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Ecological Report: Land at Streetly Hall Farm, West Wickham, Cambridgeshire



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Client	Cornerstone Planning on behalf of Christopher Covey
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Survey scope	Ecological Impact Assessment
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Declaration of Compliance

This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct and British Standard Institution's (BSI) BS 42020:2013 *Biodiversity – Code of practice for planning and development*. We confirm that the opinions expressed within this document are our bona fide professional opinions.

The information which is being provided is a true representation of the survey methods used and the results assembled, with respect to the stated dates of survey and assessment. The future validity of this report is conditional on any changes which occur to the assessment site, and in any case will be limited by professionally accepted survey lifespans^{1,2}.

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¹ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

² Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition). The Bat Conservation Trust London. Section 2.6.3 Age of survey data (pg 20).

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1. Non-Technical Summary

Norfolk Wildlife Services was commissioned to survey an area of at Streetly Hall Farm, West Wickham, Cambridgeshire.

An initial walkover survey for habitats and protected species was carried out by Ben Moore BSc ACIEEM on the 18th August 2022. The survey area consisted of predominantly arable land.

The purpose of this report is to describe the ecological baseline of the survey area and detail a summary of potential impacts to ecological receptors. Requirements for further survey, mitigation measures and a proposal for biodiversity enhancements have also been provided.

A badger sett is present immediately adjacent to the survey area, at the time of survey this appears in use by badger, however, further survey for badger should be carried out to confirm its use by badger to fully determine impacts to this species and design suitable mitigation.

There is a moderate risk of hedgehog being present within the proposed development area and a high risk of nesting birds, brown hare and foraging bats being present. Providing the advised mitigation measures are followed, there are no anticipated negative impacts to these species on site.

Furthermore, the proposed works are not envisioned to significantly negatively impact upon habitats within or surrounding the site or any nearby designated sites.

If any proposed vegetative/site clearance should be carried out, outside of the breeding bird season within the site, breeding bird surveys will be required.

The biodiversity enhancement for the site should include the installation of at least bat and bird boxes. Details for maximising biodiversity value during soft landscaping works (e.g. recommending use of native species) have also been provided.

Biodiversity Net Gain calculations have been provided which demonstrate on-site habitat creation measures ensure a minimum 10% BNG can be exceeded.

2. Introduction

2.1. Description of the project

The survey area is located at land at Streetly Hall Farm, West Wickham, grid reference TL 60043 48539 (shown in Figure 1). The proposals for the site would comprise the change of use of approximately 8 hectares of agricultural land for the development of an anaerobic digester facility with the following elements of operational development:

- Creation of access road from A1307 to the south of the survey area;
- Concrete access road to the weighbridge and silage clamps;
- DfT Type 1 (unbound surface) access to CO2 fill station and storage buildings;
- Reduction in ground level by up to approximately 5m to site the digesters and silage clamps;
- 3 silage clamps each measuring 100 x 30m;
- 2 digesters each with a diameter of 32m and height of 12m;
- 3 post digesters each with a diameter of 36m and height of 12m;
- Covered digestate storage lagoon;
- Surface water pond;
- Digestate out liquid input building (dimensions not provided but from the Proposed Site Layout plan approximately 70 x 25m);
- Storage shed (dimensions not provided but from the Proposed Site Layout plan approximately 40 x 25m);
- 2 straw sheds (dimensions not provided but from the Proposed Site Layout plan each approximately 30 x 18m);
- Technical building (dimensions not provided but from the Proposed Site Layout plan approximately 30 x 20m);
- CO2 fill station;
- Compound with DfT Type 1 (unbound surface) for gas and carbon capture infrastructure including flare;
- Small two-storey office block;
- Parking for 5 cars; and
- Weighbridge and weighbridge office.

2.2. Purpose

The purpose of this report is to:

- Describe the ecological baseline of the survey area (as shown in Figure 3);
- Evaluate the habitats within the survey area for their ecological value in a geographic context;
- Identify the requirement for further ecological surveys to fully inform the assessment of effects as a result of the proposal;
- Identify and describe all potentially significant ecological effects as a result of the proposal;

- Outline appropriate avoidance or mitigation measures for significant effects as a result of the proposal and how these could be secured;
- Clearly identify requirements to ensure compliance with nature conservation legislation;
- Provide Biodiversity Net Gain calculations and recommendations;
- Identify potential ecological enhancement measures beyond avoidance or mitigation;
- Set out any requirement for post-development monitoring.

