LAND & PARTNERS

ECOLOGICAL IMPACT ASSESSMENT

LAND WEST OF HOOK NORTON

ROAD, SIBFORD FERRIS,

OXFORDSHIRE

353

REV 1

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Non-Technical Summary

Prime Environment was instructed by Land & Partners to undertake an Extended Phase 1 Habitat Survey of Land West of Hook Norton Road, Sibford Ferris, Oxfordshire (Ordnance Survey (OS) grid Reference SP 3544 3706).

A Preliminary Ecological Appraisal (PEA) was undertaken in April and May 2017. The PEA identified initial development constraints, likely ecological impacts and outline mitigation measures. An additional bat survey was completed for which the full results are published in a separate document.

This report is an Ecological Impact Assessment (EcIA) which describes the project's likely impacts and effects based on the current proposals, which are to develop the Site into 25 residential homes with associated hard and soft landscaping including community allotment, orchard, woodland copse and attenuation pond.

The Survey Area is located on the south-western edge of the village of Sibford Ferris with open agricultural land to the west and south. The Survey Area is approximately 6.7 ha and largely comprises an arable field with an established crop of wheat at the time of survey. The Site is the northern half of this field. The field alone offers limited foraging for wildlife. The Site has worn paths around the margins of the field likely used by dog walkers and mammals. Dog walkers were seen during the surveys. There are standard oak trees in the hedgerows, however, these are immature and do not currently pose any suitability for roosting bats.

Bat surveys identified that a minimum of five species of bat use the Site regularly to forage. No lesser horseshoe *Rhinolophus hipposideros* bats (which were identified in the data search) were recorded. There was no indication that bats roost within the Site.

Birds are likely to nest within the Site's hedges and potentially on the arable field margins. Reptiles may also use the Site's hedges and field margins.

The following features were assessed as important and are included in this assessment: Hedges, population of birds, population of badgers, population of bats. All were assessed as of local importance.

Minor mitigation measures are required to protect badgers and birds during construction. On completion, the project will deliver a gain to the local area's biodiversity through the creation of new habitats; orchards, allotments and public open space.

Document Control

Report Issue	Notes	Principal Author	Review 1
00	Original document to client.	Jon Moore	Jo Pedder
01	Minor amendment post client comment	Jo Pedder	Jo Pedder
02			
03			
04			
05			
Managing Office	Derby		

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1 Introduction

This assessment and surveys were undertaken by Jon Moore MSc BSc (Hons). Jon is a full member of the Chartered Institute of Ecology and Environmental Management and has over eight years' professional experience within ecological consultancy.

The report was finalised by Jo Pedder BSc (Hons) MCIEEM. Jo is director of Prime Environment Ltd. He is an ecologist with over 15 years' experience in the environmental consulting sector. Jo holds survey licences for bats (level 2) and great crested newts (level 1) and development licences for bats and newts. Jo oversees many of Prime's projects from barn conversions to sites over 300 ha and has a range of experience in the minerals, housing and energy sectors.

In April 2017, Prime Environment was instructed by Land & Partners (the Client) to undertake an Extended Phase 1 Habitat Survey of Land West of Hook Norton Road, Sibford Ferris, Oxfordshire (Ordnance Survey (OS) grid Reference SP 3544 3706).

The Survey Area is a large (approximately 6.7 hectares) arable field with field margins and hedgerow boundaries situated on the southern outskirts of the village of Sibford Ferris. The application site (the Site) is for the northern half of this field only; approximately 3.7 ha

A Preliminary Ecological Appraisal (PEA) was undertaken in April and May 2017. The PEA identified initial development constraints, likely ecological impacts and outline mitigation measures. An additional survey was completed for which the full results are published in the following document:

- Prime Environment (2018). *Bat Activity Results Report. Land West of Hook Norton Road, Sibford Ferris.*

This report is an Ecological Impact Assessment (EcIA) which describes the project's likely impacts and effects based on the current proposals, which are to develop the Site into 25 residential homes with associated hard and soft landscaping including community allotment, orchard, woodland copse and attenuation pond.

This assessment has been produced based on the following documents:

- 3361.101 Concept Schematic Site Plan Google (01.08.18)

1.1 Aims and Objectives

The aims of EcIA are to:

- Identify, describe and assess the value of any sensitive ecological receptors at the Site and the immediate surrounding area.
- Identify potential ecological impacts and effects of development and suggest appropriate mitigation and compensation measures.
- To provide an assessment of the significance of any residual effects.
- To set out the requirements for post-construction monitoring.
- Identify any legal and policy implications of any anticipated ecological impacts.

2 Methodology

The EcIA process follows that set out in the CIEEM EcIA Guidelines[1] and the report structure follows CIEEM's Guidelines for Ecological Report Writing, with minor deviations to improve the flow of the document (e.g. including planning and legislation in the appendix).

Both CIEEM guidance documents emphasise that the assessment should be proportionate to the project and the predicted degree of risk to biodiversity.

2.1 Scope

2.1.1 Scoping

No formal scoping process has been undertaken for this project (as would be required under a 'formal' EIA).

The results of the PEA and subsequent survey have formed the basis of scoping features in, or out, of this assessment.

