

WILD FRONTIER ECOLOGY

Heath Crescent, Hellesdon



Ecology Report

March 2020

Report produced by	Produced on behalf of
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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.

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1 Non-technical Summary

1.1 Wild Frontier Ecology Ltd. (WFE) was commissioned to undertake an ecological assessment of a site at Heath Crescent, Hellesdon, Norwich. This included a desk study, Extended Phase 1 Habitat Survey, a building inspection, and trail camera checks for badger. The proposal is for a new housing development in place of an area which is largely amenity grassland.

1.2 The desk study identified one SSSI, 2 County Wildlife Sites, and 4 candidate County Geodiversity Sites within 2km. None of these designated areas would be directly affected by the proposal, and the potential for negative impacts on these sites was considered to be very low.

1.3 The habitat survey found the site to be largely amenity grassland (here defined as intensively managed and regularly mown grasslands, as per JNCC guidelines) enclosed by fence and species-poor hedgerow. There are disused tennis courts enclosed by hedge and fence, a small area of amenity grassland enclosed by a hedge, an outbuilding in the north of the site and a two storey house and garden on Prince Andrews Road that is due to be demolished to make way for an access road. The site is surrounded by residential houses and gardens, roads and industrial buildings on the northern edge of Norwich. Norwich Airport is around 700 metres to the north.

1.4 The site provides suitable habitat for nesting birds, and some foraging resource for birds, terrestrial mammals, and invertebrates. The outbuilding on site and the property on St Andrews Road were both inspected for the presence of roosting bats. The dwelling was found to have low potential, but a further activity survey will be necessary due to the presence of some cavities within the soffits on the gable end of the building. The outbuilding was found to have negligible potential for roosting bats. Some possible badger diggings were found on site, but trail cameras found no badger activity. Mitigation measures are prescribed for impacted species, including standard best-practice measures and timing of clearance works. When these measures are implemented, there is a high level of confidence that the proposed development will have a negligible impact on protected and valued species.

1.5 Appropriate ecological mitigation measures are advised to compensate for the loss of ecological value from the site, including replacing lost hedgerows with species of high wildlife value and planting pollinator friendly species in public green space or gardens of the new houses. Clearance of woody vegetation will also need to take place between September and February to avoid disturbing breeding birds. Ecological enhancement measures are advised in order that the proposed development provides net benefit to local wildlife. It is likely that the change in habitat from amenity grassland to housing with gardens will provide a biodiversity benefit in the mid- to long-term if these enhancement measures are followed.

2 Background

2.1 Wild Frontier Ecology Ltd (WFE) was commissioned by Code Development Planners on behalf of Jarrold & Sons Ltd to undertake an ecological assessment of land at Heath Crescent, Hellesdon at approximate grid reference TG216124. A location map is shown in Figure 1.

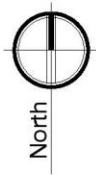
2.2 The proposal is to build a new housing development on the site, as shown in Figure 2.

Figure 1. Site location



Figure 2. Site plan (as provided by client)

Scale: 1:1250
 0m 12.5 25 37.5 50 62.5m 125m



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Former Jarrold's Sports and Social Club,
 Heath Crescent, Norwich

Location Plan

Scale	Date	Drawn	Checked
1:1250 @ A3	Dec. 2017	LB	
Drawing Number	Revision		
CH17/LBA/455/LP-1-100			

3 Relevant Legislation and Policy

3.1 Statutory Site Designations

3.1.1 International (European) Site Designations

3.1.1.1 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.

3.1.1.2 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, The Conservation of Habitats and Species Regulations 2010, and now the Conservation of Habitats and Species Regulations 2017 (as amended).

3.1.1.3 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.

3.1.1.4 Wetlands of International Importance are designated under the Ramsar Convention.

3.1.2 National (UK) Site Designations

3.1.2.1 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 Local Site Designations

3.1.3.1 A Local Nature Reserve (LNR) may be statutorily designated by a local authority under the power provided by the National Parks and Access to the Countryside Act 1949.

3.2 Non-Statutory County Site Designations

3.2.1 At county level, sites may be designated for their nature conservation interest. The criteria for inclusion, and the level of protection provided, if any, may vary between areas. Most individual counties have a similar scheme although they do vary.

3.2.2 These sites may be given various titles and some counties have multiple designations; within Norfolk they are named County Wildlife Sites (CWS), Roadside Nature Reserves (RNR) and County Geodiversity Sites (CGS). Recognition as a CWS/RNR/LGS does not itself confer statutory protection but together with statutory designations, CWS

are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined.

3.2.3 Ancient Woodland sites are woodlands that have existed since at least 1600. They are typically of high biodiversity importance due to their superior species diversity and associated rare species. Ancient Woodlands are classified as either Ancient Semi-Natural Woodland (with native trees and shrubs which have not been planted) or Ancient Replanted Woodland (where original trees have been felled and then replanted, often with conifer trees).

3.3 National Species Designations and Protection

3.3.1 Mammals

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

3.3.1.2 All bat species are listed under Annex IV (and certain species also under Annex II) of the European Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC, and are given UK protected status by Schedule 2 of the Conservation of Habitats and Species Regulations 2017. 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. Bats and their roosts also receive protection from disturbance by the WCA 1981.

3.3.1.3 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.

3.3.1.4 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 (as amended). It is an offence to intentionally kill, injure or take an otter from the wild, 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.

3.3.1.5 Shrews (all species) and hedgehog *Erinaceus europaeus* are protected from a variety of deliberate means of killing/taking by Schedule 6 of the WCA 1981.

3.3.2 Birds

3.3.2.1 All wild birds are protected under the WCA 1981 as amended. This prevents killing or injuring any bird or damaging or destroying nests and eggs. Certain species are also listed under Schedule 1 of the WCA 1981, which prevents disturbance of the species or its nest and/or eggs at any time, with protection by special penalties.

3.3.2.2 Certain bird species are listed in Annex 1 of the Council Directive 79/409/EEC on the conservation of wild birds. These are species for which Special Protection Areas (SPAs) could be designated if the population exceeds 1% of the reference population, as defined in Appendix 4 of the SPA Review.

3.3.2.3 The British Trust for Ornithology (BTO) lists Birds of Conservation Concern (BoCC)¹, which fall into three categories: Red-listed species of high concern; Amber-listed species of medium concern; and Green-listed species of lower concern. 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 necessarily indicate rarity for the species concerned, and many Red and Amber-listed species are still common and widespread.