Figure 1: Survey area location

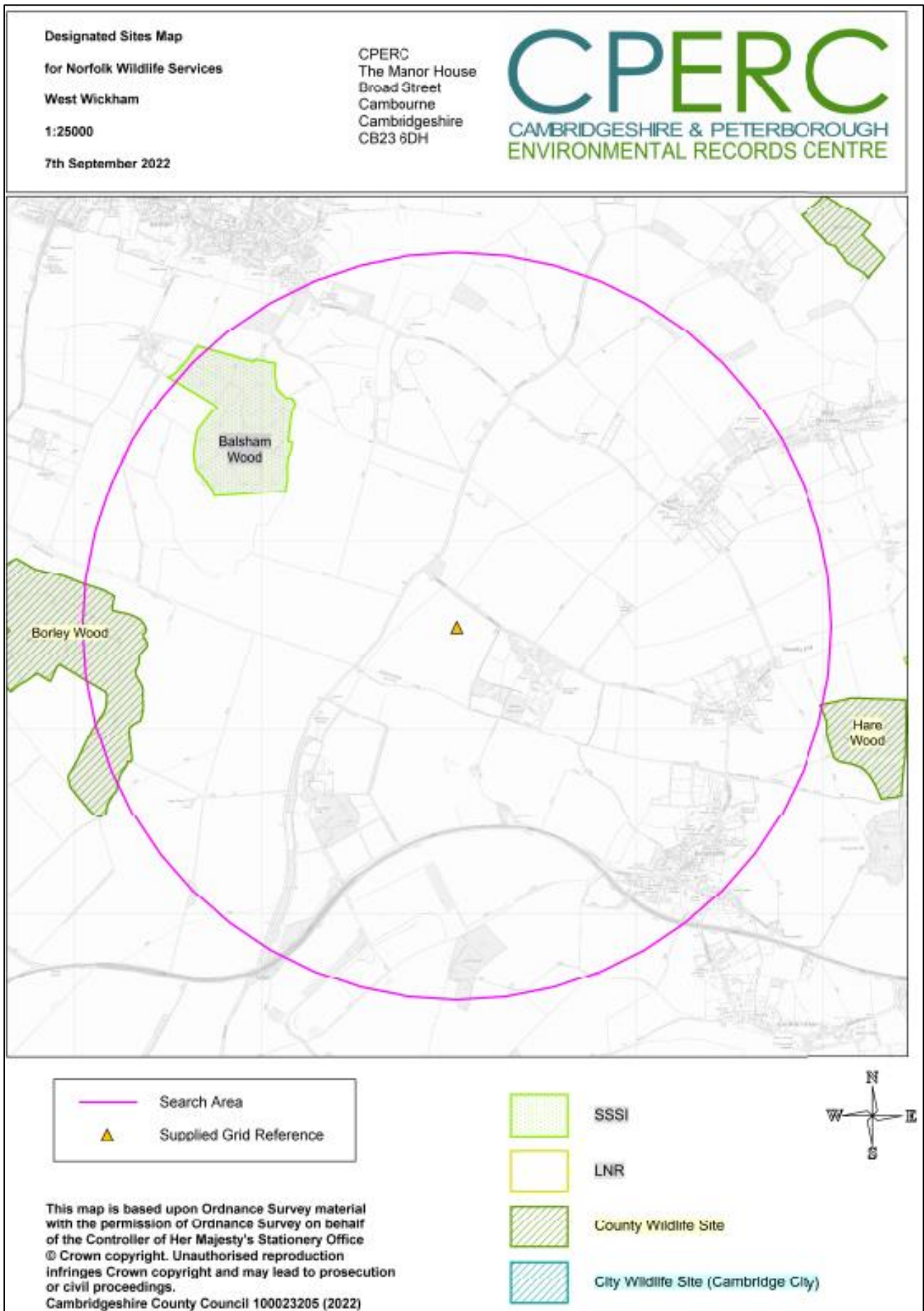


Figure 2: Red-line boundary plan



Streetly Hall AD Plant
Landscape Proposals

Client Streetly Hall Estate
Date Sept 2023

Drawing no. 2022-444-013
Revision F

Drawn by LBL
Checked by

Scale 1:2000 @ A1

Eden Cottage
Hart's Corner
Barnham
NR16 2PL
01263 887656

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3. Methods

3.1. Zone of Influence

The Zone of influence (Zoi) is defined by the CIEEM Guidelines for Ecological Impact Assessment (2018) as: *“The areas/resources that may be affected by the biophysical changes caused by activities associated with a project”*.

The Zoi for this projects considers multiple areas for the potential changes to ecological features as a result of the proposed construction of an AD plant. The extent of these areas are:

- Within the application site boundary (Figure 2) and immediately adjacent habitats for direct impacts to valued ecological features (e.g. habitats and protected species).
- Within a 2km radius of the application site boundary for designated nature conservation sites which may be indirectly impacted as a result of the proposed development.
- Within 250m of the development site for great crested newts, as based on the small-scale of the proposal.

3.2. Desktop study

A detailed desktop study was made of the survey area using the search criteria and sources described in the Table below in September 2021. It should be noted that an absence of records is likely to reflect an absence of survey data and cannot be taken as confirmation that a particular species is not present in the site or surrounding area.

Table 1: Desktop study searches

Search	Sources
A 2km search radius for designated sites and features of interest	Natural England Magic Map Application (www.magic.gov.uk) Cambridgeshire and Peterborough Environmental Records Centre (CPERC) LPA Planning Search Tool (https://applications.greatercambridgeplanning.org/online-applications/ - accessed 14/10/22)
A 2km radius for significant records of protected and priority species and European Protected Species mitigation licences	Natural England Magic Map Application (www.magic.gov.uk) Cambridgeshire and Peterborough Environmental Records Centre (CPERC)
A 250m radius for extant waterbodies	Natural England Magic Map Application (www.magic.gov.uk) Google Earth Pro Ordnance Survey maps (1:10,000)

3.3. Field survey and establishment of baseline ecological conditions

The survey area was initially walked over and inspected by Ben Moore ACIEEM, who holds Level 1 bat and great crested newt survey licences (references: 2019-39352-CLS-CLS and 2019-43385-CLS-CLS respectively) on 18/09/2022.

The weather conditions were; dry, 21°C, cloud cover 50% and Beaufort Wind Speed 0: calm.

The following Table outlines the criteria used to assign a category to the presence of protected species within the survey area. Only protected species deemed to be relevant to the survey area are included in this report.

Table 2: Criteria for defining the presence of protected species within the survey area.

Category	Criteria
Negligible	Habitats are generally very poor quality or absent for the species. No recent, confirmed records in close proximity. Surrounding habitat unlikely to support good populations of the species.
Low	Habitats are of relatively poor quality or very small in size for the species requirements. Few or no records in the area of search. However, presence cannot be discounted on the basis of national distribution and / or suitable habitats within the Zol.
Moderate	Habitats provide enough of the known key requirements for the species to be used frequently. Factors limiting presence include: small habitat area, low suitability of surrounding habitats, barriers to commuting and regular disturbance.
High	Habitats provide enough of the key requirements for the species to be used on a regular basis. Good quality surrounding habitat and good connectivity.
Present	Presence confirmed from the current survey or by recent, confirmed records.

3.3.1. Habitats

A Phase 1 habitat survey of the survey area was conducted, with habitats separated into broad groups and assigned UK Habitat Classification codes where relevant (The UK Habitat Classification Working Group, 2018).

3.3.2. Species

Mammals

Badgers

A search was made for field signs (within the site and as far as possible a 50m buffer) including setts, footprints, droppings, guard hairs and runs. An assessment was made of the potential for badger to be present within the site.