2.1.2 Important ecological features

The term 'ecological features' is used to cover habitats, species and ecosystems. The following have been used to define 'important' ecological features for this assessment:

- Designated Sites.
- Statutory sites designated under national legislation, for example:
- Sites of Special Scientific Interest.
- National Nature Reserves (UK).
- Local Nature Reserves (UK).
- Locally designated wildlife sites.
- Country and Local Biodiversity Lists.
- Species or habitats listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006: Habitats or Species of Principal Importance (HPI or SPI) are recognised in the National Planning Policy Framework and important at a national scale.
- Species or habitats listed in the local Biodiversity Action Plan.
- Red Listed, Rare or Protected Species.
- Species listed under Schedule 5 (animals) or Schedule 8 (plants) of the Wildlife and Countryside Act.
- Species listed under Schedule 2 (animals) or Schedule 5 (plants) of the Habitat Regulations 2010 (European Protected Species EPS).

[1] CIEEM (2016) EcIA Guidelines Terrestrial Freshwater and Coastal

- Birds of Conservation Concern 4 (2015): provides guidance on the conservation status of UK bird species. Red status species are those species of highest conservation concern and green status species are those of low or no conservation concern. Amber status species are those species of some conservation concern.
- Nationally rare and nationally scarce species[2].

The following geographic contexts are used in this assessment for the importance of features and scale of effects:

- International and European.
- National.
- Regional.
- Metropolitan, County, vice-county or other local authority-wide area.
- Local (up to 2 km from site boundary).

A summary of relevant wildlife legislation and national planning policies can be found in Appendix 1.

2.1.3 Zone of Influence

The 'zone of influence' (ZoI) for a project is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities.

The zone of influence varies for different ecological features depending on their sensitivity – different ZoI have therefore been chosen for different features.

Where possible, the surveys which have fed into this assessment considered a much wider area than the likely ZoI (i.e. a 'standard' desk study area for protected sites), and this assessment considers a reviewed ZoI based on the proposed activities, results of surveys and consultee responses.

2.2 Assessment

2.2.1 Impact Assessment

The assessment of impacts takes into account the baseline conditions to describe how these conditions will change as a result of the project and associated activities, and the cumulative impacts of the proposal and those arising from other developments.

The impact assessment process used in this report involves:

- identifying and characterising impacts.
- incorporating measures to avoid and mitigate (reduce) these impacts.
- assessing the significance of any residual effects after mitigation.

[2] Nationally rare and nationally scarce species UK http://jncc.defra.gov.uk/page-3425

- identifying appropriate compensation measures to offset significant residual effects.
- identifying opportunities for ecological enhancement.

The following terms are used:

Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development may require the removal of a hedgerow.

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

The emphasis of the assessment is on *significant* effects rather than *all* ecological effects. Significant effects are sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project; a significant effect does not necessarily equate to an effect so severe that the project should be refused planning permission.

A significant effect in this assessment may include an effect on the distribution or population size of a feature and its long-term viability. It also includes effects to the conservation objectives of a feature e.g. if the effect is to the detriment of targets in a local Biodiversity Action Plan. Some effects may be included that are not significant and do not meet these criteria, but the species or habitat are protected and the impact has legal implications that require mitigation. Where this is the case it is stated in the report.

Significant effects are qualified with reference to the geographic scale at which the effect is significant, which may not be the same as the level at which the feature is considered important (for example the loss of a small foraging area for Bechstein's bats may be significant only at a local level, even where the species is important at a national level). The appropriate geographic scale may be selected based on the level at which the effect could be detected or the level of steps of the mitigation hierarchy that may be required:

Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site).

Mitigation – Adverse effects should be avoided or 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.

Compensation – Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.

Enhancements – Projects should seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

2.3 Desk Study

Thames Valley Environmental Records Centre (TVERC) was contacted for records of protected species and sites of nature conservation value within a 2 km search area, centred on the Survey Area.

In addition, Ordnance Survey maps and online aerial photos were used to provide site context and to search for ponds in proximity to the Survey Area and the online Multi Agency Geographical Information Centre[3] (MAGIC) was used to identify any internationally protected areas within 5 km of the Survey Area.

2.4 Field Survey

All surveys were undertaken by Jon Moore.

2.4.1 Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey was undertaken at the Survey Area on 20th April 2017 to identify and map the habitats present following published criteria[4].

In addition to basic Phase 1 Habitat mapping, the Survey Area was assessed to identify whether it includes any Habitats of Principal Importance (HPI) or is suitable to support Species of Principal Importance (SPI)[5], or other notable or legally protected species.

Habitats and species present were reassessed during visits to the Survey Area in June and July for the bat activity surveys, when spring and summer flowering plant species are more likely to be identifiable.

2.4.2 Hedgerow Assessment

This report has been prepared to support a planning application, and therefore there is no legal requirement for undertaking a Hedgerow Regulations assessment; removal of hedgerows is considered permitted under the legislation if the removal is part of a planning consent. However, this is a useful tool for identifying features of value within a site. Each hedgerow within the Survey Area was assessed against the ecology criteria for 'important' hedgerows following the method set out in The Hedgerow Regulations 1997. **The assessment did not include an historical assessment of the hedgerows, which should be considered separately.**

2.4.3 Bat Tree Assessment

All trees within or adjacent to the Survey Area (where access was possible) were assessed for their suitability to support roosting bats. Trees which could potentially support bats were subject to a detailed examination with binoculars. Potential roosting features such as peeled bark, rot holes, inclusions or split limbs were recorded and the tree attributed a grade of negligible, low, medium or high suitability to support bats according to Bat Conservation Trust (BCT) guidelines criteria[6] (see Appendix 1).

