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# Preliminary Ecological Appraisal

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7 The Common, Little Blakenham

for

Mr & Mrs J. Knott

28 February 2023



**Client**

Mr &amp; Mrs J. Knott


**Planning authority**

Mid Suffolk District Council

**Time limit of reliance**

Please note that the reported surveys were conducted on the date(s) stated in the report and that it represents site conditions at the time of the visit. The findings and recommended mitigation are based on these conditions. If site conditions change materially after the site survey, the original report cannot be relied upon and will need to be updated. Ecological reports and surveys can typically be relied on for 18 to 24 months from the date of survey.

Surveys supporting European Protected Species Mitigation Licence applications must be within the current or most recent survey season for bats (May to September), or within two survey seasons for great crested newts (March to June).

Document	Preliminary Ecological Appraisal
Version	1.0
Date	28 February 2023
Reference number	3033
Author	Ebonie Lambo-Hills M.Sc, B.Sc (Hons), Natural England licences (Bat survey level 1, Great crested newt level 1)
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Signed disclosure	
The information, data, advice and opinions provided in this report which I have provided is true and has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. I confirm that the opinions expressed are my true and professional bona fide opinions.	
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## SUMMARY

Greenlight Environmental Consultancy Ltd. has been commissioned to carry out a Preliminary Ecological Appraisal for a proposed development at 7, The Common, Little Blakenham, Ipswich, Suffolk, IP8 4JX (grid reference: TM 12161 48778).

This report outlines the habitat features on site, the likelihood of protected species being present and any potential effects of the proposed development on such species.

The ecology report is required in support of a planning application for the conversion of the existing barn into one residential dwelling.

The survey and assessment were completed by independent, qualified and experienced ecologists with Natural England survey licences for the relevant protected species.

The findings of the assessment are that the habitats on the site are of low ecological value and that there are no significant ecological constraints that would prevent the proposed works.

Further surveys/licences is required for great crested newts prior to works commencing to inform an ecological impact assessment and appropriate mitigation strategy, or to offset any adverse impacts via financial contributions.

If the following mitigation and enhancements are incorporated into the proposed layout, there will be a net gain for biodiversity, as is encouraged by the National Planning Policy Framework.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Protected sites	Two statutory and 14 non-statutory protected sites within 2km. Site located within Zone A of Suffolk RAMS.	Increased recreational pressure on European designated sites and their qualifying features, but not significant.	<u>Mitigation</u> A Recreational Avoidance Mitigation Contribution will be made payable to Mid Suffolk District Council. Prices dated at the time of this report are £121.89 per unit.
Protected habitats and habitats subject to conservation designations	Bare ground will be lost as part of the proposed works. No Priority Habitats will be affected.	Low scale of habitat loss predicted for wildlife.	<u>Mitigation</u> Soft landscaping scheme to include the planting of new native species-rich hedgerows and trees around the site. Construction work to be carried out in accordance with BSI (2012), BS 5837:2012, to protect trees and their root protection areas. Construction work is carried out in accordance with British Standards Institution (2013), BS 42020:2013, to protect waterways from runoff and pollution. Good construction management practices will be adopted to reduce the risks of accidental discharge of pollutants into any watercourses.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Bats	Negligible bat roosting potential in building one (barn) on site. Low value commuting and foraging habitat on site.	Low scale loss and potential light disturbance of commuting and foraging habitats on site.	<u>Mitigation</u> Any lighting schemes will comply with Bat Conservation Trust and CIE 150:2003 guidance. <u>Enhancement</u> Installation of one integrated and one standalone bat box installed on the new building and suitable tree respectively.
Breeding birds	Nesting habitats for tree and building nesting birds present on site, including potential breeding habitat for Red and Amber listed species. Blue tit nests found within building one. No suitable barn owl foraging habitat on site.	Low scale loss of nesting habitat on site. Potential disturbance to breeding birds.	<u>Mitigation</u> Works to any trees and buildings on site to be conducted outside bird nesting season or under watching brief of ecologist if during nesting season. <u>Enhancement</u> Installation of one integrated swift box and three small bird boxes, installed on the new building and trees respectively.
Great crested newts	Unsuitable terrestrial habitats on site. 23 ponds within 250m of the site, 10 assessed as poor to excellent suitability, and five could not be accessed for detailed assessment. Site falls within Amber risk zone for district level licensing. 33 GCN records within 3km.	Potential harm to GCN if present on site during works. Loss of GCN terrestrial habitat not considered significant to a local population of GCN, if present. No impacts on potential GCN aquatic habitat.	<u>Further steps required</u> This can be in the form of either: Further GCN surveys (presence/likely absence surveys conducted between mid-March and mid-June, or eDNA surveys conducted between mid-April and June). The outcome of the surveys will inform a detailed mitigation strategy and whether an EPS Mitigation Licence will be required from Natural England. Obtaining the raw survey data and EPS mitigation licence for the neighbouring ponds. Applying to join a District Level Licensing scheme to determine the required level of financial contribution to GCN mitigation, which can be completed at any time of year.
Other animals	N/A	Potential harm to animals.	<u>Mitigation</u> If fencing is required, this will be porous and provide openings for hedgehogs. Rough sawn planks will be placed inside any open excavations. Construction materials will be stored off the ground on pallets and waste materials in skips. <u>Enhancement</u> Construction of one habitat pile. Installation of one bee brick on converted dwelling.