3.3.3 Reptiles

3.3.3.1 All native reptiles are listed on Schedule 5 of the WCA 1981, though they are not afforded the maximum level of protection (covered by Sections 1 and 9 only). For the four most widespread and commonly occurring reptile species (adder *Vipera berus*, grass snake *Natrix helvetica*, slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara*), the protection extends to prohibit killing and injury but does not include habitat protection. When the presence of reptiles is confirmed the legislative protection obliges that a mitigation programme be undertaken to make 'reasonable effort' to remove or displace animals prior to the commencement of any site preparation or development.

3.3.4 Amphibians

3.3.4.1 The great crested newt *Triturus cristatus* is protected in accordance with both national and European legislation. The species is listed on Schedule 5 of the WCA 1981, making it an offence to knowingly kill, injure, disturb, handle or sell the animal. The protection is afforded to all life stages and includes both the terrestrial and aquatic components of its habitat. The species is also listed under Annexes II and IV(a) of 92/43/EEC and is protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended).

3.3.4.2 The other native amphibians, including common frog *Rana temporaria*, common toad *Bufo bufo*, palmate newt *Lissotriton helveticus*, and smooth newt *Lissotriton vulgaris*, are protected by Section 9(5) of the WCA 1981. Section 9(5) only prohibits the sale, possession or transport for the purpose of sale, and advertising the buying or selling of listed animals.

3.3.5 Invertebrates

3.3.5.1 The white-clawed crayfish *Austropotamobius pallipes* is listed on Schedule 5 of the Wildlife and Countryside Act 1981, and is afforded partial protection under Section 9(1) and full protection under Section 9(5). It is an offence to sell, or attempt to sell, any part of a white-clawed crayfish, alive or dead, or to advertise that one buys or sells, or intends to buy or sell any part of a white-clawed crayfish. The species is also listed under Annex II of 92/43/EEC (The Habitats Directive), and is given UK protected status by Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). Annex II listing means that Special Areas of Conservation (SACs) may be established specifically to conserve the species, and in these circumstances the favourable conservation status of the SAC population must be ensured.

3.3.5.2 There are other invertebrate species occurring in Norfolk that are listed under Annex II of 92/43/EEC (The Habitats Directive) and given UK protected status by

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

Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended), which are little-whirlpool ram's-horn snail *Anisus vorticulus*, depressed river mussel *Pseudanodonta complanata*, shining ram's-horn snail *Segmentina nitida*, narrow-mouth whorl snail *Vertigo angustior*, and Desmoulin's whorl snail *Vertigo moulinsiana*. A number of other invertebrate species are provided some measure of protected status by Schedule 5 of the Wildlife and Countryside Act 1981, ranging from full protection to just prohibiting sale. Multiple invertebrate species are given a conservation status by the Natural Environment and Rural Communities (NERC) Act 2006, (listing in Section 41).

3.3.6 Plants

3.3.6.1 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.

3.3.6.2 A Vascular Plant Red List for England provides a measure of the current state of England's flora measured against standardised International Union for Conservation of Nature (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', and some of the species concerned are still relatively common and widespread.

3.3.7 Priority Species and Habitats

3.3.7.1 Other priority species and habitats which 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 (also known as Priority Species and Habitats).

3.3.7.2 Section 41 of the NERC Act lists a number of Priority Species and Habitats. These are species/habitats in England 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"² 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. Below are some examples of Priority Species and Habitats which are relevant in a context of the wider countryside in Norfolk.

² JNCC (2015) UK BAP priority species and habitats

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx>

3.3.7.3 Widespread Priority Habitats in East Anglia include:

- Arable field margins
- Traditional orchards
- Hedgerows
- Eutrophic standing waters
- Ponds
- Rivers
- Lowland fen
- 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

3.3.7.4 Widespread Priority Species in East Anglia (which have no other specific legal protection - except for nesting birds) include:

- Hedgehog *Erinaceus europaeus*
- Polecat *Mustela putorius*
- Brown hare *Lepus europaeus*
- Harvest mouse *Micromys minutus*
- Multiple Birds of Conservation Concern Red-listed species (e.g. skylark *Alauda arvensis*, spotted flycatcher *Muscicapa striata*)
- Common toad *Bufo bufo*
- European eel *Anguilla anguilla*
- Multiple invertebrate species (e.g. cinnabar moth *Tyria jacobaeae*, small heath butterfly *Coenonympha pamphilus*)
- Multiple plant species

3.4 Local Species and Habitat Designations

3.4.1 The Norfolk Biodiversity Partnership (NBP) has published Habitat and Species Action Plans for selected species occurring within Norfolk. Each Action Plan lists current actions and defines objectives and targets.

3.4.2 The NBP has also published a Biodiversity Supplementary Planning Guidance for Norfolk. This document sets out the key considerations relating to wildlife and biodiversity that should be taken into account for all Norfolk development proposals.

3.5 Policy

3.5.1 The overarching policy guidance for biodiversity is included within the National Planning Policy Framework (NPPF)³. Section 15 of the NPPF (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.

3.5.2 The NPPF also states that development plans should “*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*”, and “*...opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*”

³ MHCLG (2019). National Planning Policy Framework. UK Government.

4 Survey Methods

4.1 Survey Objectives

4.1.1 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. 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

4.2.1 In December 2019, a data search was undertaken with Norfolk Biodiversity Information Service (NBIS). The data search obtained all biological records within a 2km radius of the proposed development site. The MAGIC website⁴, aerial photographs, and Ordnance Survey (OS) maps were used to identify any nearby designated areas for nature conservation and to examine the local landscape (e.g. identify nearby ponds, woodlands, hedgerow etc.).

4.3 Field Survey

4.3.1 The site survey was undertaken on 15th November 2019 by Graham Riley BSc ACIEEM on a mild, cloudy day.

4.3.2 The Phase 1 Habitat Survey followed the Joint Nature Conservancy Council (JNCC) guidelines⁵, with methods being ‘extended’ to include a general evaluation of the site in terms of any rare or protected species that were either likely or shown to be present (e.g. badgers, bats). The assessment covered the areas outlined in the site plan provided by the client (Figure 2). Photographs were taken to record key features/views.

