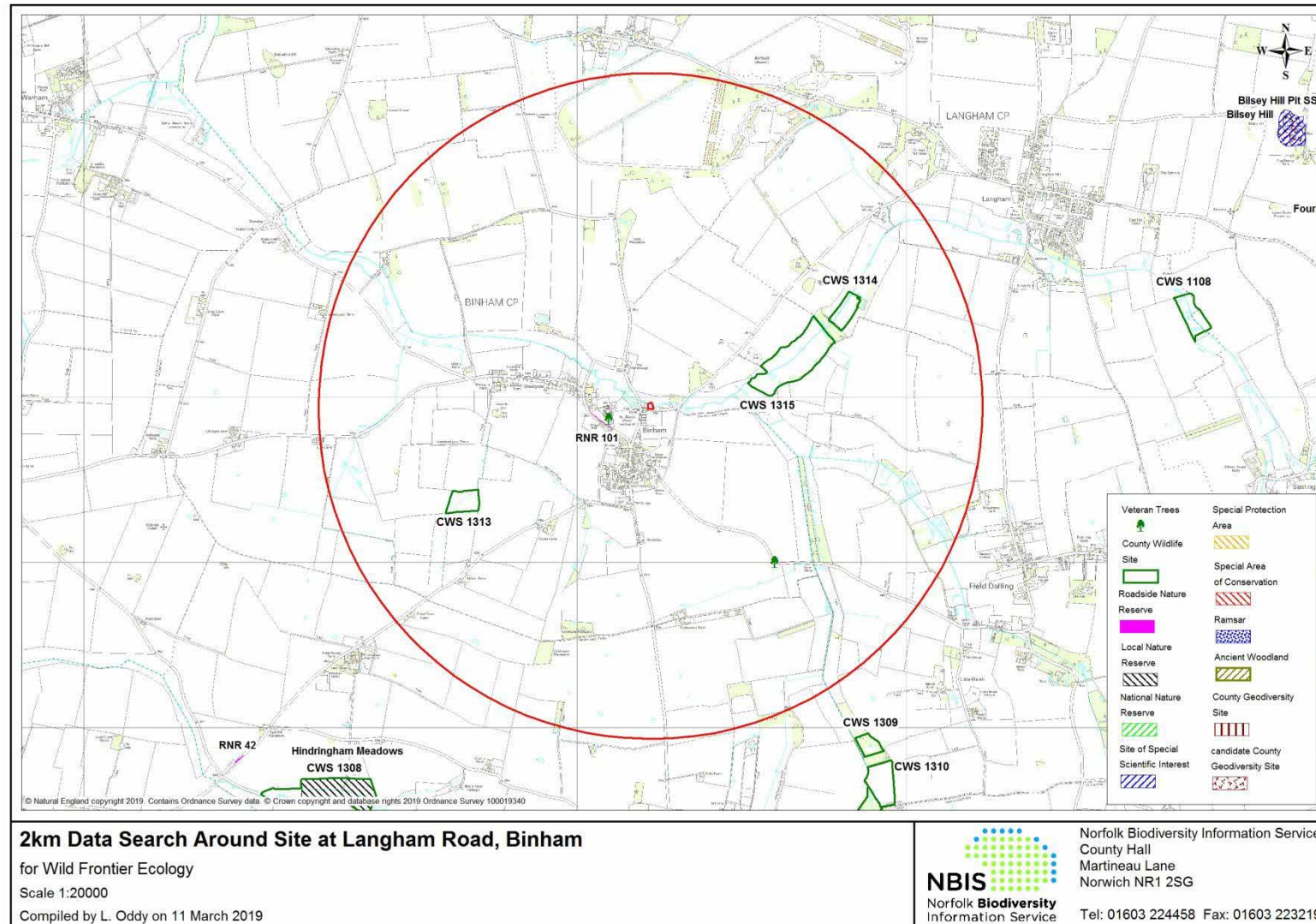


Figure 4: Phase 1 Habitat Map

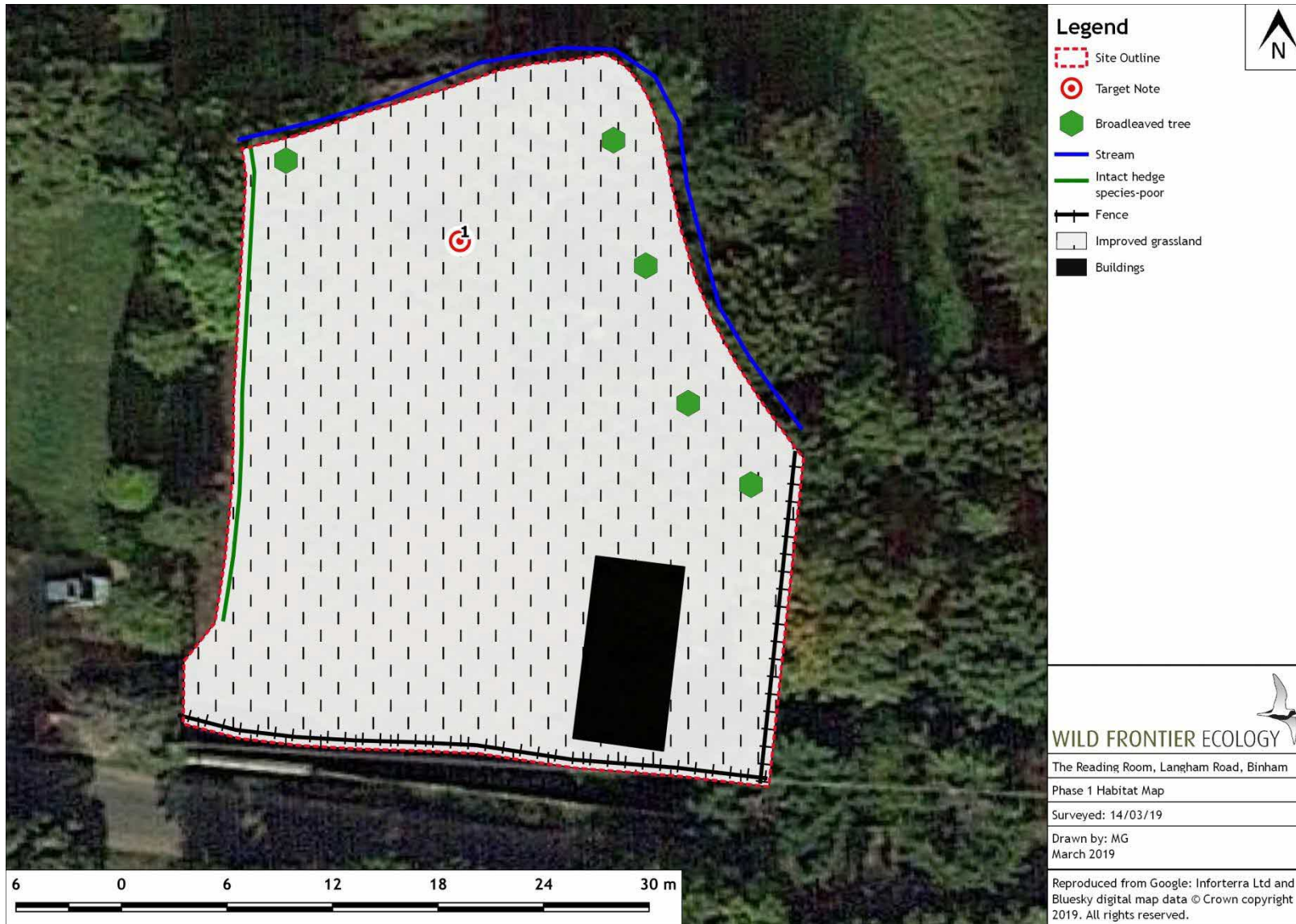