## 1. METHOD

- 1.1. A walkover of the site was conducted on 14<sup>th</sup> February 2023 by Ebonie Lambo-Hills – an independent, qualified and experienced ecologist. Survey conditions were as follows: 11°C, 8mph wind, sunny intervals and dry.
- 1.2. All survey methods were carried out in accordance with the most up to date good practice guidance for the relevant protected species. Please refer to Appendix A for the full methodology and species breakdown.
- 1.3. The habitats on and directly adjacent the site were considered unsuitable for the following protected species, with no evidence or signs of use observed. No further surveys or mitigation for these species are detailed in this report:

Water vole *Arvicola amphibius*

Otter *Lutra lutra*

White-clawed crayfish *Austropotamobius pallipes*

Reptiles (slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara*, grass snake *Natrix helvetica* and adder *Vipera berus*)



Hazel dormouse *Muscardinus avellanarius*

Natterjack toad *Epidalea calamita*

## 2. SITE CONTEXT

### Location

- 2.1. The general location of the site is shown in Figure 1 below.
- 2.2. The site is situated within a nest of houses, with the village of Little Blakenham located approximately 1.3km west. A railway line (main line between Norwich and London Liverpool Street), the B113 and A14 are located approximately 0.2km east, 0.1km west and 1km northeast respectively. The closest town is Ipswich, located approximately 4.8km southeast of the site.
- 2.3. The site is enclosed by managed grassland and residential dwellings to the north, a fishery to the east and deciduous woodland to the south and west. The wider surroundings are comprised of a mixture of residential dwellings, industrial sites, River Gipping, lakes, blocks of woodland and arable fields lined with mature trees and hedgerows.