4.3.3 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.

4.3.4 The changing room building to be demolished was 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, body oil stains, and accumulations of feeding remains (insect parts). Signs of building use by barn owls and other birds were also searched for including nesting sites, feathers, droppings and pellets.

4.4 Building Inspection

4.4.1 A building inspection to assess the potential for roosting bats was undertaken on the 11th of February 2020, by Mary Goddard BSc MSc (Natural England bat class licence number 2019-43829-CLS-CLS) and Graham Riley BSc ACIEEM.

4.4.2 Where access was available, 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

⁴ <http://magic.defra.gov.uk/>

⁵ JNCC (2010); Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit, JNCC, Peterborough.

remains (insect parts). Torches, 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.

4.5 Badger Static Camera Survey

4.5.1 A trail camera was deployed on 29th November 2019 by Graham Riley BSc ACIEEM and Ptolemy McKinnon BSc MSc to cover the possible diggings found on the eastern boundary (Figure 3). The camera was collected on 11th December 2019 by Alice Petherick BA.

5 Results

5.1 Desk Study

5.1.1 Designated Sites

5.1.1.1 The desk study found only one designated site within 2km of the proposed development. This was Catton Grove Chalk Pit SSSI, which is around 1.9km south-east of the site at the closest point. The chalk pit is designated for its geological features, including well preserved fossils, and is also a candidate County Geodiversity Site for this reason. There are three other candidate County Geodiversity Sites (cCGS) within 2km, which are Upper Hellesdon Brick Pits around 500 metres south-east, Whiffler Road 1.5km south-west, and Lodge Lane Pit 1.7km north-east. There are two CWS within 2km; Fiddle Wood and Night Plantation (CWS #1468) is approximately 1.2km south-east of the site and consists of broad-leaved plantation woodland, mostly sycamore *Acer pseudoplatanus* and ash *Fraxinus excelsior*. The second CWS is Drayton Wood (CWS -2022) which is a mixed, semi-natural woodland dominated by sycamore, oak *Quercus robur*, and Scot's pine *Pinus sylvestris*. Drayton Wood is also a proposed Local Nature Reserve. A map of sites revealed by the data search is below (Figure 4).

5.1.2 Species

5.1.1.2 The data search with Norfolk Biodiversity Information Service (NBIS) revealed 949 records of 129 Species of Conservation Concern. This included Priority Species such as hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, and slow-worm *Anguis fragilis*, as well as several Priority bird species.

5.1.2.2 A search of the MAGIC database showed two European Protected Species mitigation licences within 2km of the site. One licence around 1.9km east of the site allowed for destruction of a brown long-eared bat *Plecotus auritus* roost. The other licence, close to Catton Grove Chalk Pit SSSI and around 1.9km south-east of the site, allowed for destruction of a roost for common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared bat.

5.1.2.3 OS map data revealed no ponds within 250 metres of the proposed development. There is one pond around 450 metres north of the site, however this pond is isolated from surrounding waterbodies and is separated from the site by houses and roads. We therefore consider the risk of great crested newt *Triturus cristatus* (GCN) occurring on site to be negligible.

5.2 Local Landscape Description

5.2.1 The site context is in the northern edge of Norwich. To the north lies housing and industrial buildings, with Norwich Airport around 700 metres away. To the east are industrial buildings with housing further afield, and to the south and west are further residential areas. The site is therefore an isolated area with little ecological connectivity.

5.2.2 There are no waterbodies nearby, with the nearest pond being 450 metres north of and isolated by unsuitable habitat from the proposed development site.

5.2.3 The site itself has been used as a sports ground and closed in 2016 due to dwindling membership and the facility running at a loss. The looks to have been heavily managed since at least 1946⁶, and despite the closure of the sports ground the grass is managed.

5.3 Extended Phase 1 Habitat Survey

5.3.1 The site is largely made up of amenity grassland enclosed by fences (Photo 1). Amenity grassland is here defined according to JNCC Handbook for Phase 1 habitat survey⁷ as:

“[Amenity grassland] comprises intensively managed and regularly mown grasslands, typical of lawns, playing fields, golf course fairways and many urban ‘savannah’ parks, in which *Lolium perenne*, with or without *Trifolium repens*, often predominates”.

5.3.2 The sward is dominated by perennial rye grass *Lolium perenne*, with other species including yarrow *Achillea millefolium*, groundsel *Senecio vulgaris*, dandelion *Taraxacum sp.*, and fescue *Festuca sp.* (Photo 2). There is a small outbuilding towards the north-west of the site, which was previously used as changing rooms (Photo 3). To the east of this is another area of amenity grassland, enclosed by intact Leyland Cypress *Cupressus x leylandii* hedge (Photo 4). On the eastern edge is a disused tennis court (Photo 5). The western and northern edge of the courts is enclosed by an intact species poor hedge, including cherry *Prunus sp.*, privet *Ligustrum sp.*, and snowberry *Symphoricarpos albus* (Photos 6-7).

5.3.3 The southern boundary is lined by coniferous Leyland Cypress (Photo 17), with a small section of hawthorn *Crataegus monogyna* in the south-east. The western boundary is fenced (Photo 18), with a small section of the site to the west containing a house and garden which backs onto the main site area (Photo 19). There are a few scattered trees along the western boundary, including cherry, rowan *Sorbus aucuparia*, sycamore *Acer pseudoplatanus*, and beech *Fagus sylvatica* (Photos 20-22).

5.3.4 The northern boundary is also fenced, with another small extension to the site comprising of a tarmac track (Photo 23), gated onto the site (Photo 24), which can be used for access. Along the border is a small line of trees recently planted trees, including sycamore, hawthorn, and ash *Fraxinus excelsior* (Photos 25-26).

5.3.5 The eastern boundary is intact species-poor hedge, including ivy *Hedera helix*, oak *Quercus robur*, hawthorn, and dog rose *Rosa canina* (Photos 27-28). In the northern corner of the hedge there are a few trees including ash, Scot’s pine *Pinus sylvestris* and other hedgerow species including privet and blackthorn *Prunus spinosa*. In the centre of the hedge was a possible badger digging, although this was largely covered by ivy growth (Photos 29-31). This was investigated further with a trail camera.

5.3.6 The site is bounded by Fifers Lane in the north, by a high hedge and an industrial estate beyond in the east, by residential development in the south and west and by development along Heath Crescent in the north-west. Norwich Airport is around 700 metres to the north.