[3] http://magic.defra.gov.uk/

[4] JNCC (2010) Handbook for Phase 1 habitat survey - a technique for environmental audit

[5] HPI and SPI are habitats and species listed in Section 41 of the Natural Environment and Rural Communities Act 2006 and regarded as the highest conservation priorities in the UK. HPI and SPI are material consideration in planning.

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

2.4.4 Automated bat surveys

Due to the identification of lesser horseshoe bat roosts within 2 km of the Survey Area, an automated bat survey was recommended to survey whether or not the hedgerows bordering the Site are used by bats commuting from these roosts. An eleven-night automated bat survey was undertaken between 22nd June 2017 and 3rd July 2017. Automated surveys were undertaken using Anabat Express automated bat detectors. These units automatically record bat echolocation calls in zero crossing format. Full methods and results are presented in a separate report[7].

2.4.5 Great Crested Newt Pond HSI

A Habitat Suitability Index[8] (HSI) score was calculated for one pond with available access within 500 m of the Survey Area.

The calculated HSI for a pond provides a score between 0 and 1. The pond's HSI can then be compared to the ranges of pond suitability, as shown in the table below. An inference can then be made between the HSI of a pond, and the likelihood of great crested newt presence.

Table 1
HSI scores and suitability of ponds for GCN

HSI Score	Classification	Proportion of Ponds Occupied by Great Crested Newts
<0.5	Poor	0.03
0.5 – 0.59	below average	0.20
0.6 – 0.69	Average	0.55
0.7 – 0.79	Good	0.79
> 0.8	Excellent	0.93

2.5 Constraints

Any ecology assessment must be considered as a 'snapshot' of the conditions at the time of the survey; not all botanical species or communities would have been evident during the survey.

Notwithstanding this, given the agriculturally managed nature of the Site, the findings of the survey are considered to provide an appropriate assessment of the Site's ecological value.

Ecological constraints will change over time and therefore the findings of this report are considered to be valid for a period of one year, after which the report should be reviewed to assess whether the survey should be updated.

[7] Prime Environment (2018). Bat Activity Results Report. Land West of Hook Norton Road, Sibford Ferris.

[8] Oldham, R.S., Keeble, J., Swan, M.J.S., & Jeffcote, M. (2000) *Evaluating the Suitability of Habitat for the Great Crested Newt (Triturus cristatus).* Herpetological Journal 10: 143-155.

2.6 Designated Sites

Wildlife conservation sites which occur within the search area (2 km for local and national sites, 5 km for international sites) are listed in Table 2. All of the sites are in excess of 700 m to the south and southwest of the Survey Area. No international sites are present in the search area.

Table 2
Desk Study Data - Sites

Location / Designation	Ecological Feature
Local Wildlife Sites	
Temple Mills Quarries	Pasture and old quarries with grassland, ash woodland and wetland habitat, with a rich population of calcareous grassland species
Sites of Special Scientific Interest	
Sharp's Hill Quarry	Geological features including richly fossiliferous rock formations
Special Areas of Conservation	
None	n/a
Special Protection Areas	
None	n/a
Ramsar Sites	
None	n/a
Conservation Target Area	
Swere Valley and Upper Stour	Large area (838 hectares) of diverse habitats and geological features.