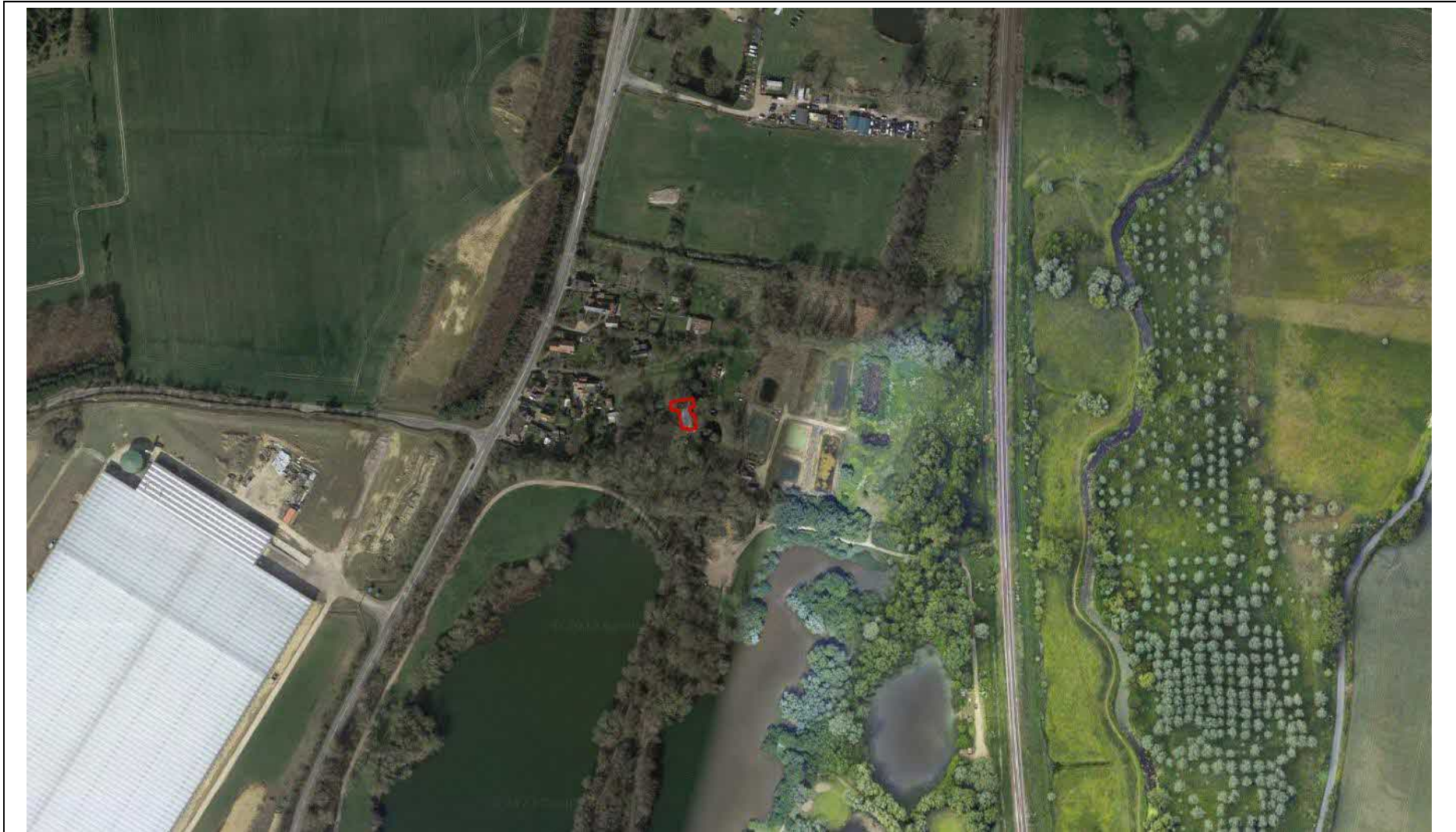


Figure 1  
Satellite image of site surroundings, site indicated by red line.  
Image © Google, date accessed 16/02/23



### 3. DESCRIPTION OF THE DEVELOPMENT

- 3.1. The proposals are for the conversion of the existing barn into one residential dwelling. Please refer to Appendix K for the proposed plans.

### 4. PROTECTED SITES

#### Statutory

- 4.1. There are two statutory protected sites located within 2km – two Sites of Special Scientific Interest (“SSSI”). Please refer to Appendix C for the full citation.

- i. Great Blakenham Pit SSSI, approximately 1km northwest.

“The Great Blakenham site exposes a sequence through Early and Middle Pleistocene sediments and soils. These include residual Crag, a thick body of estuarine sands, a thin layer of Thames river gravels, a buried soil complex, an extensive glacial till and associated outwash gravel.”

- ii. Little Blakenham Pit SSSI, approximately 1.2km west.

“This site consists of former chalk workings which support one of the few examples of chalk grassland flora in East Suffolk. Amongst the more unusual plants present is the locally rare Greater Broomrape *Orobanche rapum-ganistae*. A tunnel, totalling about 127m in length, radiates outwards from one pit which also contains two disused limekilns.”

- 4.2. Although the proposed development falls outside of all SSSI Impact Risk Zones relating to rural residential developments, being a development of less than 50 units, it falls within Zone A of the emerging Suffolk Recreational Disturbance Avoidance and Mitigation Strategy (“RAMS”) zone of influence.

#### Non-statutory

- 4.3. There are 14 non-statutory protected sites located within 3km – 11 County Wildlife Sites (“CWS”) and three Roadside Nature Reserves (“RNR”). Please refer to Appendix C for the full citations.

- i. Suffolk Water Park CWS, approximately 0.1km south.

“Suffolk Water Park is a disused gravel pit which has been reclaimed and developed as a leisure facility. Situated to the north-west of Ipswich, it is well used by local people for walking, fishing and bird-watching.”