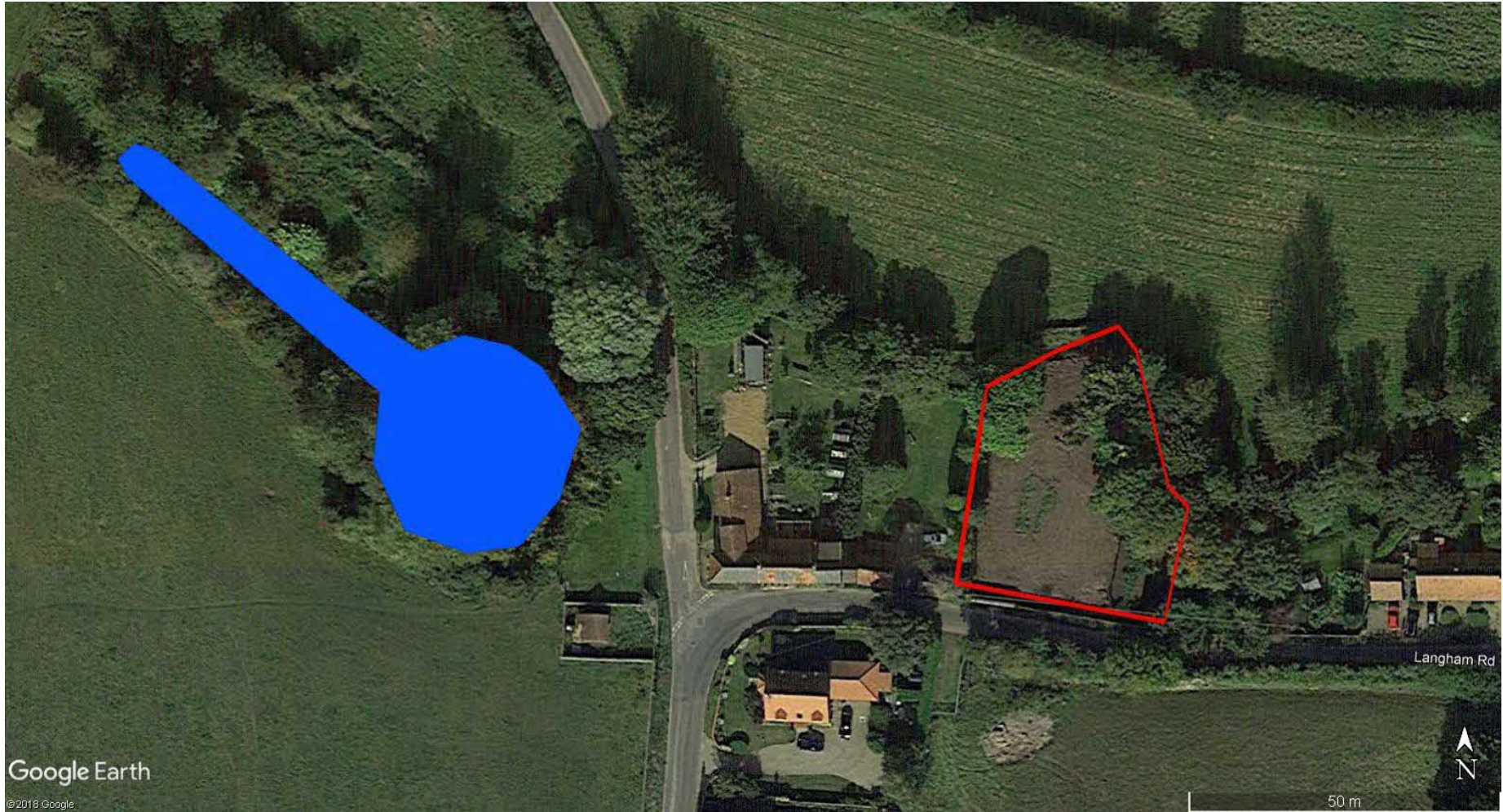