Bats

The visual search for roosting bats and their signs consisted of a methodical inspection of suitable trees within the survey area. Based upon the signs found and the conditions of the trees, an assessment was made of the potential of each building for roosting bats based on guidance in: Bat surveys for Professional Ecologists: Good Practice Guidelines 3rd edition (Collins, 2016).

A visual search of trees for bats consisted of a methodical search externally for actual roosting bats and their signs:

- Droppings on the main stem, branches and bark can be used to identify species;
- Scratch marks and staining at roosts and exit holes can be used to identify the presence of bats;
- Audible squeaking within cavities can indicate bat presence;
- Additionally, access points and Potential Roost Features (PRFs) were identified, for example: natural and woodpecker holes, cracks or splits in limbs, loose bark, epicormic growth.

The survey was achieved using torches, ladders and binoculars to examine the trees externally. An endoscope was used to investigate potential roost features. Photographs of all of the trees surveyed are provided in Appendix 2.

Based upon signs found and the condition of the trees, an assessment was made of the potential of the trees for roosting bats.

Hedgehogs and brown hare

Identification of suitable habitat within the site was carried out. An assessment was made of the potential for hedgehog and/or brown hare to be present within the site.

Water vole and otter

Identification of suitable habitat within the proposed development site was carried out, and an assessment was made of the potential for water vole and otter to be present within the site.

Birds

An assessment was made of the features likely to support breeding birds and Schedule 1 birds (e.g. barn owl *Tyto alba*) within the survey area.

Reptiles

Identification of suitable habitat within the site was carried out, and an assessment was made of the potential for reptiles to be present.

Great crested newt

A desktop search for ponds within 250m of the survey area was conducted using the Natural England Magic Map Application (Magic Maps) and Google Earth Pro. Identification of suitable terrestrial habitat within the survey area was also carried out, and an assessment was made of the potential for great crested newt to be present within the survey area.

3.4. Assessment of impact potential / risk

Potential impacts on ecological features are characterized using the following criteria.

Positive or Negative

The definition of a positive or negative impact/effect is as per CIEEM (2018):

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

Spatial Extent

The spatial extent of an impact’s predicted effects is estimated according to the following categories: international and European; national; regional / river basin district; county; local planning authority district; local (≈ parish); site (within the proposed development boundaries).

Magnitude

- *Major – an impact which is predicted to have a crucial effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered either long-term (potentially reversible) or permanent.*
- *Moderate – an impact which is predicted to have a modest effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered temporary in either the short- or medium-term, and reversible.*

- *Minor* – an impact which is predicted to result in a slight but unimportant effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered to be short-term and reversible.
- *Neutral* – a ‘non-impact’, with no appreciable effects on a designated conservation site, habitat or species population.

Duration

The duration of an impact’s predicted effect may be quantified, or else broadly defined as either short-term, medium-term, long-term or permanent.

4. Results

4.1. Local context

The proposed red-line boundary (11.17ha) consists of primarily arable land and field margins. The survey area is located in the village of Streetly End, Cambridgeshire (centered on grid reference TL 60043 48539).

4.2. Desktop study results

The following designated site records were found within the area of search.

Table 3: Desktop search results – designated sites

Site name	Details	Source
Balsham Wood <i>Site of Special Scientific Interest (SSSI)</i>	Situated approximately 1.7km north-west of the proposed development. Balsham Wood is designated for containing woodland community types of ancient origin and of a type geographically restricted to lowland England. Represents one of the few remaining areas of ancient ash-maple woodland on the chalky Boulder Clay and contains a rich assemblage of plants.	CPERC (2022)
Borley Wood <i>County Wildlife Site (CWS)</i>	Situated approximately 1.8km west of the proposed development. Borley Wood is an ancient woodland over 75% replanted which supports more than 10 ancient woodland indicator species. Additionally, it supports more than 40 woodland plant species.	CPERC (2022)
Hare Wood <i>CWS</i>	Situated approximately 2km south-west of the proposed development. Hare Wood is a woodland listed in the ancient woodland inventory of Cambridgeshire which retains more than 25% semi-natural cover. Additionally it supports a population of a Nationally Scarce vascular plant species (<i>Primula elatior</i>).	CPERC (2022)

The following species records were found within the area of search.

Table 4: Desktop search results – species

Species	Location details	Source
Badger	Seven records of badger with 2km of the survey area between 2002 and 2011.	CPERC (2022)
Bats	55 records across up to eight species (brown long-eared, common pipistrelle, <i>Myotis</i> spp, Natterer's, serotine, soprano pipistrelle, pipistrelle sp. And unidentified bats. The nearest record approximately 0.2km east of the survey area.	CPERC (2022)
Water vole and otter	0 records of water vole were returned in the search. 0 records of otter were returned in the search.	CPERC (2022)
Hedgehog and brown hare	One record of hedgehog from 2016. The nearest to the survey area is 1.6km east of the survey area. Four records of brown hare between 1997 and 2021.	CPERC (2022)
Breeding birds	Numerous species of birds of conservation concern have been recorded within 2km of the survey area which could be considered to potentially nest within the site. Including: Skylark, Corn Bunting, Dunnock, Grey Partridge, Lapwing, Linnet, Starling, Swift and Yellowhammer.	CPERC (2022)
Barn owl	0 records of barn owl were returned in the search.	CPERC (2022)
Reptiles	0 records were returned in the search for this species.	CPERC (2022)

Species	Location details	Source
Amphibians	Five records of great crested newt between 1985 and 2021. The nearest record approximately 1.2km south-east of the survey area	CPERC (2022)
	No great crested newt licence returns were discovered within 2km of the survey area. Likewise, there were no ponds surveyed by Natural England for great crested newt discovered in the search area.	Magic.gov (2022)

There were no previously granted European Protected Species (EPSL) licences discovered within 2km of the survey area.

No nearby developments were discovered which could be considered to have cumulative negative impacts to protected species or nearby designated sites. The nearest planning applications were primarily small-scale barn conversions and tree works.