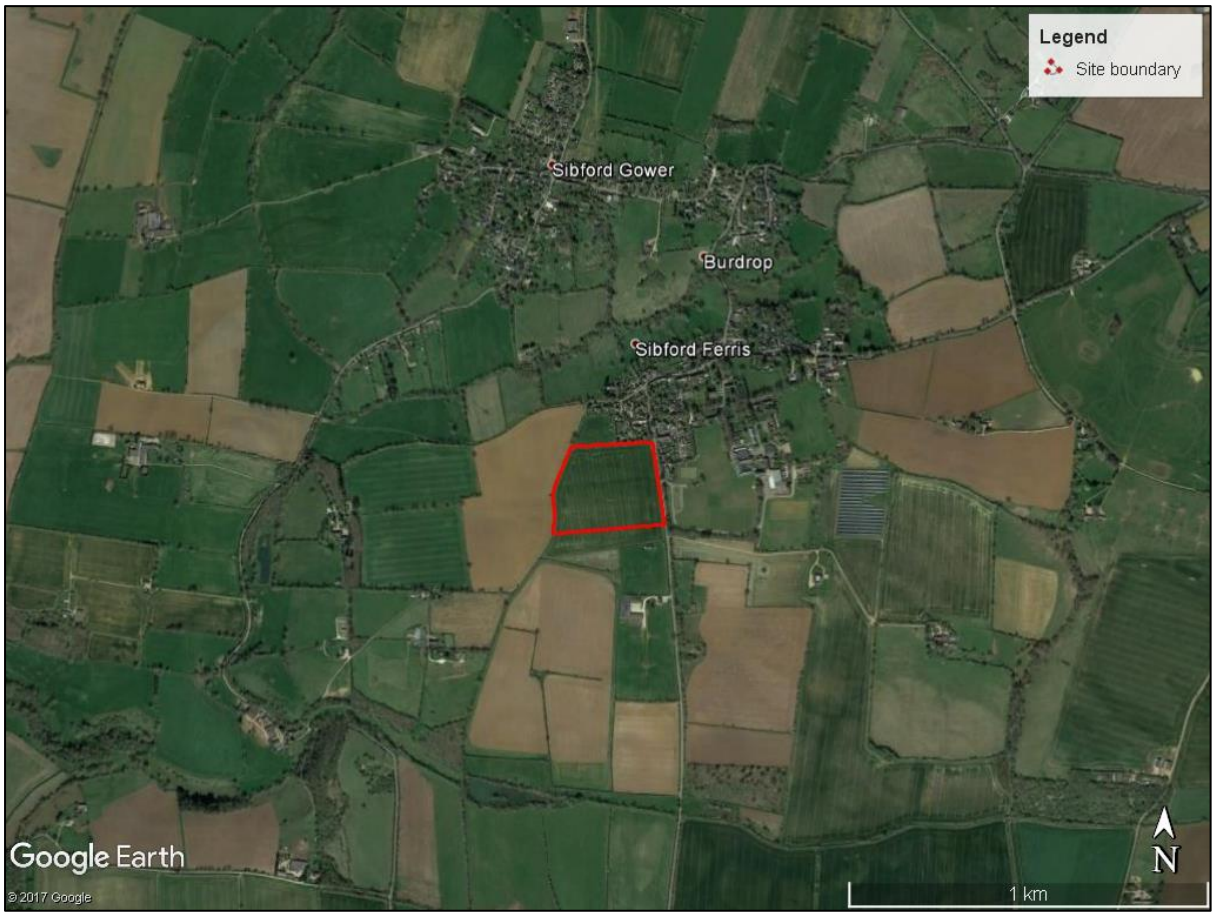
2.7 Habitats

2.8 Surrounding Area

Figure 1, an aerial photograph of the Survey Area, shows the context with the surrounding landscape.

The Survey Area is located on the south-western edge of the village of Sibford Ferris with open agricultural land to the west and south. The Survey Area is an arable field with hedgerows and grassland field margins (4-6m wide) on the north, east and west boundaries, with the south boundary continuing as arable with no linear feature present. Hook Norton Road forms the east boundary, with Woodway Road the west boundary. The Survey Area borders a grassland field and residential properties to the north, and an arable field to the south.

Plate 1 - Aerial Photograph



2.9 Site Habitats

The Survey Area is approximately 6.7 ha and largely comprises an arable field with an established crop of wheat at the time of survey. The Site is the northern half of this field. The field alone offers limited foraging for wildlife. The Site has worn paths around the margins of the field likely used by dog walkers and mammals. Dog walkers were seen during the surveys.

There are standard oak trees in the hedgerows, however, these are immature and do not currently pose any suitability for roosting bats.

The Survey Area comprises:

- An arable field.
- Arable field margins.
- Hedgerows with standard trees.

A list of all species recorded with their Latin names is included in Appendix 2.

2.9.1 Arable field margins

Phase 1 Habitat Survey type: poor semi-improved grassland.

Habitat of Principal Importance (HPI): No: The margins do not appear to be specifically managed for wildlife and therefore are unlikely to meet the HPI requirements.

Management: Regular mowing.

The field survey was undertaken in April with follow up visits in June and July allowing a broader range of spring and summer flowering species to be recorded where present. Species diversity and herbs increase in the area approx. 1 m from the hedge which is dominated by hogweed and common nettle, with the remaining area of the margin being dominated by grasses.

Species richness appears moderate - at the time of the survey, plants were recorded at density of five species per m^2. Given the species composition and structure of the habitat it is likely the margins were planted with a grasses seed mix and cut on a regular basis.

Plate 2. Poor semi-improved grassland field margin

2.9.2 Arable Field

Plate 3. Arable Field

Phase 1 Habitat Survey type: Arable.

Habitat of Principal Importance (HPI): No.

Management: Arable land likely to be subject to annual ploughing, and fertilizer and pesticide treatment.

The majority of the Survey Area comprises arable field habitat. At the time of survey this contained a crop of wheat.

2.9.3 Hedgerows

Phase 1 Habitat survey type: species poor intact hedgerows.

HPI: Yes.

Management: Annual maintenance.

There are three hedgerows within the Site. These are dominated by hawthorn, with other typical hedgerow species present including blackthorn, elder, hazel and elm. The east hedgerow is in poorer condition and is dominated by ash and ivy. None of the hedges qualify as being 'important' hedgerows under the criteria set out in the Hedgerow Regulations; however, they provide an established green link with the wider arable landscape.

Ground flora comprises that described within the field margins. The north and west hedgerows have standard trees which are all immature oak trees, with no suitable features for bats.

Plate 4. East boundary hedgerow

2.10 Species and Species Groups

2.10.1 Plants

Status: Some species Protected/SPI

Present on Site: Unlikely

All plant species recorded are common and widespread and typical of the habitats present in the Survey Area.

2.10.2 Invertebrates

Status: Some species Protected/SPI

Present on Site: Unlikely

The terrestrial habitats within the Survey Area are species-poor, common and widespread. The sward of the pasture is grazed and therefore flowering will be limited. The Survey Area is therefore unlikely to support species or a range of invertebrate fauna which are of conservation importance.