⁶ <http://www.historic-maps.norfolk.gov.uk/>

⁷ Joint Nature Conservation Committee ‘Handbook for Phase 1 habitat survey - A technique for environmental audit’ (2010)

5.3.7 Grey wagtails *Motacilla cinerea* were seen on site, which are a Red List species in the UK.

5.4 Building Inspections

5.4.1 The property at 3 Prince Andrews Road was found to be a modern brick construction in good condition with a tightly fitted concrete pantile roof (photos 32, 33). The tiles are predominantly in good condition; however there are areas around the eaves where tiles have lifted slightly to provide potential access between the roofing felt and the tiles (photo 36). There is tile cladding along the gable of the western elevation but it is tight set with no potential access to bats.

5.4.2 The roofing felt throughout the property is a bitumen lining and is still in relatively good condition. The eaves at the gable ends of the house are comprised of wooden soffits which are of moderate condition and could be a potential access point for roosting bats within the western elevation of the building where several cavities were noted (photos 34,35). The windows have UPVC frames and are modern and intact.

5.4.3 The roofspace was heavily insulated with plastic film covering the bitumen lining. Some cobwebs were present and a few mouse droppings but otherwise the area was clean (Photos 37,38).

5.4.4 Considering the lack of any physical evidence of bat activity within the building and the relatively few potential access points available for bats to enter the dwelling, there is concluded to be **low** potential for roosting bats.

5.4.5 The outbuilding within the sports ground was examined internally and externally for bat roost potential. The building is brick, with windows along the top of the front face (Photo 8). The roof is a mixture of corrugated asbestos and bitumen roofing felt and is well sealed (Photo 9). There are several windows and doors into the building, and these are also well sealed (Photos 10-12). The fascia and soffit boards are in good condition, and there is no realistic access for bats to the building (Photos 13). The inside of the building also provides no good quality roosting features, as the roof is corrugated metal (Photos 14-16). Therefore, we conclude that the building has *negligible* potential for roosting bats.

5.4 Badger Static Camera Survey

5.4.1 The camera was on site for 12 days, positioned to record any activity around suspected badger diggings. During this time there was no badger activity on site. The holes were largely obscured by ivy, and heavily cobwebbed.

5.5 Survey Constraints

5.5.1 The surveys were carried out in mid-November, which is outside of the season for most flowering plants. However, enough plants were visible for a reasonable assessment of the habitat to be made.