Figure 5: Location of Proximate Pond



6. Impact Assessment

6.1 Impact Assessment Methods

Impact assessment is made with reference to the Chartered Institute of Ecology & Environmental Management (CIEEM) Ecological Impact Assessment (EclA) guidelines⁸.

The CIEEM EclA guidelines define different uses of the terms ‘impact’ and ‘effect’:

“Impact - Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow.”

“Effect - Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from loss of a hedgerow.”

6.1.1 Zone of Influence for an Impact/Effect

This refers to the geographical context of the impact/effect. Hence, the following geographical frame of reference will be used, or else will be adapted to suit local circumstances (and appropriately defined):

- International and European
- National
- Regional
- Metropolitan, County, vice-county or other local authority-wide area
- District*
- Local

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

The local/parish geographical context for the proposal site is defined here as the civil parish of Binham. The district context is North Norfolk, in which the site is situated. The county context is Norfolk, and the region is East Anglia.

6.1.2 Positive or Negative Impacts

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.”

⁸ CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

6.1.3 Magnitude of Impact/Effect

The CIEEM EclA guidelines espouse a quantification of impact/effect magnitude where possible. Where this is not available or uncertain, magnitude categories and criteria are defined based on Byron (2000)⁹. 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.

6.2 Potential Impacts from the Proposal

A number of impacts may result from the proposed development, and then have ensuing effects on ecological receptors.

6.2.1. Change of Land Use

The development is for the demolition for the existing building on site and construction of a single new dwelling with associated cart shed, hard-standing and road access. Vehicle access will be by a site entrance on Langham Road. The current areas (0.12 hectares) of improved grassland habitat will become built environment and garden.

6.2.2. Construction Activities

The activity, noise and other general disturbance from, movements of construction machinery and personnel could disturb animal species using the site or immediately adjacent areas. Impacts need to be viewed in the context of the existing baseline of a small paddock used for storage and waste disposal within a residential area; there will already be a level of human disturbance from the residential properties either side of the site.

6.2.3. Operational Activities

Once constructed, there is potential for disturbance impacts from one additional family in residence, 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 of a

⁹ 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



single dwelling within the existing settlement of Binham (population 292, according to the 2011 census).

6.3 Designated Sites

All designated sites for nature conservation are at such a distance from the proposal site that there will be no measurable effects as a result of direct disturbance through an increase of activity (e.g. noise and human presence) on the proposal site (neutral impact).

Given the very small scale of the proposed development (i.e. one new dwelling), the impact of increased recreation at local publicly accessible sites is anticipated to be neutral.

6.4 Habitats

The primary habitat on site is improved grassland with a short-mown sward. Given the comparatively low ecological value of this habitat, and the abundance of similar or better habitat in the surrounding landscape, the loss of this small area (0.12 ha) is predicted to have a neutral impact.

The sycamore trees along the northern border along the bank of the stream provide habitat for nesting birds and possibly roosting bats. The loss of these mature trees from the local landscape would be predicted to have minor negative impacts at most on the resource locally. At present the plans are to retain all trees.

The most ecologically valuable habitat in the vicinity of the proposed development is the stream immediately adjacent to the northern border of the site. Without consideration for pollution prevention measures, substances such as sediments stemming from ground clearance could result in an intermediate negative impact on the water quality of the water course in the short term. Mitigation is advised.

6.5 Water Voles

Although no specific survey effort was undertaken to establish the presence/absence of water voles on site, the stream along the northern boundary is considered to hold potentially suitable habitat for this species. Provided that no works associated with the development come within 5 metres of the bank of the stream, impacts to water voles (if present) are anticipated to be neutral. The proposed plans for the site show that construction will be restricted to the southern half of the site, well away from the bank, therefore this is considered to be the likely outcome. Should works become necessary within 5 metres of the bank of the stream, further surveys will be necessary to ascertain the status of water voles on site.

6.6 Great Crested Newts

The pond approximately 65 metres to the west of the proposal site is considered to hold good potential to support a breeding population of great crested newts, given the quality of the habitat (although such a population is unconfirmed). However, an abundance of good quality terrestrial habitat (for foraging, refuge and hibernation) very close to the pond (i.e. within a radius of 50 metres), and the lack of suitable habitats within the proposal site means that this species is considered very unlikely to occur within the footprint of the development. As such, a neutral impact on great crested newts is anticipated as a result of the proposed development. Nonetheless, precautionary working methods are advised which will further reduce the risk of injury or harm to individual transient newts.

6.7 Bats

6.7.1 Roosting Bats

The building on site is considered to hold negligible bat roost potential given the lack of suitable niches and poor condition of the structure. The demolition of this building to make way for the proposed development is therefore predicted to have neutral impacts on roosting bats.

The sycamore trees are considered to hold low bat roost potential. As these trees are to be retained (according to current plans), neutral impacts are anticipated as a result of the development. The felling of any of these trees, should it become necessary, must employ “soft felling” techniques to avoid impacts to roosting bats (see below).

6.7.2 Foraging Bats

It is highly likely that local bat populations will use the site for foraging, particularly along the northern boundary. Excessive and insensitive night-lighting of the site could cause minor negative impacts to foraging bats, without mitigation. Appropriate best practice measures to reduce this impact are advised below.