2.10.3 Amphibians

Status: Some species Protected/SPI

Present on Site: There are no ponds on the Survey Area or within 250 m. Hedgerows and field margins may support small populations of terrestrial amphibians

There were no records of amphibians returned in the data search within 2 km of the Survey Area.

There are four waterbodies within 500 m of the Survey Area. Two are east of the Survey Area at 490 m, one is northeast of the Survey Area at 500 m and one pond is approximately 310 m to the southeast. Access for a HSI assessment was only available for the pond 310 m to the southeast herein referred to as Pond 1.

Pond 1 is a small pond (45 m^2) located to the side of an arable field. It is connected to the Survey Area by hedgerows. Within 1 km of Pond 1 there are eight waterbodies present. The pond is shallow and is likely to sometimes dry out. The water quality was not fully assessed for the presence of invertebrates using a net, but is likely to be moderate given its location within an arable field which is subject to herbicide and pesticide use. Shrubs are present on the edge of the pond casting approx. 60% of the shoreline in shadow. No evidence of waterfowl was present and given its small size it is likely to support only individual pairs of moorhens or coots. There was no evidence of fish, however populations of small species such as sticklebacks and minnows may be present. The surrounding landscape is dominated by arable land with hedgerows and a school playing field; the habitat is poor for great crested newts. The results of the HSI assessment suggests Pond 1 is of **average suitability** for great crested newts.

Given the small numbers of waterbodies in the area, and with none within 250 m of the Survey Area, it is unlikely that populations of amphibians are present within the Survey Area.

2.10.4 Reptiles

Status: Protected/SPI

Present on Site: Possible.

There were no records of reptiles returned in the data search within 2 km of the Survey Area.

Given the small amount of available habitat present on the Survey Area in the form of hedgerows and field margins, and the lack of basking areas or refugia, the Survey Area is considered unlikely to support a viable reptile population and is considered to be of negligible importance to reptiles. Nevertheless, the field and hedgerows may support occasional individual animals dispersing through the local landscape.

2.10.5 Birds

Status: Protected/ SPI

Present on Site: Likely.

No records of birds were returned from within the Site boundary. A range of Amber listed birds have been recorded in the area which are typical of a farmland landscape including swift *Apus apus*, green woodpecker *Picus viridis*, house martin *Delichon urbicum*, and grey wagtail *Motacilla cinereal.* SPI species recorded include song thrush *Turdus philomelos*, marsh tit *oecile palustris*, reed bunting *Emberiza schoeniclus* and Tree sparrow *Passer montanus.*

No bird surveys were undertaken on the Site. The trees, hedgerows and field margins are suitable for supporting nesting birds; however, no bird nests were identified during the surveys.

Given the Site's habitats, typical farmland birds are likely to use the Site for nesting and foraging or commuting through the landscape.

Given the lack of significant areas of habitat being lost to the development further bird survey is not considered necessary.

2.10.6 Bats

Status: Protected/SPI

Present on Site: No - Foraging/commuting only.

There are no buildings or other built structures on the Site. The trees present are considered to be of negligible suitability for roosting bats.

Records of four species of bat were returned in the data search within 2 km of the Site. These include serotine *Eptesicus serotinus*, lesser horseshoe *Rhinolophus hipposideros*, Daubenton's *Myotis daubentonii* and common pipistrelle *Pipistrellus pipistrellus*.

Records of two lesser horseshoe roosts were returned; between 0.9 km and 1.2 km southwest and west of the Site. As a result of the presence of roosts of an Annex II species, and the fact that hedgerows bordering the Site which may be impacted by the development may be used

by these bats commuting or foraging, an automated survey was undertaken to determine their potential use.

Bat surveys identified that a minimum of five species of bat (76% common pipistrelle *Pipistrellus pipistrellus*, 0.1% soprano pipistrelle *P. pygmaeus*, 5% *Myotis* species bats, 0.4% brown long-eared bat *Plecotus auritus* and 3% *Nyctalus* species bats) use the Site regularly to forage. There was no indication that bats roost within the Site, however roosts are likely to be present in the surrounding area. No lesser horseshoe *Rhinolophus hipposideros* bats were recorded in the data.

2.10.7 Badgers

Status: Protected

Present on Site: Yes.

A single freshly dug, large mammal hole was recorded beside a telegraph pole [redacted] during the bat surveys. This was not present during the visit for the phase 1 habitat survey in April 2017. There was no evidence of which species had used the hole but is deemed to be of a large mammal such as a fox or badger.

Two lightly used badger latrines were recorded on the [redacted] hedgerow beside mammal runs through the hedge.

A large badger latrine of several dung pits was present off site on the opposite side of [redacted]) within 10 m of the Site boundary.

No other setts were recorded on accessible land in the surrounding area.

Considering the findings, it is likely that the large latrine is a territory marker marking the boundary of the territories of two or more badger clans. Given the large mammal hole is likely to be on the outskirts of a badger clan's territory and does not appear to be well used, it is likely to be an outlier sett of limited importance.

2.10.8 Other mammals

Status: Protected/SPI

Present on Site: No.

There are no records of other mammal species within 250 m of the Site.