5.6 Further Survey Requirements

5.6.1 The property at 3 Prince Andrews Road will require a single bat activity survey.

Figure 3: Extended Phase 1 Habitat survey

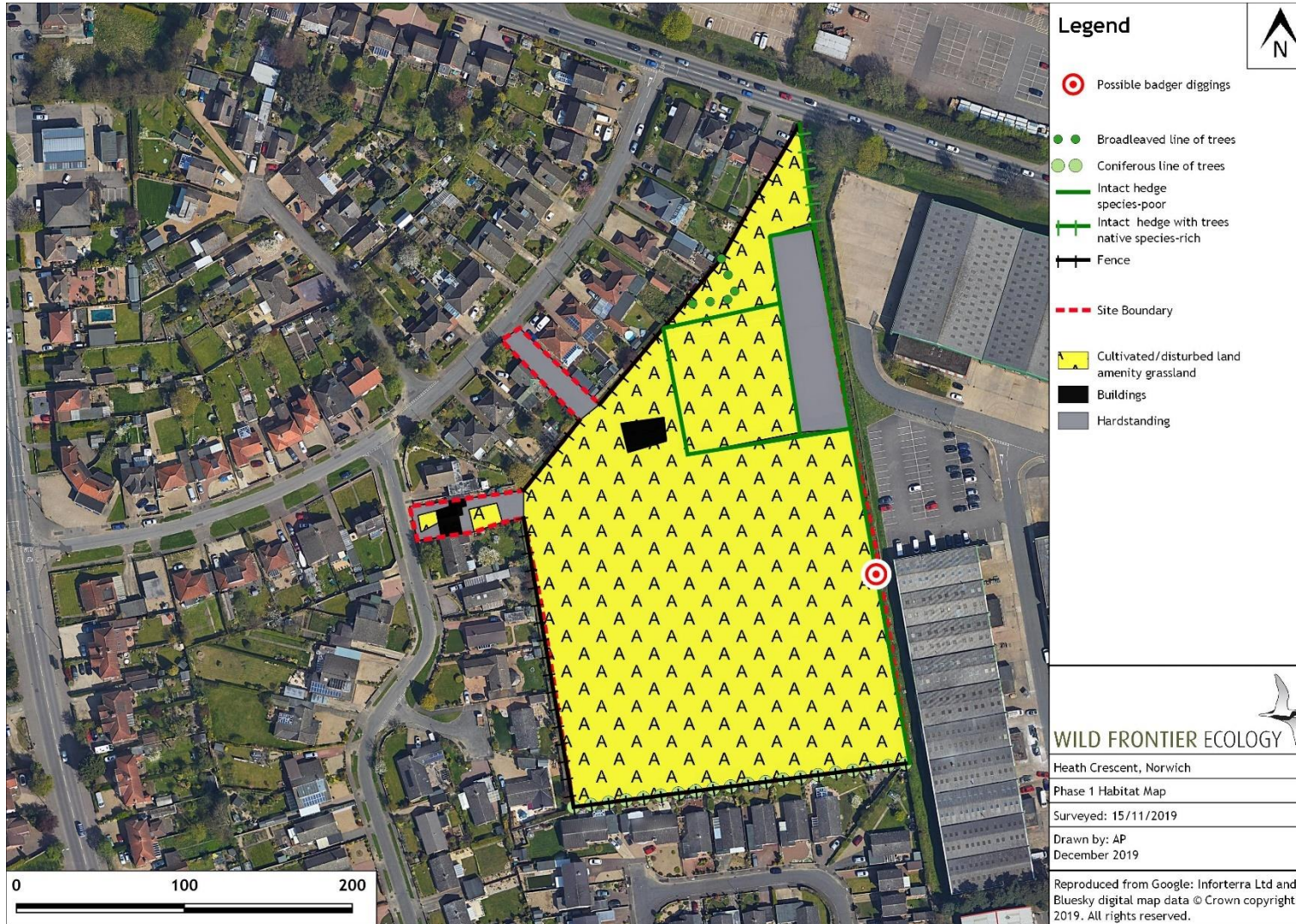
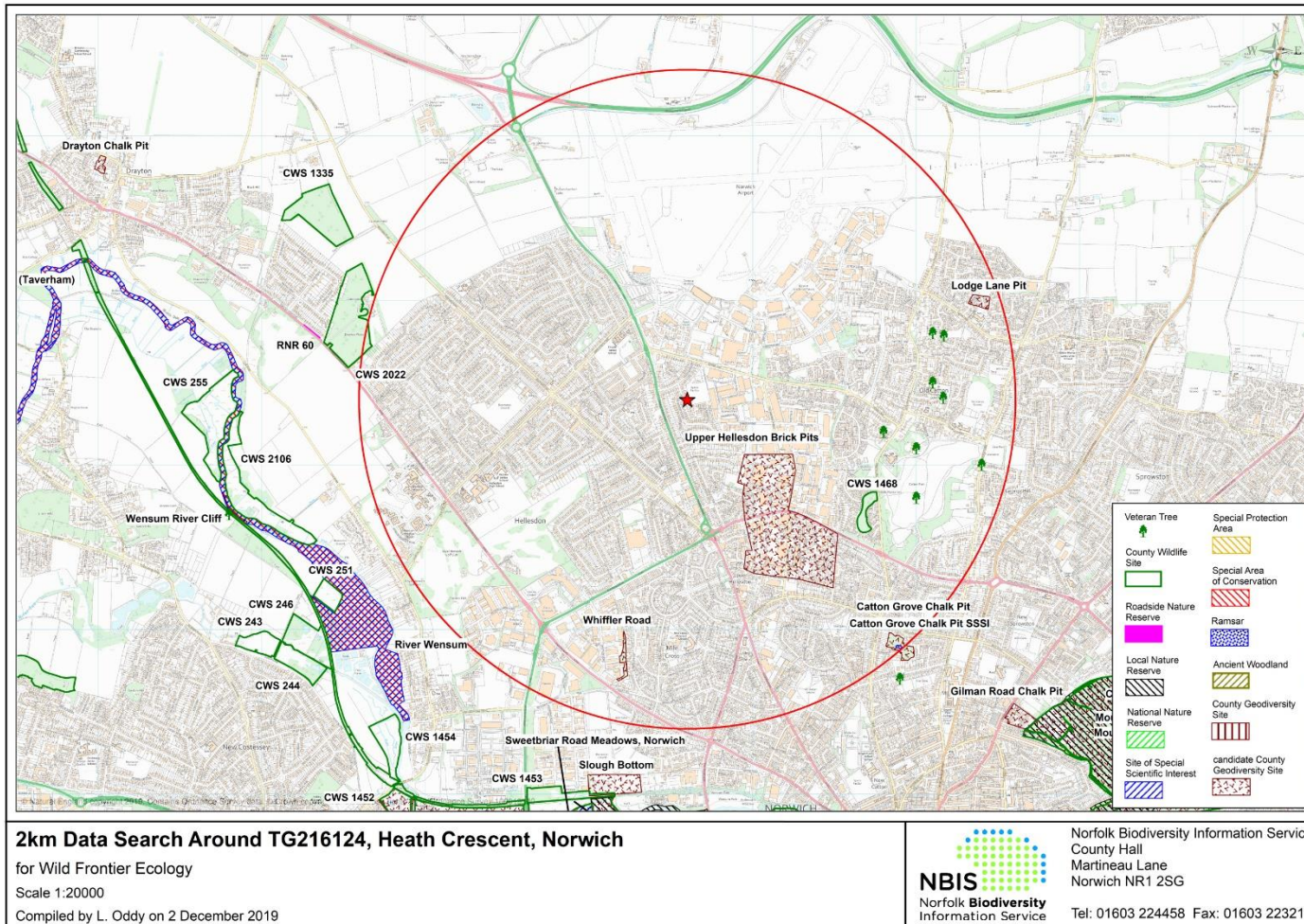


Figure 4. NBIS map of nearest designated nature conservation sites



The site is represented by the red star, surrounded by a 2km buffer.

6 Impact Assessment

6.1 Potential impacts on ecological receptors

6.1.1 Impact assessment is made with reference to the CIEEM EclA Guidelines⁸.

6.1.2 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

6.1.3 *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.

6.1.4 The local geographical context for the proposal site is defined here as the ward of Hellesdon south east in which the site is situated. The district context is Broadlands, the county context is Norfolk and the region is East Anglia.

6.1.5 The EclA 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)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.

⁸ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

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

6.1.1 Positive or Negative Impacts/ Effects

6.1.1.1 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

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

6.3 Impact/ Effect Reversibility

6.3.1 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

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

“For the purpose of EclA, ‘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).”

6.4.2 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

6.5.1.1 The development would involve the removal of an area of amenity grassland, disused tennis courts, two buildings and potentially the disused bowling green to create new houses with associated parking spaces and gardens.

6.5.2 Construction activities

6.5.2.1 The activity, noise, and other general disturbance from movements of construction machinery and personnel could potentially injure, kill or disturb animal species using the site of immediately adjacent areas. Impacts need to be viewed in the context of the existing baseline; the site is in close proximity to roads, housing, industrial buildings, and is relatively close to Norwich Airport. The site has previously been used as a sports ground and has been managed (e.g. by grass cutting and fence trimming). There will therefore already be a high level of human, noise and mechanical disturbance from traffic, human use of the site, and activities associated with nearby residential properties.

6.5.3 Operational activities

6.5.3.1 Once constructed, there is potential for disturbance impacts from increased human populations and associated recreational activities which may include use of nearby open spaces or designated sites, increased vehicle use, and other indirect impacts such as predation by pets and light pollution. These impacts need to be viewed in the context of a relatively small addition to housing in Hellesdon south east (population of 5,150¹⁰) in the district of Broadland (population of 123,646¹¹).

6.6 Designated Sites

6.6.1 Catton Grove Chalk Pit SSSI is 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. *Neutral* impacts are therefore certain during the construction phase.