- ii. River Gipping (Section) CWS, approximately 0.3km east.

“Many stretches of the River Gipping as it flows between Stowmarket and Ipswich are of considerable conservation value. Some sections support a diverse emergent fringe consisting of reed, pond sedge and bur-reed. This provides suitable habitat for breeding water birds, for example moorhen and coot.”
- iii. Great Blakenham Pitts CWS, approximately 1km northwest.

“This large pit, situated to the north of Ipswich and to the west of the A45, is being excavated at the present time. It will be largely filled with domestic rubbish but certain areas will be retained for their wildlife value. The chalky banks and hedges around the older parts of the pit have stabilised and now support a species-diverse flora including many plants characteristic of a chalk grassland community.”
- iv. RNR 114 CWS, approximately 1km northeast.

“Chalk flora including Pyramidal orchids. This site is also a Roadside Nature Reserve.”
- v. Cubitts Pit CWS, approximately 1.1km southwest.

“This County Wildlife Site is a small remnant of a much more extensive area of chalk grassland which was once part of Blood Hill SSSI, now de-notified following use of the area for landfill.”
- vi. Hogfield Grove CWS, approximately 1.3km northwest.

“Hogfield Grove is a small woodland which is thought to be a fragment of ancient woodland. Situated in the parish of Little Blakenham, it is bordered in the south by a chalk pit which is designated as a Site of Special Scientific Interest.”
- vii. Column Field Upper Quarry CWS, approximately 1.5km west.

“Survey work carried out at the site during 2004 and 2005 has shown the area to be of high wildlife value and that it meets the CWS selection criteria. The geology of the pit is distinctive of the Gipping valley, with sand and gravels overlying the Upper Chalk. Similar exposures are localised elsewhere in Suffolk, occurring in limited locations along the Lark valley near Bury St Edmunds and along the periphery of the Brecks associated with the Little Ouse valley.”
- viii. Bramford Meadows CWS, approximately 1.6km south.

“Bramford Meadows are a good example of floodplain grazing marsh (Priority habitat) and comprise a series of low-lying wet meadows in the valley of the River Gipping, crossed and sounded by a network of ditches, typical of grazing marsh.”

- ix. Barnham Pits CWS, approximately 1.6km northeast.  
“Barham Pits are situated to the east of Great Blakenham in the Gipping valley and are a series of steep sided flooded gravel pits well-used by local anglers. The pits are of considerable ornithological importance for significant numbers of wildfowl, providing food and shelter in winter and also used in summer for breeding.”
- x. RNR 165 CWS, approximately 1.6km northeast.  
“Tower Mustard. This site is also a Roadside Nature Reserv.”
- xi. RNR 119 CWS, approximately 1.7km west.  
“Man Orchid. This site is also a Roadside Nature Reserve.”
- xii. Valley Lodge Meadow CWS, approximately 1.9km west.  
“This species-rich grassland (Priority habitat) lies on a steep, south facing slope with chalk lying very near the surface. It supports a flora typical of a chalky boulder clay, including yellow-wort, pyramidal orchid, wild basil, salad burnet and sulphur clover.”
- xiii. Millers Wood CWS, approximately 1.9km southwest.  
“This long, sinuous shaped woodland is one of several ancient woods situated in the parish of Bramford and listed in English Nature's Inventory of Ancient Woodland. The entire wood is enclosed by a woodbank, parts of which are probably medieval in origin.”
- xiv. Nutt Tree Cottage Meadow CWS, approximately 1.9km west.  
“Nut Tree Cottage Meadow is a species-rich grassland (Priority habitat) supporting a flora typical of a chalky boulder clay and is strongly influenced by the fact that the underlying chalk geology is close to the surface.”

## 5. HABITATS

### Desktop review

- 5.1. Priority Habitats to occur within 2km (identified using MAGIC – managed by Natural England), include Coastal and Floodplain Grazing Marsh, Good Quality Semi-Improved Grassland, Lowland Calcareous Grassland, Deciduous Woodland, Traditional Orchards and Woodpasture and Parkland BAP Priority Habitat. The closest of which (according to MAGIC), is Deciduous Woodland located within the site boundary. However, the habitats located on site comprise of modified grassland with scattered trees and thus should not be classified as Deciduous Woodland Priority Habitat. Adjacent the western boundary, an area of Deciduous Woodland is present.