4.3. Field survey results

4.3.1. Habitats

c1 – Arable

The majority of the red-line boundary area consisted of arable land (Photograph 1). At the time of survey this area had recently been cultivated.

c1a – Arable margin, 16 – tall herb

The proposed route of the access track crosses a small area of grass margin (Photograph 2), species within the sward include yarrow *Achillea millefolium*, cock’s foot *Dactylis glomerata*, lesser knapweed *Centaurea nigra*, greater knapweed *Centaurea scabiosa*, false oat grass *Arrhenatherum elatius*, nettle *Urtica dioica*, bindweed *Convolvulus sp.*, lady’s bedstraw *Galium verum*, hogweed *Heracleum sphondylium*, creeping cinquefoil *Potentilla reptans* and knapweed broomrape *Orobanche elatior*.

The proposed access track will adjoin the A1307 to the south, a field margin is also present where the access track adjoins the road (Photograph 3).

h2a – Hedgerow (Priority habitat), 47 – native

The proposed route of the access track passes a native hedgerow approximately 3m high x 3m wide consisting of hawthorn *Crateagus monogyna*, blackthorn *Prunus spinosa*, field maple *Acer campestre* dog rose *Rosa canina*, bramble *Rubus fruticosus*, Bryony *Bryonia dioica*, elder *Sambucus nigra* and hazel *Corylus avellana* (Photograph 4).

u1c – Artificial un-vegetated, unsealed surface, 115 – track

An existing dirt farm track runs adjacent to the proposed new access route area (Photograph 5).

4.3.2. Species

Mammals

Badger

A small badger sett with three identified entrances (TN1, Photograph 6) was identified on the eastern boundary of the survey area. Fresh spoil was evident outside the entrance of one of the holes indicating recent use by badger.

Arable habitats within the survey area provided varied foraging opportunities as it is dependent on the crops in the field and surrounding area.

Bats

There are no features within the survey area suitable for roosting bats and therefore roosting bats are likely absent from the survey area. However, Tree TN2 (Photograph 7) is located immediately adjacent to the eastern edge of the survey area along a tree line connected to an area of deciduous woodland. This tree has numerous natural holes, torn and dead limbs and areas of flaking bark. This tree is considered being of high bat roost potential.

Hedgerows within the survey area are well connected to other features in the wider landscape for bats. Foraging bats are therefore considered likely present in the survey area.

Hedgehog and brown hare

Although no signs or evidence of hedgehog or brown hare were observed, the habitats within the site were considered to be suitable for both species, providing both foraging and sheltering opportunities. Habitats were less suitable for hedgehog within the site with the primary foraging and sheltering habitat consisting of hedgerows, the likelihood of hedgehog being present within the survey area is rated as moderate. The arable habitat provides excellent foraging and sheltering for brown hare, therefore the likelihood of brown hare being present within the survey area is rated as high.

Water vole and otter

There was no habitat suitable for use by water vole or otter within the survey area. Water vole and otter are considered likely absent from the red-line area.

Birds

Hedgerow within the site provides excellent habitat for breeding birds. Likewise, the arable habitat within the site provided moderate suitability for ground nesting birds.

There were no signs of barn owl within the survey area, and no features suitable for roosting or breeding barn owl were observed. Additionally, arable habitats provided low suitability foraging habitat for barn owl. Therefore, the likelihood of barn owl being present in the site is considered low.

Reptiles

No signs or evidence of reptiles were discovered within the site. Hedgerows within the survey area provide low suitability foraging and sheltering habitat, however as hedgerows are situated within an intensive arable landscape reptiles are considered likely absent.

Great crested newt

There are no identified aquatic habitats within 250m of the proposal site and terrestrial habitats are of negligible suitability for great crested newt within the survey area. Therefore, great crested newt are considered absent.

4.4. Limitations

There are no limitations to the survey.

Figure 3: Habitat map of survey area



5. Ecological Impact Risk Assessment

5.1. Potential Impacts

5.1.1. Designated nature conservation sites

A search of Magic.gov revealed that the proposed development sites within the SSSI Impact Zone for Basham Wood SSSI which is located approximately 1.7km north-west of the survey area. Based on the nature of the proposals, Magic.gov states that Natural England should be consulted as part of the proposals based on the following criteria:

- *“Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t)”*
- *“General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion”.*

An Air Quality Assessment (AQA) (Redmore Environmental, 2024) has been carried out which considers the following points (as requested by Natural England in comments dated 18/12/23:

- Details of lagoons and lagoon cover type
- Revised in-combination assessment for air quality impacts on SSSIs
- A detailed foul and surface water drainage plan and pollution prevention strategy to demonstrate no adverse effect on the natural environment including nearby water dependent sites.
- Consideration of digestate storage size

The AQA report also concludes that the proposals will not have a significant negative impact to the above stated SSSI as well as five other nearby SSSI that were identified by Natural England in comments dated 18/12/2023 which are considered to be vulnerable to air quality impacts. Hare Wood County Wildlife site has also been included as part of the assessment which too concluded non-significant negative impacts.

Furthermore, the intervening habitats (arable, and rural development) between the SSSI and the proposed development which is 1.7km distant are considered to act as significant visual and noise buffers where neutral impacts are anticipated to the SSSI during the construction and operational phases.

Intervening habitats (predominantly arable agricultural land) and infrastructure (roads and urban development) between the proposed development site and the identified County Wildlife Sites are considered to act as buffers to any negative impacts arising through the construction and/or operational phases of the development.

5.1.2. Habitats

During the construction phase, there will be a direct loss of arable habitat from the construction of the proposal. The arable habitat is of low ecological value and the predicted impact is minor negative on a local scale. These permanent loss of habitats are expected to result in minor-negative impacts at the local scale during the construction and operational phases.

During the operational phase, if the proposed development is built without regard to root protection zones, nearby retained hedgerows and trees could be damaged resulting in minor negative localised

impacts through root compaction. These impacts can be avoided through the implementation of suitable mitigation.