6.6.2 The CWS sites are separated from the proposal site by residential areas, and therefore the construction is unlikely to have any measurable effect. The cCGSs close to the site are designated for their geological features and are again isolated from the development, so the proposal is unlikely to have a measurable effect. *Neutral* impacts on CWS and cCGS are *certain*.

6.6.3 During the operational phase of the development (i.e. occupation of the new dwellings) it is likely that the resulting increase in the human population will increase visitor pressure on nearby publicly accessible sites. However, with only a small increase in population compared to the surrounding area it is very unlikely that any negative effects would be significant. *Negligible* impacts are therefore expected.

6.7 Habitats

6.7.1 The habitats on site with the most ecological value are the hedgerows, particularly the sections along the western edge. These provide a food resource and refuge for bird and invertebrate species on the site and in the surrounding area. Removal would constitute a *minor negative* impact, which would not be significant at a local scale. Mitigation and best practice measures are advised to compensate for these effects and

¹⁰ <https://www.nomisweb.co.uk/reports/localarea?compare=E05005769>

¹¹ <https://www.nomisweb.co.uk/reports/localarea?compare=E07000144>

to prevent committing an offence such as disturbing breeding birds. Enhancement measures are also suggested.

6.7.2 The grassland on site is species poor and has low ecological value. This habitat is common locally as part of gardens and public open areas nearby. It is managed by grass cutting and has been heavily used by humans in the recent past. It is also ecologically isolated, and disturbed by noise and light from nearby houses, roads, and Norwich Airport so its value to bats, amphibians, and reptiles is very low. It will have some beneficial value to pollinating insects and for this reason without mitigation *minor negative* impacts on local resource are expected.

6.7.3 There were some signs of mammals using the site, for example the diggings noted on the eastern boundary. No records of badger were returned during the data search; however, it is possible that these animals use the site transiently while foraging. Other small terrestrial mammals are likely to occur, such as hedgehog (the data search returned 206 records of hedgehogs within 2km), and so without mitigation *minor negative* impacts on foraging resource are expected.

6.7.3 Some of the more mature trees on site may provide nesting habitat for common bird species, including the Leyland Cypress line. The fruiting trees, for example cherry, will also provide some seasonal foraging resource for birds and invertebrates. If these trees are removed, then a *minor negative* impact on foraging resource is expected without mitigation.

6.8 Protected Species

6.8.1 Badgers

6.8.1.1 Possible badger diggings were found on site; however, these were heavily cobwebbed and covered by ivy. A trail camera found no badger activity on site. It is possible that transient individuals will occasionally occur on site, and standard best practice mitigation has been suggested to avoid impacts to any individual animals. A *neutral* impact to badgers is predicted.

6.8.2 Bats

6.8.2.1 The dwelling on Prince Andrews Road, although classified as *low potential* provides several niches that could potentially be used by roosting bats and therefore a **further bat activity survey is advised**. This will determine if bats are using the building, and if so the numbers and species of bats.

6.8.2.2 If roosting bats are present It will be necessary to obtain an EPS licence from Natural England for any works that will affect a bat roost.

6.8.2.3 None of the other buildings or trees on site provide suitable roosting features for bats. Bats are small and highly mobile species that do use multiple roosts throughout their active season, so may not always be present or leave appreciable evidence at a roost. Given the information provided by the visual inspection the presence of roosting bats is extremely unlikely within the changing facilities building; however enhancement measures are advised.

6.8.2.4 The site occupies a relatively small area when considering the total range of foraging bats, and there are higher quality foraging habitats - particularly north and east of the site outside of the urban area of Norwich. Once developed, bats foraging patterns may be disrupted by night lighting; however bats affected would already be habituated to such impacts due to the site being surrounded by residential and industrial

areas. Development is expected to have a *neutral* impact on foraging bats on a local scale.

6.8.3 Great Crested Newt

6.8.3.1 There are no ponds within 250 metres of the site, the closest pond is around 450 metres north of the site. This pond is separated from the site by roads and unsuitable habitat (houses and gardens), and the site contains no suitable habitat for great crested newts (GCN), so the likelihood of GCN occurring on site is *negligible*. It is considered that a *neutral* impact on GCN is *almost certain*.

6.8.4 Reptiles

6.8.4.1 The data search revealed only three records of reptiles within 2km, all for slow worm. There is considered to be no suitable habitat for reptiles on site, and it is unlikely that reptiles would occur here with any regularity due to the ecological isolation of the site. A *neutral* impact is predicted, although some precautionary standard best-practice measures are advised to minimise the risks to any transient individuals (see Section 8).

6.8.5 Breeding Birds

6.8.5.1 The hedgerows and some of the trees on site may be used by nesting birds. The site is considered to be too small, disturbed and enclosed to be suitable for ground-nesting species. A minor negative impact is predicted in the short term.

6.8.5.2 Once the gardens on site are established it is likely that increases in the presence of some species (those which nest in gardens or buildings) are possible. Advice on enhancement of the site for nesting birds is provided below.

6.8.5.3 While destruction of bird's nests will be avoided, there is a risk of nests going undetected in suitable woody vegetation on site. Impacts of accidental nest disturbance or damage would be a minor negative impact and will be avoided by suitable precautionary mitigation (see 7.4.1 below).

6.8.6 Water Voles and Otters

6.8.6.1 There are no watercourses on or bordering the proposed development site which are suitable for riparian mammals. A *neutral* impact for both otters and water voles is therefore expected.

6.9 Priority Species

6.9.1 Priority Species such as hedgehog are likely to be present in the area, and the data search returned records of hedgehog within 2km. Without mitigation, short-term *minor negative* impacts to local populations are likely due to disturbance, direct harm/mortality, and habitat loss. Some standard, best-practice mitigation measures during site clearance and construction works are therefore advised. Enhancements are also proposed to limit long-term habitat loss.

7 Mitigation Advice

7.1 Guiding Principle

7.1.1 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 (Table 1).

Table 1: Mitigation Hierarchy

Action and sequential number	Description
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.
Mitigation	Where potential adverse impacts cannot be avoided, the next stage is to use measures aimed at minimising the magnitude and/or likelihood of impacts/effects, such as through the design of the project or adopting specific working practices.
Compensation	Where significant residual adverse impacts cannot be satisfactorily avoided or mitigated, the next stage is to use appropriate measures which subsequently offset or compensate for the predicted impact/effect.
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.