### Field study

- 5.2. The habitats on the site are of low ecological value, being mainly bare ground with scattered trees, hardstanding and building.
- 5.3. No priority Habitats, as listed under the NERC Act 2006 Section 41 Habitats of Principal Importance found on site.
- 5.4. Figure 2 provides a map of the habitats present on the site. NERC Act 2006 Section 41 habitats have been identified where relevant. A full list of plant species recorded on site is attached in Appendix E.

### Buildings (UK Habitat Classification u1b5)

- 5.5. There is one building located on site which is used as storage. Please refer to the bat section detailed below for further information.

### Other developed land (UK Habitat Classification u1b6)

- 5.6. North of the building there is a concrete pad which is used to store building materials.

### Artificial unvegetated, unsealed surface (UK Habitat Classification u1c, secondary code: 11 scattered tree, 17 ruderal/ephemeral & 73 bare ground)

- 5.7. The site is dominated by bare ground which features several areas of scattered ephemeral vegetation and sparsely scattered grasses. Species include: annual meadow grass *Poa annua*, cleavers *Galium aparine*, cock's-foot *Dactylis glomerata*, dandelion *Taraxacum officinale*, foxgloves *Digitalis purpurea*, nettle *Urtica dioica*, perennial ryegrass *Lolium perenne* and

snowdrop *Galanthus* sp. The bare ground features several scattered trees, species include: hazel *Corylus avellana* and leyland cypress *Cupressus* × *leylandii*.

Target note	Comments
A	Storage of building materials.

Table 1, target notes.







Photo 1, bare ground with scattered trees, building one and target note A (storage of building materials), looking east.



Photo 2, hardstanding and target note A, looking west.





Photo 3, pond two, bare ground and building one, looking west.



Photo 4, bare ground with scattered tree and building one, looking north.



## 6. PROTECTED AND NOTABLE SPECIES

### Desktop review

#### Data search

6.1. The biodiversity data search within 3km of the site indicated 2,565 records from 282 species.

6.2. Records of note within 3km and relevant to the proposed development works are:

22 barn owl *Tyto alba* records, with the most recent from 2022.

37 skylark *Alauda arvensis* records, with the most recent from 2021.

44 swift *Apus apus* records, with the most recent from 2021.

33 GCN *Triturus cristatus* records, with the most recent from 2021. The closest record is located approximately 60m northeast.

252 hedgehog *Erinaceus europaeus* records, with the most recent from 2021.

75 bat records, with the most recent from 2021, including common pipistrelles *Pipistrellus pipistrellus*, soprano pipistrelles *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, serotines *Eptesicus serotinus*, noctules *Nyctalus noctula*, Leisler's *Nyctalus leisleri*, Daubenton's *Myotis daubentonii*, Natterer's *Myotis nattereri*, barbastelles *Barbastella barbastellus* and other unidentified bat species.

#### Protected species licences

6.3. A 2km search on <http://www.magic.gov.uk/> indicated three record of a granted European Protected Species ("EPS") Mitigation Licence relating to:

GCN (case reference: 2017-31271-EPS-MIT-1 and 2020-45191-EPS-MIT) from 2020, approximately 0.6km northwest.

GCN (case reference: EPSM2009-1418) from 2013, approximately 1.7km northwest.

## Bats

6.4. There is one building located on site, as indicated in Figure 3 and photos 5-7.



### Building one

- 6.5. The barn is a timber framed structure clad with corrugated metal, while the roof is a mixture of corrugated metal and corrugated acrylic. The barn features timber fascias on every aspect, two metal framed doors on the north aspect and a chimney on the south aspect.
- 6.6. Internally the barn features modern timbers and a ridge beam. The walls and roof are predominantly lined with polystyrene boards; except where corrugated acrylic is present, allowing significant light into the barn.
- 6.7. There were no signs of use by bats on the building exterior or interior and the structure provides an unsuitable roost environment, with no suitable cavities for roosting bats. The building is assessed as negligible (summer and hibernation) roost suitability for bats.



Photo 5, north and west aspects of building one, looking southeast.



Photo 6, south and east aspects of building one, looking northwest.



Photo 7, internal view of building one, looking south.