5.2. Biodiversity Net Gain Calculations

The following tables (Tables 5-7) detail the calculations for Biodiversity Net Gain (BNG). Calculations are based on the finalised site plans. The baseline biodiversity units of a pre-development site are influenced by the size of the site and the habitats within it. For the proposed anaerobic digester plant we have defined our survey area as the whole red line boundary area where works are proposed (see Figure 1). The following Tables detail the calculations for Biodiversity Net Gain (BNG). The UK Habitat Classification system was used to record the habitats present (see Figure 3). The calculations for BNG were made using the Defra Metric 4.0, and are for the whole survey area. See Appendices 3 and 4 for habitat condition criteria.

Figures in tables are taken from the DEFRA Biodiversity Metric 4.0, which prevents changes to the formatting so includes rounding at each stage. The rounding at each stage is not included in the final calculation which uses unrounded figures from the stage calculations. This can lead to minor discrepancies when breaking the various stages.

Methods

The UK Habitat Classification system was used to record the habitats within site (see figure 3). The calculations for BNG were made using the Defra Metric 4.0.

The baseline biodiversity units of a pre-development site are influenced by the size of the site and the Area Habitat Biodiversity Units (AHBU) within it (see Tables 5 and 6). The pre-development site at Land at Streetly Hall Farm is defined/used here as the whole red-line boundary area (see Figure 1).

Results and conclusion

To get an overall minimum BNG of 10% for the survey area would require an additional 2.240 AHBU (see Table 5) this would be in addition to those lost by the development.

The change in the AHBU value of the site that would result from the proposed development are calculated in Table 6. The impacts on the biodiversity units of the current proposal would result in the loss of 22.40 AHBU from the loss of habitats within the red line area.

Improvements to achieve a minimum 10% BNG are provided in Table 7. On-site woodland planting (to be managed to 'moderate' condition) and creation of 'other neutral grassland (to be managed to be of 'good' condition) will result in the creation of 24.78 AHBU (see Table 7).

The calculations below demonstrate that the proposals will ensure that overall a 10.63% BNG for habitats will occur as a result of the proposed. This exceeds the 10% net gain standard.

Table 5: Baseline Area Habitat Biodiversity Units (AHBU) of the proposed development area

UK Habitat Type	Secondary Code	Distinctiveness Score	Condition Score	Area (ha)	AHBU
Cereal crops	-	Low	Condition Assessment N/A	11.14	22.28
Other neutral grassland	16 – tall herb	Medium	Poor	0.03	0.12

Total	11.17	22.40
Additional AHBU required for total site 10% BNG		2.240

Table 6: AHBU total proposed development area values lost

UK Habitat Type	Secondary Code	Distinctiveness Score	Condition Score	Area (ha)	AHBU
Cereal crops		Low	Condition Assessment N/A	11.14	22.28
Other neutral grassland	16 – tall herb	Medium	Poor	0.03	0.12
Total				11.17	22.40
Additional AHBU required for total site 10% BNG					2.240

Table 7: Changes in AHBU as a result of the proposed development and landscaping plan

Proposed UK Habitat Type	Habitat Distinctiveness	Habitat Condition	Strategic significance	Area (ha)	AHBU Delivered
On-site					
Urban – developed land, sealed surface	Very Low	N/A other	Low	7.35	0.00
Woodland – other woodland; broadleaved	Medium	Moderate	Low	1.97	9.24
Grassland – other neutral grassland	Medium	Good	Low	1.85	15.55
Total				11.17	24.78
Net Change in AHBU (on- and off-site habitat changes)				2.38	
Minimum 10% BNG Achieved (total net change)				Yes 10.63%	

5.2.1. Protected species

Mammals

Badger

Further surveys for badger should be carried out to determine the full impacts to this species. However, should badgers be present within sett TN1 the following risks are anticipated.

The badger sett (TN1) may become damaged and badgers injured during works to improve the existing access track within 30m of sett entrances during the construction phase. The badgers are already used to anthropogenic disturbance of farm traffic using the existing unmade farm track on the edge of the field. As such it is anticipated that the badgers will become habituated to the increase in use of the upgraded track. The proposal will see the access track widened and laid with concrete within the 30m buffer zone. Potential moderate-negative impacts are anticipated to local badger associated with this sett during the construction phase.

It is considered likely that badgers could find their way onto the proposed development site for the anaerobic digester and perhaps become trapped in any trenches dug for construction, resulting in a minor-negative impact at the local population level. Best practice measures are advised as a precaution to ensure no badgers are harmed or killed by construction works.

During the operational phase the increase in traffic associated with the anaerobic digester plant is anticipated to result in disturbance impacts to the local badger population. If they do not habituate to the increase in vehicle movements. There is plenty of suitable areas within the range of the clan which use the sett at TN1 to dig a new sett away from the track but within range of their favoured foraging areas, which change annually based on the cropping rotations.

Bats

Any external site lighting during the construction phase may result in the disturbance to foraging bats, particularly along boundary features and any bats potentially roosting in tree TN2. This is expected to result in no more than minor-negative impacts to locally occurring bats who will already be accustomed to a degree of lighting from the nearby farm yard. Neutral impacts are expected providing the mitigation measures (set out below) are followed.

During the operational phase there may be a risk of increased illumination of boundary features through light spill from external lighting. This could have minor-negative impacts on foraging bats which use boundary hedgerows to forage along. However, a neutral impact to bats is anticipated providing mitigation measures (as set out below) are followed.

The removal of a section of hedgerow to facilitate the access track could disrupt bat foraging habitat. However, the anticipated loss of a short section of hedgerow to facilitate this is not expected to result in significant negative impacts to foraging bats.

Water vole and otter

Water vole and otter are considered absent from the survey area. Neutral impacts to these species are therefore anticipated.

Hedgehog and brown hare

Hedgehog are vulnerable to construction phase impacts including direct destruction of hibernation and sheltering habitat. Any hedgerow removal could result in the destruction of foraging/sheltering habitat, resulting in potential minor-negative displacement impacts to hedgehog at the local scale.