7.2 Habitats

7.2.1 Some clearance of hedgerow may be necessary for the proposed development. To compensate for the loss of habitat an equal or greater length of hedgerow should be planted, for example in publicly available open spaces or to separate the gardens of the new houses, alongside fencing if necessary. Suitable hedgerow species should be selected from the list below:

Apple *Malus domestica*
 Bird cherry *Prunus padus*
 Blackthorn *Prunus spinosa*
 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*
 Pedunculate oak *Quercus robur*
 Pear *Pyrus communis*
 Plum *Prunus domestica*
 Spindle *Euonymus europaeus*

7.2.2 To compensate for the loss of flowering species in the grassland and ruderal vegetation, any areas of public green space and any new gardens should be planted with pollinator friendly plants. A list of pollinator friendly species is available from the Royal Horticultural Society, and many garden centres will also mark pollinator friendly plants with a bee symbol.

7.2.3 Any areas of public green space and new gardens which are put to grass should be planted with a mix of appropriate wildflower and grass seed mix, such as that below (Table 2).

Wildflowers		
% of seed mix	Scientific name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
4.5	<i>Centaurea nigra</i>	Common Knapweed
3	<i>Galium verum</i>	Lady's Bedstraw
1	<i>Leucanthemum vulgare</i>	Oxeye Daisy
0.5	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
1	<i>Plantago lanceolata</i>	Ribwort Plantain
0.5	<i>Plantago media</i>	Hoary Plantain
0.2	<i>Primula veris</i>	Cowslip
2	<i>Prunella vulgaris</i>	Selfheal
4.2	<i>Ranunculus acris</i>	Meadow Buttercup
1.5	<i>Rhinanthus minor</i>	Yellow Rattle
1	<i>Rumex acetosa</i>	Common Sorrel
0.1	<i>Trifolium pratense</i>	Red Clover
25% of total mix		
Grasses		
% of seed mix	Scientific name	Common name
8	<i>Agrostis capillaris</i>	Common Bent
35	<i>Cynosurus cristatus</i>	Crested Dogstail
33	<i>Festuca rubra</i>	Slender-creeping Red-fescue
4	<i>Phleum bertolonii</i>	Smaller Cat's-tail
75% of total mix		

7.2.4 Any trees which are removed to accommodate development should be replaced with at least one new native or fruit bearing tree in the finished development to mitigate this loss of resource. These should be suitable species, such as those below:

Apple *Malus domestica*
 Beech *Fagus sylvatica*
 Bird cherry *Prunus padus*
 Crab apple *Malus sylvestris*
 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*
Pedunculate oak *Quercus robur*
Pear *Pyrus communis*
Plum *Prunus domestica*
Rowan *Sorbus aucuparia*
Spindle *Euonymus europaeus*
Silver birch *Betula pendula*
Small-leaved lime *Tilia cordata*
Whitebeam *Sorbus aria*

7.3 Bats

7.3.1 A further survey is required to determine if bats are roosting in the dwelling 3 Prince Andrews Road. The results of this survey will be used to inform suitable mitigation. For example, if bats are found to be roosting in the building, a like for like roost provision may be required. This could be in the form of a bat box on a nearby building or tree.

7.3.2 An EPS mitigation license will be necessary for any works affecting a bat roost. Natural England require surveys from the “current or most recent survey season” to inform a license application, so surveys undertaken in spring/summer 2020 would be valid to apply for a mitigation license until spring/summer 2021.

7.3.3 Although definitive mitigation requirements cannot be established until further surveys have been carried out, given the relatively low level of roost potential identified obtaining any necessary EPS licence and designing an appropriate mitigation scheme is considered likely to be achievable.

7.4 Breeding Birds

7.4.1 The hedges and trees on site provide potential nesting habitats for breeding birds. The client has assured us that any clearance of woody vegetation will not be undertaken during the main bird nesting season (1st March-31st August). However, if for some unforeseen reason this is not possible then the area that is required for clearance would need to be surveyed by an ornithologist shortly before works begin. Clearance would then only be permissible if this survey revealed that there were no active birds’ nests on site. If active birds’ nests were present, clearance works would need to avoid the area/s within five metres of any active nest/s. Any such areas could only be cleared once these nests had reached their natural conclusions, which would need to be confirmed by subsequent ornithological checks.

7.4.2 The hedgerow planting detailed above will compensate for any loss of habitat in the medium to long term.

7.5 Best Practice Measures

Best practice measures are advised for effects which, although 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:

7.5.1 Construction Methods

- All building and waste materials will be stored above the ground, such as on pallets or in skips. This measure will ensure that such materials do not provide a sheltering opportunity attractive to invertebrates, amphibians, reptiles, and small mammals.
- Excavations will not be left open overnight, or else will be fitted with egress boards sloped at a shallow angle (<40°). 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. Amphibians, hedgehogs and badger typically forage terrestrially at night, so restricting works to daylight hours will minimise the chances of these species encountering the works.
- 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 the works then construction work will cease until advice has been sought from a professional ecologist.
- The construction site will not be lit overnight, in order to reduce disturbance to nocturnal animals such as bats, badgers, hedgehogs and moths. If lighting is essential (both during construction and once the houses are built and occupied), it will use LED lights emitting a warm white spectrum fitted with hoods to limit light overspills¹². Lights will be placed on the site in a configuration which focuses light inwards and downwards and avoids/minimises illumination of surrounding areas. Furthermore, movement sensors can be installed on lights to avoid unnecessary illumination.

7.5.2 Permanent Mitigation Measures

- Any close-board boundary fences will have small gaps at ground level to allow access by small terrestrial mammals both onto and throughout the site. Gaps will be approximately 13cm wide by 13cm tall to allow access for animals such as hedgehogs while still functioning as secure barriers for residents.
- Planting will include some shrub species which will provide ground cover for hedgehogs and other small terrestrial species.

¹² Institute of Lighting Professionals & Bat Conservation Trust (2018). Guidance Note 08/18: Bats and artificial lighting in the UK

8 Ecological Enhancements

The following measures are appropriate for ecologically enhancing the site:

8.1 Habitat Enhancements

8.1.1 Hedging should be planted to define areas of publicly available green space and to separate the gardens of new houses, alongside fencing if necessary. These hedges will use the species listed in Section 7.2, as well as the most abundant species blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, and hazel *Corylus avellana*.