#### Trees

- 6.8. The trees around the site boundary were assessed for bat roosting potential and were considered unsuitable due to their age and/or lack of features.

#### Foraging and commuting links

- 6.9. The site itself provides low value foraging habitat for bats along the building, with bats mainly using nearby woodlands for foraging.
- 6.10. The landscape immediately adjacent to the site is considered of moderate to high value for foraging and commuting bats, woodland, River Gipping, Lakes, hedgerows and treelines providing links to the wider landscape. Residential dwellings adjacent the site and within Little Blakenham have the potential to provide roosting opportunities for bats.

#### Birds

- 6.11. Birds in the UK are classified into three categories of conservation importance - red, amber and green. Factors such as global threat level, population decline, breeding population decline and contraction of breeding range are taken into account to determine classification.
- 6.12. The following bird species were observed during the site visit:

## Amber listed:

Black-headed gull	<i>Chroicocephalus ridibundus</i>
Mallard	<i>Anas platyrhynchos</i>
Moorhen	<i>Gallinula chloropus</i>
Song thrush	<i>Turdus philomelos</i>
Woodpigeon	<i>Columba palumbus</i>

## Green listed:

Blackbird	<i>Turdus merula</i>
Blue tit	<i>Cyanistes caeruleus</i>
Carrion crow	<i>Corvus corone</i>
Great tit	<i>Parus major</i>
Long-tailed tit	<i>Aegithalos caudatus</i>
Magpie	<i>Pica pica</i>
Robin	<i>Erithacus rubecula</i>
Tree creeper	<i>Certhia familiaris</i>

- 6.13. The site provides suitable nesting habitats for tree and building nesting species. Several blue tit nests were present under the fascia boards of building one.
- 6.14. The site provides potential breeding habitat for the following Red listed species: house sparrow *Passer domesticus*.
- 6.15. The site provides potential breeding habitat for the following Amber listed species: woodpigeon *Columba palumbus*.
- 6.16. No signs of barn owl were found on the site and no foraging habitat is present.

## Great crested newts

- 6.17. There are no ponds within the survey site and 23 further ponds within 250m, which for the size of the development and nature of terrestrial habitat on the site, is a sufficient distance to consider for assessment (Figure 4). GCN are most likely to occupy good quality terrestrial habitat within 250m of a breeding pond (English Nature, 2001).
- 6.18. The terrestrial habitats on the site are considered unsuitable for GCN, consisting of bare ground and hardstanding, although the storage of material (Target Note A) provide suitable GCN refuge.
- 6.19. Terrestrial habitats adjacent the site include a mixture of unsuitable (managed grassland) and suitable (scrub and deciduous woodland) GCN foraging, commuting and hibernating habitats.
- 6.20. Ponds 1-5 and 7-11 were assessed as poor to excellent suitability for GCN (Table 2). Ponds six and 12-23 were not assessed in detail, as authorised access to the ponds were not available.
- 6.21. The site falls within the Amber risk zone for GCN district level licensing, which is classified as “containing main population centres for GCN and comprise important connecting habitat that aids natural dispersal” (Natural England, 2021).



- 6.22. The data search confirmed the presence of GCN within ponds 16-20, following presence/absence surveys (Bowland Ecology, 2021). The surveys confirmed a low breeding population of GCN, with a peak count of six individuals. However, during the recent site visit ponds 16-20 did not appear to exist, having been filled in.
- 6.23. Please note, two ditches (pond three and 11) within the 250m survey area have been HSI scored due to the confirmed presence of GCN within the vicinity. The remaining ditches were unable to be accessed in detail, as authorised access to the ponds was not available.