6.8 Breeding Birds

The trees and shrubs bordering the site will be used by nesting birds. The loss of this woody vegetation from the edge of the site would be expected to have at most a minor negative impact to local nesting bird populations. Any affected birds are predicted to be displaced to alternative nesting habitat, which is abundant in the surrounding area. Once the garden on the developed site becomes established, it is likely that the site will support a similar assemblage and level of bird nesting as before development, and increases in the presence of some species (those which nest within/amongst buildings) are possible. Advice on enhancement of the site for nesting birds is provided below.

Without mitigation, clearance of woody vegetation during the main breeding bird season (1st March to 31st August) could destroy, damage or disturb active birds' nests. This could have a short-term (i.e. for one nesting season) minor negative impact on local nesting bird populations. This impact is entirely avoidable, and as it would constitute a legal offence, mitigation is compelled (see below).

6.9 Priority Species

Priority Species such as common toad *Bufo bufo* or hedgehog may occur on site as well as other small terrestrial animals. Without mitigation a short-term, minor negative impact to populations of these animals is possible as a result of direct harm/mortality, habitat loss and disturbance. However, any presence on site is likely to be infrequent and involve small numbers of animals, so standard best practice measures will be appropriate at addressing these impacts. Advice is provided below to ensure no direct negative impacts on any of these species. Enhancements are also proposed to limit long-term habitat loss.

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 x below.

Table 2. Mitigation Hierarchy

Action and Sequential Number	Description
1. Avoidance	Seek options that avoid impacts/ effects on ecological features, for example through design of development or seasonal timing of works.
2. Mitigation	Adverse impacts/ effects should be minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed - for example, through a condition or planning obligation.
3. Compensation	Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures. A common example is the replanting of a removed section of hedge elsewhere on the site.
Enhancement	Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

7.2 Habitats

In order to avoid impacts to the water course to the north of the site, measures will be put in place to prevent sediments and other pollutants from entering the watercourse.

The implementation of a silt control plan will ensure that the mobilisation of silt is decreased during the construction phase, for example through the use of silt traps, which reduce the number sediment particles suspended in water leaving the site.

The use of proper pollution prevention measures on site during construction will reduce the risk of fuels (and other environmentally damaging chemicals) entering the water course. These measures will include:

- Use of a designated re-fuelling area on site, on an impermeable surface, at least 10 metres away from any water courses.
- Appropriate spill-kits located on site.
- Appropriate storage of fuel: at least 10 metres away from the stream on the northern boundary of the site and bunded to prevent spills or leaks from spreading.



The primary sources of potential pollution during the operational phase of the development, i.e. when the new dwelling is occupied, consist of sewage and surface water run-off from buildings and hard-standing.

Sustainable Drainage Systems (SuDS) should be employed in order to manage surface water appropriately. Minimising the percentage surface area of the site covered by hard-standing will reduce the amount of run-off that will require management. Any direct discharge of surface water into the ditch must be subject to SuDS measures to reduce large amounts of water discharging immediately after rain episodes.

7.3 Bats

Bat roosts are not anticipated to be affected by the proposed works. 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. In the unlikely event that a bat is found during works, then construction work will cease until advice has been sought from a professional ecologist.

The effect on foraging bats posed by the proposal consists of disturbance through lighting at night, therefore night-lighting of the site will be minimal, and sensitive where essential. The use of movement sensors installed on lights can ensure that they come on only when needed and avoid unnecessary constant illumination. Positioning lights at angles of not greater than 90° to the ground can reduce overspill of light and sky glow, which can disrupt the nocturnal behaviours of bats and insects.

7.4 Water Voles

In order to avoid potential impacts to water voles, a construction exclusion zone of 5 metres will be implemented along the bank of the stream running along the northern boundary of the site. No works will take place within this exclusion zone.

7.5 Great Crested Newts

This species is not anticipated to be encountered within the development footprint. The best practice measures specified below (7.5) will be sufficient to ensure minimal risk to any transient animal occurring on site.

7.6 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 compensate for potential ecological impacts are as follows:

- If the removal of any woody vegetation (shrubs or trees) is required it will be done outside of the main bird nesting season (1st March - 31st August) to ensure that no active bird nests are damaged or destroyed), or else have the affected vegetation thoroughly checked for bird nests prior to the works.
- 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.
- In the unlikely event that a great crested newt or other protected species is encountered during the clearance of the site or construction of the buildings,



works must cease and an appropriately qualified ecologist contacted immediately. Works can only resume once the ecologist has confirmed that no protected species will be negatively impacted.