8.1.2 If new trees or hedges are proposed it is advised that a Tree Planting Plan is produced detailing the number, location and species of trees to be planted. This plan should have input from an Arboriculturist in addition to members of the design team such as a Landscape Architect, particularly where planting is proposed near to hard surfacing. The right tree species needs to be planted in the right place to ensure that the tree can thrive, reach its full potential and achieve its mitigation purpose (if applicable) in the long term.

8.1.3 Trees provide a wide variety of benefits such as visual amenity, habitat, shade, carbon capture, improved air quality and many more. For the purposes of this ecological report WFE has focused on maximising the habitat value of the trees to wildlife, therefore the following native flowering and fruiting species are advised:

Apple *Malus domestica*
 Beech *Fagus sylvatica*
 Bird cherry *Prunus padus* bird cherry
 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*
 Pedunculate oak *Quercus robur*
 Pear *Pyrus communis*
 Plum *Prunus domestica*
 Rowan *Sorbus aucuparia*
 Spindle *Euonymus europaeus*
 Silver birch *Betula pendula*
 Small-leaved lime *Tilia cordata*
 Whitebeam *Sorbus aria*

8.1.4 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 and foraging resource for invertebrate and bird species.

8.2 Species Enhancements

8.2.1 In order to compensate for loss of habitat for breeding birds (trees, hedges) at least 5 new bird nest boxes will be installed. These should target species of conservation concern, such as swift *Apus apus*, house sparrow *Passer domesticus*, and house martin *Delichon urbicum*. Nest boxes for these species are available from NHBS¹³ or similar and will be provided with instructions for appropriate installation. The boxes will be installed high up on the east, west or north sides of the buildings, and not directly above doorways, windows, or walkways. Additional nest boxes could also be installed on trees on the site, and these could be targeted to species such as blue tit *Cyanistes caeruleus*, which were found on site during surveys.

8.2.2 Three bat boxes could be installed on trees or buildings on the site. South facing spots are the most appropriate place for installation of a bat box, or if this is not possible then the east or west sides would be suitable. Boxes will be provided with instructions for installation, and should not be installed directly above doorways, windows or walkways. Exterior lighting (if required) should be well separated from the box. Any of the following boxes (or similar models) would be appropriate:

- Improved Cavity Bat Box
- Ibstock Enclosed Bat Box 'C'
- Ibstock Enclosed Bat Box 'B'
- HabiBat bat boxes

8.2.3 In order to encourage invertebrates at the site (providing a foraging resource for bats, birds and other wildlife in turn), at least two invertebrate boxes ('bug boxes') could be installed on the new buildings. A wide variety of models are available from NHBS, but some suitable models would be:

- Heritage Fix On Insect Wooden Hotel Nest Home Bee Keeping Bug Garden
- Ladybird Box 2630
- Ernest Charles Large Norfolk Bee and Bug House
- Bug - 4 Storey Solid Wood Insect / Butterfly / Bee Hotel / House - Bro
- Insect Hotel Wooden Bee Butterfly Ladybird Nesting Box Aid Large Wood House
- Hexagonal insect boxes wild bee box
- Woodside Wooden Insect & Bee House
- Wildlife World Friendly Bug Barn

¹³ <https://www.nhbs.com/>

9 Conclusion

9.1 This report has examined the potential impacts of the proposed development on valued ecological receptors, based on a habitat survey, building inspections, desk study, and static camera badger survey. This found that there is no realistic potential for impacts to designated nature conservation sites. *Neutral* impacts are expected for most protected species. *Minor negative* impacts are possible for nesting birds and for habitat provision for a number of species. Appropriate mitigation and best practice measures have been provided, and when followed there is a high level of confidence that the proposed development would have negligible impacts on protected and valued species.

9.2 The developed site has scope to incorporate ecological enhancements, and advice for this is provided. If these enhancement measures are followed, then the proposed development offers an opportunity to increase the ecological value of the site, which would provide benefits to local biodiversity in the medium to long term.

9.3 A further bat activity survey is advised for the property on St Andrews Road.

Appendix 1: Site Photographs



Photo 1: Overview of main site area



Photo 2: Grass sward



Photo 3: Outbuilding on site, formerly changing rooms



Photo 4: Enclosed area of amenity grassland



Photo 5: Disused tennis court



Photo 6: Fencing and hedge separating tennis courts from amenity grassland



Photo 7: Hedge separating tennis court from amenity grassland



Photo 8: Front face of outbuilding



Photo 9: Side wall of site showing roofing material



Photo 10: Side view of outbuilding showing sealed windows



Photo 11: Side view of outbuilding showing sealed doors and windows



Photo 12: Side of outbuildings showing sealed windows



Photo 13: Fascia around side of building



Photo 14: Corrugated roof on inside of building



Photo 15: Well sealed roof on building with no bat access



Photo 16: Inside of building, showing negligible bat roosting potential and cobwebs indicating disuse



Photo 17: Row of Leyland Cypress trees on southern border of site



Photo 18: Scattered trees and fencing on west boundary of site, looking south



Photo 19: Property on western edge of site



Photo 20: Scattered trees along western boundary, looking south



Photo 21: Cherry tree in south-west corner of site



Photo 22: View of site and border looking south from western boundary



Photo 23: Access track on northern boundary



Photo 24: Gated access to site



Photo 25: Recently planted trees in north-west corner of site



Photo 26: Recently planted tree in north-west corner of site



Photo 27: Intact eastern boundary hedge



Photo 28: Intact eastern boundary hedge



Photo 29: Possible badger diggings on eastern boundary hedge, discounted by trail camera monitoring



Photo 30: Possible badger diggings on eastern boundary, obscured by ivy, discounted by trail camera monitoring



Photo 31: Possible badger diggings on eastern boundary hedge, discounted by trail camera monitoring



Photo 32: View of the western elevation of 3 Prince Andrews Road showing tight fitting tile cladding



Photo 33: View of the eastern elevation



Photo 34: Western elevation showing cavities in the soffits which could potentially be used by roosting bats



Photo 35: Further view of soffit cavities



Photo 36: Concrete pantile roof with small spaces along the eaves



Photo 37: View of the roofspace, heavily insulated with plastic film covering bitumen lining and modern machine timbers



Photo 38: Further view of the roofspace at the gable end



Photo 39: View of small outbuilding and greenhouse in the garden of the property