There are no watercourses close to the Site, and therefore there are unlikely to be water voles *Arvicola amphibius* or otters *Lutra lutra* within the Site.

The hedgerows on Site are not large enough to support a population of hazel dormouse *Muscardinus avellanarius*.

The hedgerows and grassland on the Site are suitable for foraging hedgehogs *Erinaceus europaeus.* The hedgerows are valuable as they may be used for feeding and/or breeding. Hedgehogs are SPI.

2.11 Important Features Within the ZoI

In summary, the Site comprises one large arable field with field margins, with hedgerows on the north, east and west boundaries. The south boundary leads onto an adjacent arable field. No plants of notable interest were recorded, and the hedgerows were not classified as of ecological importance.

Bat surveys identified that a minimum of five species of bat (76% common pipistrelle *Pipistrellus pipistrellus*, 0.1% soprano pipistrelle *P. pygmaeus*, 5% *Myotis* species bats, 0.4% brown long-eared bat *Plecotus auritus* and 3% *Nyctalus* species bats) use the Site regularly to forage. No lesser horseshoe *Rhinolophus hipposideros* bats were recorded. There was no indication that bats roost within the Site.

Birds are likely to nest within the Site's hedges and potentially on the arable field margins. Reptiles may also use the Site's hedges and field margins.

The following features were therefore assessed as important and are included in this assessment:

Table 3 – Important Features

Feature	Qualifier	Significance
Hedges	Approx. 650 m of HPI	Local
Population of birds	Likely range of typical farmland birds, includes red-listed birds and SPI	Local
Population of badgers	Outlier sett and badger clan territory markers are adjacent to the Site	Local
Population of bats	Majority of bats common and widespread, however includes protected species and SPI. Lesser horseshoe bat roosts within 2 km of the Site.	Local

3 Impact Assessment

3.1 Project Proposals

The proposals are to construct 25 dwellings with associated hard and soft landscaping over approximately half the Site. The remaining area will be developed into public open space, a public orchard, allotments, a LAP and trees. Access to the Site will be via a road through the east hedgerow.

To facilitate the development, telegraph poles will be removed from the Site.

Figure 1 - Project Proposals (from 3361.101 Concept Schematic Site Plan Google 01.08.18)

3.2 Assessment of Significant Effects and Mitigation Measures

3.2.1 Hedges

Impact Removal of approximately 30 m of low-quality hedgerow in order to construct the access road.

Effect No significant effect is anticipated – this will remove approximately 5% of the Site's hedges. The hedge's value as a wildlife corridor is not expected to be significantly diminished as the hedgerow already terminates 70 m north of the proposed Site entrance.

Mitigation None required.

Residual Effects. No significant effects anticipated.

3.2.2 Birds

Impact Construction on the Site will disturb birds, as will use of the completed Site by residents. Habitats will be changed permanently.

If hedgerow removal is undertaken during the breeding season, active nests, eggs or young may be damaged.

Effect During construction the range and number of birds that breed in the Site's hedgerows will be reduced. On completion, the species composition of birds at the Site is likely to change from farmland species to garden and parkland species. Negative Impacts will be very localised and short-term. Although these effects are not significant, all active wild bird nests have legal protection requiring mitigation.

Mitigation In order to avoid unlawful interference with nests, hedgerow removal will be undertaken outside of the main breeding season (which is generally taken to run from March to August inclusive[9]). If this cannot be achieved, the hedge will either be netted by a specialist bird control contractor before the breeding season, or preceded by a detailed hand search for nests by an experienced ecologist. If the latter approach is taken and an active nest is found works will be delayed until chicks have fledged.

Residual Effects. No significant effects are anticipated.

3.2.3 Badgers

Impact Removal of the telegraph poles may interfere with the outlier badger sett. The sett would be within one of the new back gardens and therefore also subject to landscaping and the movement of vehicles during construction.

The arable land will be removed, which will be used for some limited foraging by badgers. Orchards and public open space will be created.

Effect The loss of an outlier sett is inconsequential and badgers will utilise the new habitats for foraging; grassland habitats provide a much higher earth worm resource and impacts on foraging are likely to be neutral in the long term.

Badgers could become trapped in foundation trenches and may be disturbed or harmed during construction. Although no significant effect in EcIA terms is anticipated, badger setts (and badgers when occupying a sett) are legally protected, so mitigation is required.

Mitigation Badger's use of outlier setts is sporadic and the sett may not be in use when construction begins. In the lead up to construction, the sett should be monitored for 21 days with a wildlife camera or wet sand and hair traps. If there are no signs of badger activity the sett can be closed. If badgers are present, a Natural England licence will be obtained (allowing

[9] This is a general guide only. Different species may nest at different times, and prevailing weather conditions may limit or expand the breeding season. Some species, such as pigeons and owls, can breed throughout the year in suitable conditions.

30 days for the application) and the sett closed in a staged manner using standard fencing and one-way door over 21 days. Badger sett closure can only be undertaken between 1st July and 30th November.

All excavations over 0.5 m deep will have escape planks installed over night to allow badgers (and other wildlife) to escape.

Residual Effects. No significant effects anticipated.

3.2.4 Bats

Impact Construction of houses close to hedges where bats are known to commute and forage. The east hedgerow will be breached. All habitats will be altered. Installation of street lighting along the internal road, which goes through the east hedgerow and meets the north hedge. There is no proposal for lighting the open space.