Pond	1	2	3	4	5	6	7	8	9	10	11
Geographic location	Zone A	Zone A	Zone A	Zone A	Zone A	Unable to access.	Zone A	Zone A	Zone A	Zone A	Zone A
	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Pond surface area (m <sup>2</sup> )	200m <sup>2</sup>	300m <sup>2</sup>	300m <sup>2</sup>	450m <sup>2</sup>	300m <sup>2</sup>		450m <sup>2</sup>	450m <sup>2</sup>	700m <sup>2</sup>	300m <sup>2</sup>	700m <sup>2</sup>
	0.40	0.60	0.50	0.90	0.60		0.90	0.90	1.00	0.50	1.00
Desiccation rate	Never	Never	Annually	Never	Never		Never	Never	Never	Never	Annually
	0.90	0.90	0.10	0.90	0.90		0.90	0.90	0.90	0.90	0.10
Water quality/ invert density	Moderate	Moderate	Moderate	Moderate	Moderate		Moderate	Moderate	Moderate	Moderate	Poor
	0.67	0.67	0.67	0.67	0.67		0.67	0.67	0.67	0.67	0.33
Shoreline shade (%)	40%	30%	40%	0%	0%		0%	0%	0%	40%	6-%
	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Waterfowl impacts	Minor	Minor	Minor	Minor	Minor		Minor	Minor	Minor	Minor	Minor
	0.67	0.67	0.67	0.67	0.67		0.67	0.67	0.67	0.67	0.67
Fish impacts	Absent	Major	Absent	Major	Possible		Major	Major	Possible	Possible	Absent
	1.00	0.01	1.00	0.01	0.67		0.01	0.01	0.67	0.67	1.00
Ponds within 1km	13+	13+	13+	13+	13+		13+	13+	13+	13+	13+
	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Terrestrial habitat quality	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	
	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	
Macrophyte cover (%)	10%	5%	70%	0%	30%	0%	0%	30%	20%	0%	
	0.40	0.35	1.00	0.35	0.60	0.35	0.35	0.60	0.50	0.30	
HSI Score	Good	Poor	Average	Poor	Good	Poor	Poor	Excellent	Good	Average	
	0.73	0.47	0.67	0.49	0.76	0.49	0.49	0.83	0.75	0.58	

Table 2, HSI score for ponds within 250m of the proposed site.



Pond	12-15	16-20	21-23
Geographic location	Unable to access.	Filled in.	Unable to access.
Pond surface area (m <sup>2</sup> )			
Desiccation rate			
Water quality/ invert density			
Shoreline shade (%)			
Waterfowl impacts			
Fish impacts			
Ponds within 1km			
Terrestrial habitat quality			
Macrophyte cover (%)			
HSI Score			

Table 2, HSI score for ponds within 250m of the proposed site.



Photo 8, pond one, looking east.



Photo 9, pond two, looking south.





Photo 10, pond four, looking east.



Photo 11, pond five, looking north.





Photo 12, pond seven, looking east.



Photo 13, pond eight, looking east.





Photo 14, pond nine, looking east.



Photo 15, pond ten, looking south.



Photo 16, pond 11, looking south.