Brown hare are considered likely to avoid the active construction site and are anticipated to disperse into surrounding arable land during the construction stage of the development. A minor negative displacement impact on any local population is possible.

Hedgehog and brown hare (especially young ones) could become trapped in any trenches dug for construction (if left open overnight). Best practice measures are advised as a precaution to ensure no hedgehogs or brown hares are harmed or killed by construction works.

Once the site is developed it is unlikely that there would be any long-term, in-use impacts on hedgehog and brown hare. Disturbance effects from the surrounding roads and farm buildings form part of the baseline situation in this area, so any hedgehogs or brown hares present will be habituated to these effects. A neutral operational impact is expected.

Birds

The potential for breeding birds to be present within the survey area is considered high. The nesting potential is primary associated with hedgerows and arable habitat within the site.

The removal of approximately 10m of hedgerow to facilitate the access track during the construction phase, could cause mortality or disturb active birds' nests (if carried out within the breeding bird

season, 1st March – 31st August). This could have a short-term (i.e. for one nesting season) minor negative impact on local nesting bird populations. To avoid an offence, mitigation is compelled to ensure no nests are harmed.

Furthermore, there is potential for minor negative disturbance and displacement impacts to birds using these habitats and arable habitats within the site for breeding during the construction phase of the project. Post construction it is likely that some of the bird species will return to the site. There will be less suitable nesting habitat after development, and some birds are expected to be displaced into the surrounding landscape. This displacement is anticipated to have a minor negative impact at the local scale. However, should any additional hedgerows be planted along site boundaries, this is anticipated to have a positive impact for common species through the availability for additional nesting and foraging habitat.

Once the site is cleared during the construction phase, any foraging barn owls are anticipated to avoid the construction site as habitats will have been made unsuitable for foraging owls. This is not anticipated to result in any more than minor-negative impacts to barn owls at the local scale as habitats on the site are already considered 'low suitability' for foraging barn owl. Furthermore, there is plenty of adjacent arable land foraging barn owls would be expected to be displaced into.

During the operational phase, the permanent loss of arable habitat is considered to result in minor-negative impacts to barn owl locally.

Reptiles

Neutral impacts to reptiles are anticipated during the construction and operational phase of the development of the site. Reptiles are not considered further in this report.

Great crested newt

Neutral impacts to great crested newt are anticipated during the construction and operational phase of the development of the site. Great crested newt are not considered further in this report.

5.3. Cumulative effects

No nearby developments were discovered which could be considered to have cumulative negative impacts to protected species or nearby designated sites. The nearest planning applications were primarily small-scale barn conversions and tree works.

5.4. Further survey recommendations

Badger

Further surveys should be carried out to determine the level of badger activity at sett TN1.

Birds

Should any tree or hedgerow removal and/or ground clearance occur during the main bird breeding season (between March – August inclusive) further bird surveys will be required within 48 hours of proposed clearance.

5.5. Mitigation Measures

5.5.1. Habitats

Suitable root protection zones to be implemented and adhered to surrounding all retained hedgerows. Building materials should not be stored within these zones nor should machinery be operated or stored within these zones. Likewise, no construction should occur within these zones.

5.5.2. Protected species

Mammals

Badger

Full mitigation measures can be provided once the full impacts to badger have been determined following further survey.

Although it is likely the sett will need to be closed at least during the construction phase of the project. These works will need to be completed under licence issued by Natural England.

Hedgehog and brown hare

Any trenches dug for construction must be covered over at night or else should have a shallow graded end to prevent animals getting trapped. Building materials should be stored raised off of the ground by pallets.

Any perimeter fencing erected surrounding the site should include 'hedgehog gaps' (13cm x 13cm) in numerous locations along its length; these are holes along the base which ensure that the fences are permeable to terrestrial wildlife.

Bats

To mitigate potential impacts from lighting, a wildlife-sensitive lighting scheme will be adopted, as per recent Institution of Lighting Professionals and Bat Conservation Trust guidance (Ferguson et al. 2018). The site lighting scheme for the project will be unobtrusive and hooded/shielded to prevent direct illumination of surrounding boundaries.

Lighting on site is also recommended to avoid blue-white short wavelength and lights with high UV contents, as these have a negative impact on insect so reduce foraging for bats (Stone, 2013).

Birds

The site set-up and vegetation clearance of the proposal site is advised to avoid the main nesting bird season of March through August.

Alternatively, a qualified breeding bird survey of the site will be required to check for established territories and possible nesting activity. The ability to proceed with clearance would be dependent on the findings. Any identified active nests must be given a suitable works exclusion buffer (as determined by the ecologist) until the nesting attempt reaches a natural conclusion. Should the works be considered able to proceed, it is likely that this would be in small sections at a time, and further competent watching briefs would be required to determine if any nests were still present and active in the working area.

5.6. Mitigation Licensing for European Protected Species

Badger

Should badger be confirmed as present within sett TN1 and works cannot avoid the 30m buffer zone a licence for badger will be required for works to proceed lawfully. This will be confirmed following further survey.

5.7. Residual impact assessment

Table 8: Residual impact risk assessment

Receptor	Potential impact	Mitigation	Residual impact
Habitats	Minor negative impacts through root compaction during	Implementation of root protection zones where	Neutral

Receptor	Potential impact	Mitigation	Residual impact
	construction and operation phase to retained trees and hedgerows	the following is prohibited: <ul style="list-style-type: none"> • Building material storage • Use/storage of machinery • Construction 	
	Minor negative impacts through loss of arable habitat on site	Planting of native species as part of the landscaping proposals for the site	Positive impacts (10.63% BNG expected)
Badger	TBC	TBC	TBC
Hedgehog and brown hare	Minor negative impacts to hedgehog and brown hare through entrapment in open trenches/excavations if left overnight	Cover all open excavations if left overnight or leave with shallow graded ends	Neutral
	Minor negative impacts from exclusion from the site and fragmenting existing habitats through the construction of the perimeter fence	Provision of 'hedgehog gaps' along the base of the perimeter fence	Temporary minor negative habitat displacement impact, for hedgehog at the local scale
Bats	Minor negative impacts through disturbance to foraging bats if any site lighting spills onto boundary features and through removal of sections of hedgerow to facilitate site access	Site lighting to be directed away from site boundaries	Neutral
Birds	Minor negative impacts, <i>only</i> if tree, hedgerow and ground clearance is required during the breeding bird season	Restrict tree/ hedgerow/ ground clearance outside breeding bird season (September-February inclusive) OR require breeding bird survey within 72 hours of proposed clearance.	Neutral
	Minor negative impacts through displacement of nesting birds during site clearance, construction and operational phases arising through removal of quantity of currently available nesting habitat	Planting of native trees and shrubs as part of the landscaping proposals	Minor-positive

6. Enhancements

The following enhancements are recommended to contribute towards a net gain for biodiversity from the development. Once finalised plans are available, the indicative plan (shown below in Figure 4) can be updated to reflect relevant enhancements.