Effect Artificial lighting may change the use of the Site by bats. The incidence of *Plecotus* and *Myotis* species flying along the north and east hedgerows is likely to reduce. Pipistrelle bats, which are known to forage in lit areas are not likely to be affected. Negative effects will be short term, as new tree planting, allotments and the orchard will provide alternative commuting routes and foraging resources for bats. Bat's movement across the landscape will not be reduced.

Mitigation No mitigation is required (on assumption that the western areas of the Site remain unlit).

Residual Effects The proposed works will result in slight positive impact at the local level.

3.2.5 General biodiversity

Impact removal of intensive arable habitats and replace with buildings, gardens, orchard, trees, SUDS and amenity grassland.

Effect creation of new habitats and a greater range of microhabitats within the Site. Likely to attract greater range of fauna and contribute to the local area's biodiversity.

Mitigation n/a

Residual Effects Positive impact at the local level.

3.3 Cumulative Effects and Impacts

The Client's planners Howard Sharp & Partners have conducted a search and have found that there are no other projects of a similar (or larger) scale in the vicinity of the Site. No significant cumulative effects are therefore predicted.

3.4 Compensation

No significant negative impacts are anticipated, therefore no compensation is required.

3.5 Enhancement

The project already includes measures to enhance the Site's biodiversity. These include SUDs, allotments, public open space and a public orchard.

In order to capitalise biodiversity gains within this green infrastructure, detailed plans for the Site will include native species landscaping in the SUDs, wild flower planting understorey to the orchards and sensitive selection of trees to include either native species, or equivalent European species which are climate change resistant (for example Italian alder).

The houses will include one integral bird box and one integral bat box each.

3.6 Legal and Policy Consequences

If the badger sett is found to be active prior to works commencing, a Natural England licence will be required to lawfully close the sett prior to works (see 3.2.3).

3.7 Method of delivery

In order to achieve the mitigation, compensation and enhancement measures set out in this assessment, a Construction Environmental Management Plan (CEMP) and Landscape and Ecology Management Plan (LEMP) will be produced. These plans could be secured through planning condition.

The CEMP would detail the means for protecting wildlife in the lead up to and during construction. This would include (but not be limited to):

- Pollution prevention.
- Provision of temporary habitats during construction.
- Badger sett monitoring.

The Landscape and Ecology Management Plan (LEMP) will be produced to set out the aims and objectives for habitat creation within the Site, with long-term objectives and outline management practices.

The LEMP would include (but not be limited to):

- Methods of preparation, establishment and management of the proposed new wildlife habitats.
- How SUDS will be adapted to provide habitat for wildlife
- Details of the bat and bird box scheme.

4 Conclusions

The Site, an arable field, has little intrinsic biodiversity value. Minor mitigation measures are required to protect badgers and birds during construction. On completion, the project will deliver a gain to the local area's biodiversity through the creation of new habitats; orchards, allotments and public open space.

Table 4 below includes a summary of the EcIA.

Table 4 - Summary

Feature	Impact	Effect	Mitigation	Compensation	Enhancement	Residual impact	Delivery
Hedges	Loss of 30 m of habitat.	No significant effect	None.	None.	None.	No significant impact.	
Population of birds	Disturbance. Damage to nests.	Change in species composition (not significant)	Timing of works, search for nests ahead of works.	None	Bird boxes on all new houses.	No significant impact.	CEMP, LEMP
Population of badgers	Change in habitats. Loss of outlier sett.	No significant impacts; badgers will use new habitats.	Monitoring and if necessary closure of sett under licence. Mammal ladders in trenches.	None.	Creation of orchard, trees an amenity grassland.	No significant impact.	CEMP, LEMP
Population of bats	Change in habitats. Street lighting.	No significant long-term effects.	None.	None.	Creation of orchard, trees an amenity grassland.	Positive long-term effect at local level.	
General biodiversity	Change in habitats.	Positive long-term effect.	n/a	n/a	n/a	Positive long-term effect at local level.	

Appendix 1 - Relevant English Legislation, Policy and Guidance[10]

Legislation

Badgers

Badgers are protected in the UK under the Protection of Badgers Act (1992), making it an offence to:

- Kill, injure or take a badger;
- Intentionally or recklessly interfere with a badger sett.

Sett interference includes damaging, destroying or obstructing access to a sett and disturbing badgers while they occupy a sett.

Bats

All species of bat in Britain are 'European Protected Species' (EPS) and are protected under the Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981, as amended by the Countryside & Rights of Way Act 2000. These pieces of legislation combine to give substantial protection to EPS and their habitats, making it an offence to:

- Deliberately capture, injure or kill a bat.
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats.
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time).
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.
- Intentionally or recklessly obstruct access to a bat roost.

The Natural Environment & Rural Communities (NERC) Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

Nesting Birds

All wild bird nests are protected under The Wildlife and Countryside Act 1981 (as amended), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting.

[10] This legal information is an outline only and intended for general information only. Consult the original legal documents and/or seek legal advice for definitive information.