- Excavations will not be left open overnight, or else will be fitted with egress boards sloped at a shallow angle (<math><40^\circ</math>). Preferably all excavations will be 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.
- If boundary fences/walls are to be used then there will be a means of entrance and exit to allow small animals to access the garden. This will consist of small gaps at ground level (approximately 15cm wide by 10cm in height) in the fences/walls surrounding the garden. This will allow small terrestrial animals such as hedgehogs and amphibians to access the garden freely. The ground-level fence gaps should be installed both within and around the site, allowing animals to move freely within the site, but also to allow access onto and out of the site.

8. Ecological Enhancements

8.1 Plantings

The development plan includes the provision of a garden. Trees and shrubs will be chosen to maximise the wildlife value of these areas. These will include native species e.g.

Apple *Malus* spp.
Beech *Fagus sylvatica*
Bird cherry *Prunus padus*
Blackthorn *Prunus spinosa*
Buckthorn *Rhamnus catharticus*
Crab apple *Malus sylvestris*
Dog rose *Rosa canina*
Dogwood *Cornus sanguinea*
Elder *Sambucus nigra*
Field maple *Acer campestre*
Guelder rose *Viburnum opulus*
Hawthorn *Crataegus monogyna*
Hazel *Corylus avellana*
Holly *Ilex aquifolium*
Hornbeam *Carpinus betulus*
Spindle *Euonymus europaeus*

Non-native species with high wildlife value such as firethorn *Pyracantha* spp. or Lilac *Syringa vulgaris* could be considered but are not preferred. Such species will provide new habitat for invertebrate and bird species.

8.2 Nest and Roost Boxes

One bird and one bat box will be installed on or within the fabric of the new buildings. One box should be selected for each building. Bird boxes should target species of conservation concern such as starling *Sturnus vulgaris*, house sparrow *Passer domesticus*, swift *Apus apus* or house martin *Delichon urbicum*. Nest box designs for these species are commercially available and will be provided with instructions for appropriate installation.

Any of the following bat boxes, or similar models (in terms of lifespan and demonstrated effectiveness) will be used: Schwegler 1FD, Schwegler 1FF, Schwegler 1FQ, Schwegler 1WQ, Schwegler 2F, Schwegler 2FE, Schwegler 2FN, Ibstock Enclosed Bat Box 'C', Ibstock Enclosed Bat Box 'B', HabiBat bat boxes (various custom faces available to fit with proposed building facades).



9. Conclusions

This report has examined the potential impacts of the proposed development on valued ecological receptors, based on a habitat survey and desk study. This has found that there is no realistic potential for impacts to designated nature conservation sites. Impacts to habitats can be acceptably mitigated by pollution prevention measures and post-construction enhancement of the site. Impacts to water voles within the stream to the north of the site can be avoided through implementing a construction exclusion zone of 5 metres along the bank. The minimal risk of impacts to great crested newts can be acceptably mitigated by adopting best practice measures during site preparation/clearance and construction works. Mitigation advice is provided, and when this is followed there is a high level of confidence that the proposed development would have negligible impacts on protected and valued species.

The developed site has scope to incorporate ecological enhancements, and advice for this is provided.



Appendix 1. Photographs

Photo 1. View of the site facing north-east



Photo 2. The stream to the north of the site, facing east





Photo 3. The stream to the north of the site, facing west



Photo 4. Sycamore trees along the northern boundary (facing east)





Photo 5. Large sycamore along the north bank (facing west)



Photo 6. Site used for burning waste (Target Note 1 in Figure 4)





Photo 7. Example of the close-board fencing along the north and east boundaries



Photo 8. Recently planted laurel hedgerow along the western boundary





Photo 9. Pond approximately 65 metres to the west of the site



Photo 10. Interior surface of the building on site





Photo 11. Wooden sarking of the ceiling of the building on site



Photo 12. The metal supports installed to stabilise the building





Photo 13. Metal cladding of the exterior of the building



Photo 14. View of the large gap between the sarking and metal cladding of the building





Photo 15. An example of the broken, boarded up windows of the building



Photo 16. Example of the rotting fascia boards of the building