Bat boxes

Provide at least two roosting features for bats (2F Schwegler Bat Box, or similar) to be installed as per the design specification on retained trees within the landholding or onto buildings constructed as part of the proposals.

Bird boxes

Provide at least three starling nest features to the design specification above the ground on northern, eastern or western aspects.

Landscaping

The landscaping for the project should consist of the use of native, locally sourced tree and shrub varieties. A mix of berry and nut producing species is preferable to maximise benefit to biodiversity. Species should include hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, guelder rose *Viburnum opulus*, hazel *Corylus avellana* and spindle *Euonymus europaeus*. Shrubs should be planted in same species groups of 2-3 and should be protected using tree guards and canes with an approximate distance between plants of 450mm.

7. Recommendations for ecological planning conditions

A condition of planning approval should relate to the fulfilment of finalised biodiversity enhancements.

8. Conclusions

An ecological impact assessment of a proposed development of land south at Streetly Hall Farm, Cambridgeshire makes the following predictions:

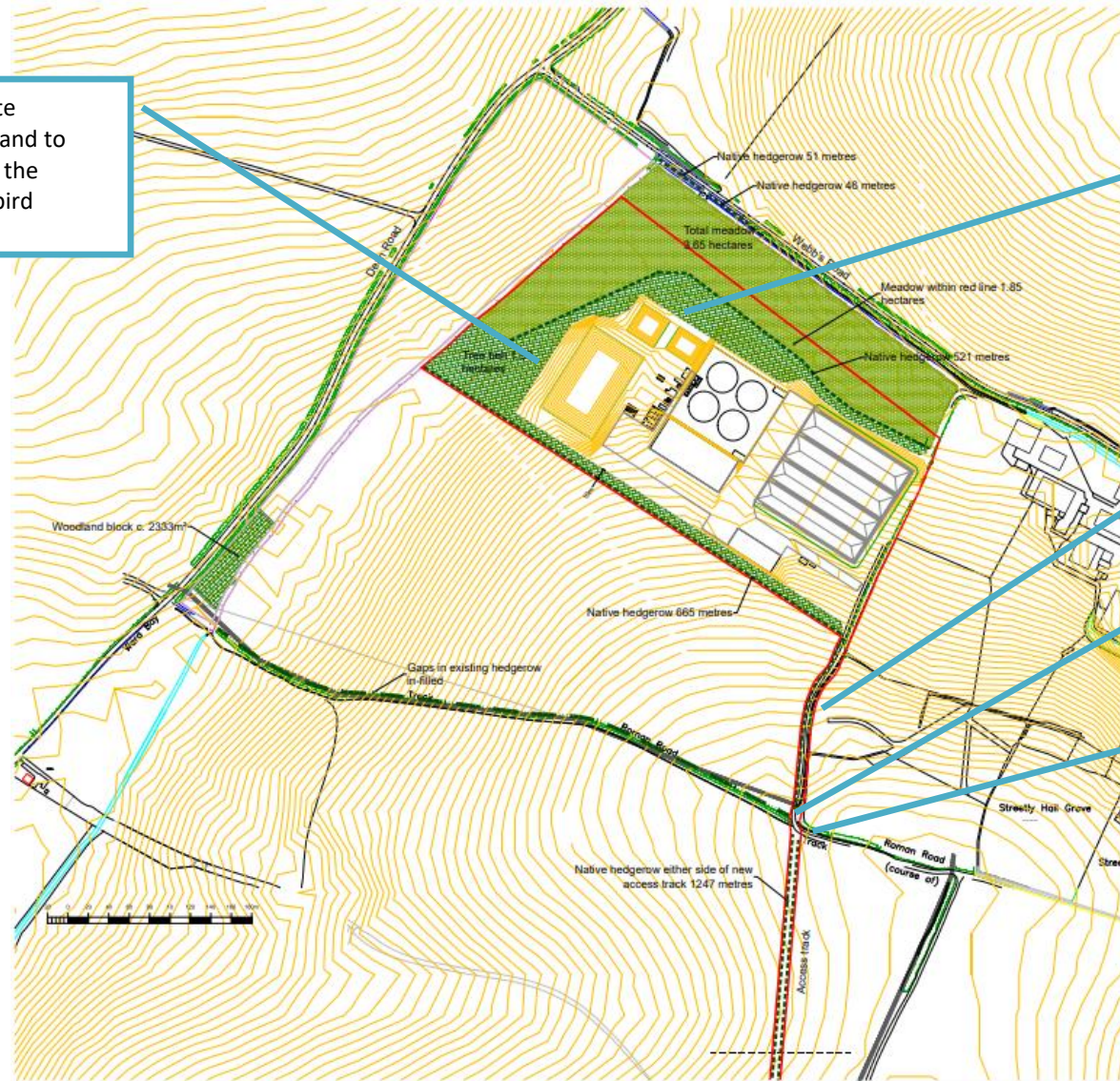
- No impacts on current citation features of any nearby designated nature conservation sites.
- A minor but insignificant negative impact as the result of the direct loss of arable habitat considered to be of low biodiversity value. Neutral impacts are anticipated through the removal for a section of hedgerow to facilitate the access road, with the implementation of the mitigation.
- A potential impact to resident badger immediately adjacent to the site. Further survey for badger is recommended to determine the full impacts to this species. A disturbance licence is likely to be required to close the sett for the duration of the construction phase of the project.
- A potential minor-negative impact to any on-site bat population via light disturbance, which is to be mitigated by adopting a wildlife-sensitive lighting scheme.
- A potential for a minor negative impact on local, hedgehogs and brown hare, which can be mitigated by fitting any open excavations with escape ramps and having precautionary methods of material storage and movement.
- A potential for a minor-negative impacts to on-site nesting birds, which is to be mitigated by the timing of vegetation clearance and by otherwise using watching briefs to confirm nest absence.
- On-site habitat creation measures are proposed to ensure a minimum 10% BNG is achieved.