Bird Directive

Bird Directive Annex I lists species that shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

Policy

Revised National Planning Policy Framework (NPPF) (2018)

Chapter 15 of the Revised National Planning Policy Framework (NPPF) aims at conserving and enhancing the natural environment and states that planning policies and decision should contribute to and enhance the natural and local environment. In terms of biodiversity this should be achieved by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils
- recognising the intrinsic character and beauty of the countryside, and wider benefits from natural capital and ecosystem services
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures

The NPPF states that to protect and enhanced biodiversity, [local] plans should:

- identify and safeguard components of wildlife-rich habitats and wider ecological networks
- promote the conservation and enhancement of priority habitats and ecological networks and the protection and recovery of priority species

The NPPF states that when determining planning applications, local planning authorities should refuse applications which:

- cause significant harm to biodiversity which can not be avoided, adequately mitigated or as a last resort, compensated for
- plan to develop on land within or outside of a Site of Special Scientific Interest (SSSI) and which is likely to have an adverse effect on it (either individually or in combination with other developments)
- result in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and where a suitable compensation strategy exists

The local planning authority should support developments whose primary objective is to conserve or enhance biodiversity, especially where this can secure measurable net gains in biodiversity.

NERC Act

The Natural Environment & Rural Communities (NERC) Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

The NERC Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list replaces the UK Biodiversity Action Pans (UKBAP) and has been drawn up in consultation with Natural England, as required by the Act.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of NERC Act, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Habitats of principal importance

Fifty-six habitats of principal importance (HPI) are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

Species of principal importance

There are 943 species of principal importance (SPI) included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

Protected and Priority Habitats and Species

Legal protection is afforded to particular habitats and species (as well as designated sites). The legislation, and the habitats and species listed, vary between the different jurisdictions.

Certain habitats and species are also considered to have some level of nature conservation importance, due to factors such as their rarity, vulnerability or declining population/status. This document uses the term ‘priority habitats’ and ‘priority species’, as they are those which should be considered as priorities for conservation (it should not be confused with priority habitats and species as listed in the EU Habitats Directive).

Priority habitats and species are defined as those which are:

- Listed as a national priority for conservation (such as those listed as habitats and species of principal importance for the conservation of biodiversity).
- Listed as a local priority for conservation, for example in the relevant local Biodiversity Action Plan (BAP).
- Red Listed using International Union for the Conservation of Nature (IUCN) criteria (e.g. in an all-Ireland Red List, in one of the UK Species Status Project reviews, in the Species of Conservation Concern Red List, Birds of Conservation Concern in Wales, or BWI/RSPB Red List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014

to 2019) or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book)

- Listed as Near Threatened or Amber Listed e.g. in an all-Ireland Red List, in one of the UK Species Status Project reviews, in Birds of Conservation Concern in Wales, in the Species of Conservation Concern Amber List or BirdWatch Ireland (BWI)/RSPB Amber List for Ireland and Northern Ireland (Birds of Conservation Concern in Ireland 2014 to 2019)
- Listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken and/or endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

Most protected species are also considered to be priority species, although there are some exceptions. There are numerous priority habitats and species which do not receive any legal protection. Note that the terms 'priority habitat' and 'priority species' used in this document differ from the following uses of the same terms:

- These terms were previously used to denote those habitats and species afforded the highest level of priority for conservation under the UK BAP this has been superseded by the lists of habitats and species of principal importance for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, Section 7 of the Environment (Wales) Act 2016, or their equivalents in Scotland (Nature Conservation (Scotland) Act 2004, Scotland's Biodiversity Strategy and the Scottish Biodiversity List) and Ireland (Actions for Biodiversity – Ireland's National Biodiversity Plan 2017 -202116 and Valuing Nature – A Biodiversity Strategy for Northern Ireland to 2020).
- The terms 'Priority Natural Habitat Type' and 'Priority Species' are used to denote specific lists of habitats and species under The Conservation of Habitats and Species Regulations 2017 these are defined in Articles 1(d) and 1(h) respectively of the Habitats Directive.

Appendix 2 – Survey Data

Latin	Common name	Arable	Field margins	Standard trees	Hedgerow
Agrostis capillaris	Common Bent		O		
Anthriscus sylvestris	Cow Parsley		F		
Convolvulus arvensis	Field Bindweed		R		R
Cornus sanguinea	Dogwood				R
Corylus avellana	Hazel				R
Cirsium arvense	Creeping Thistle		O		
Dactylis glomerata	Cock's-foot		F		
Crataegus monogyna	Hawthorn				F
Galium aparine	Cleavers		O		
Hedera helix	Ivy				O
Heracleum sphondylium	Hogweed		F		
Holcus lanatus	Yorkshire-fog		A		
Lamium album	White Dead-nettle		R		
Fraxinus excelsior	Ash				O
Poa trivialis	Rough Meadow-grass		O		
Prunus spinosa	Blackthorn				O
Quercus robur	Pedunculate Oak			D	
Phleum pratense	Timothy		F		
Ranunculus repens	Creeping Buttercup		F		
Rumex acetosa	Common Sorrel		R		
Sambucus nigra	Elder				O
Stachys sylvatica	Hedge Woundwort		R		
Rubus fruticosus agg.	Bramble Raspberry		O		O
Trifolium repens	White Clover		O		
Rumex crispus	Curled Dock		O		
Elmus sp.	Elm				O
Taraxacum officinale	Dandelion		O		
Urtica dioica	Common Nettle		F		

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