There is potential for overall site biodiversity enhancement by providing bat roost boxes, bird nest boxes and using native species for any soft landscaping.

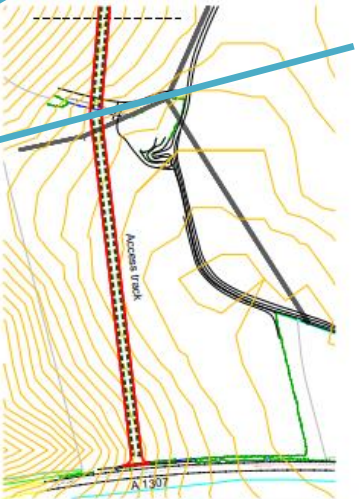
Figure 5: Proposals for mitigation, compensation and enhancement*

*Representation for visual actions only.

Restrict site clearance and to outside of the breeding bird season.



- Land currently under arable to be converted to wildflower meadow
- Proposed tree belt comprising mixed native trees and shrubs
- Proposed hedgerow comprising Hawthorn and other native shrubs
- Total Red Line area: 11.17 hectares



Cover any trenches dug for construction overnight or leave with graded ends and check prior to infilling for trapped animals.

Further survey for badger at Sett TN1. Or works to avoid 30m buffer around sett entrances

Root protection zones for all retained trees and hedgerows

Native species to be used for all soft landscaping

Any site lighting to be low intensity and directed away from boundary features

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Appendix 1: Relevant Legislation and Policy Guidance

Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 (as amended), Section 9, offers protection from intentional or reckless actions upon species listed on Schedule 5 or Schedule 8. Schedule 5 listed species have different degrees of protection depending on whether they are protected by Section 9.1, 9.2, 9.4 or 9.5.

- Section 9.1 - animals protected from killing or injury; includes water vole, grass snake, common lizard, slow-worm and adder.
- Section 9.4a - animals which are protected from intentional damage or destruction to any structure or place used for shelter or protection; includes water vole.
- Section 9.4b - animals which are protected from intentional disturbance while occupying a structure or place used for shelter or protection; includes all bat species, hazel dormouse, otter and water vole.
- Section 9.4c - Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed; includes all bat species, hazel dormouse, otter, water vole, great crested newt and natterjack toad.

All birds are protected from destruction of their nests (with minor exceptions) under the Wildlife and Countryside Act 1981. A higher level of disturbance protection is extended to Schedule 1 species, such as barn owls, and their active nest sites.

Plants listed under Schedule 9 of the act are invasive and generally need controlling on a development site. It is an offence to “plant or otherwise cause to grow in the wild”, the invasive species listed on this schedule. Disposal of the plants or soil contaminated by them may need to be to a controlled waste site.

Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidate the various amendments made to The Conservation (Natural Habitats, &c.) Regulations 1994 in England and Wales. This implements the European Habitats Directive (EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna). The updated legislation affords very strict protection to Annex IV listed species (e.g. all species of bats, hazel dormouse, otter, great crested newt and natterjack toad).

Developments that are likely to have a significant impact upon Annex IV listed species (e.g. bats and great crested newts) require a European Protected Species mitigation license from Natural England in order for the development to legally proceed.

Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 (NERC) came into force on 1 October 2006. Under Section 40 of the Act, all public bodies (including planning authorities) now have a legal duty to consider biodiversity in their work (i.e. a material consideration for planning applications). As such, in order to increase the likely success of any planning application, consideration should be given to enhancing the biodiversity value of the site following redevelopment. Section 41 lists priority (Principle Importance) habitats and species which are to be particularly considered with respect to potential impacts, and may include species which are not otherwise protected by UK legislation.

Appendix 2: Photographs



Photograph 1: Recently cultivated arable habitats within survey area (facing south)



Photograph 2: Tall herb arable field margin along access road, adjacent copse (outside red line)



Photograph 3: Southern field margin (proposed access onto A1307)



Photograph 4: Native hedgerow



Photograph 5: Farm track



Photograph 6: Badger sett (TN1)



Photograph 7: Tree TN2

Appendix 3a: Non-cereal crop condition assessment

Habitats exempt from condition assessment.

Appendix 3b: other neutral grassland condition assessment

Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. NB - This criterion is essential for achieving moderate condition for non-acid grassland types only.	N	
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Y	
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Y	
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Y	
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition ¹ and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Y	None observed
Additional Group (Non-acid types only)			
6	There are greater than 9 species per metre squared. NB - This criterion is essential for achieving good condition (non-acid grassland types only).	N	Fewer than 9sp/m2
Criterion 1 Achieved (Essential for good condition for non-acid grassland) (Y/N)			Y
Number of criteria passed			4
Condition Assessment Result	Condition Assessment Score	Score Achieved x/□	
Acid Grassland Types			
Passes 5 of 5 criteria	Good (3)		
Passes 3 or 4 of 5 criteria	Moderate (2)		
Passes 0, 1 or 2 of 5 criteria	Poor (1)		
Non-acid grassland Types			
Passes 5 of 6 criteria, including essential criterion 1 and 6.	Good (3)		
Passes 3 or 4 of 6 criteria, including essential criterion 1.	Moderate (2)		
Passes 0, 1, 2 criteria of 6 criteria; OR Passes 3 or 4 criteria excluding criterion 1 and 6	Poor (1)		