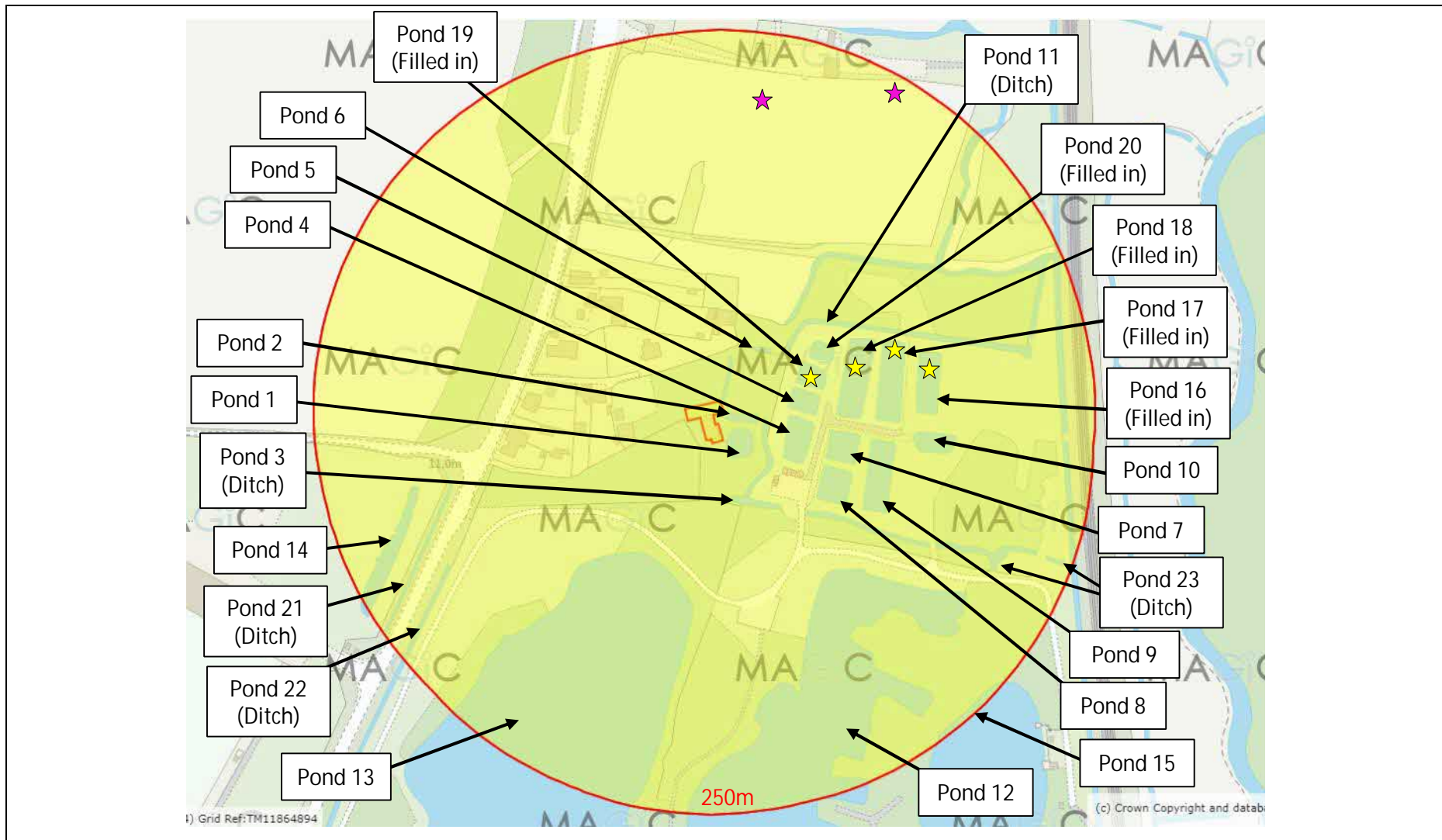


Figure 4  
 Ponds within 250m of the proposed site. \*Yellow star indicates GCN records and pink stars indicate GCN License Return.  
 Image © MAGIC, date accessed 16/02/23



### Other animals

- 6.24. Although the site is considered unsuitable for stag beetles *Lucanus cervus*, the surround habitat within the ownership boundary offers suitable habitat for stag beetles, with a variety of deadwood in various stages of decay.
- 6.25. The surround habitat offers suitable habitat to a range of pollinator with a variety of scrub, trees and flowering plants within the ownership boundary.

## 7. DISCUSSION AND CONCLUSIONS

### Protected sites

- 7.1. The development footprint falls outside all identified protected sites (statutory and non-statutory). There are two statutory protected sites and 14 non-statutory protected sites located within 2km of the site.

The closest statutory protected site (Great Blakenham Pits SSSI) is located approximately 1km northwest and designated for its Early and Middle Pleistocene sediments and soils.

The closest non-statutory protected site (Suffolk Water Park CWS) is located approximately 0.1km south of the site and designated for its disused gravel pits.

- 7.2. Although the proposed development falls outside of all SSSI Impact Risk Zones relating to rural residential developments, being a development of less than 50 units, it falls within Zone A of the Suffolk RAM, being a housing development within the zone of influence for European designated sites.
- 7.3. The following mitigation will be implemented to avoid potential impacts on European designated sites and their features from the proposed works:
- i. A Recreational Avoidance Mitigation Contribution will be made payable to Mid Suffolk District Council. Prices dated at the time of this report are £121.89 per unit.
- 7.4. After these above mitigation measures, we predict no impact on statutory or non-statutory protected.

### Habitats

- 7.5. The proposed works will require the clearance of vegetated habitats on site, including ≈0.02ha of bare ground. No priority habitats will be affected by the proposed development. This is expected to result in a low scale loss of nesting habitat for building nesting birds, and a low scale loss of foraging features for bats. Please refer to the bat section below for predicted impacts on buildings and trees with potential bat roosts.
- 7.6. As a precautionary measure, the following mitigation will be implemented to avoid impacts on habitats from the proposed works:
- i. A soft landscaping scheme to include the planting of new native species-rich (≥5 species), hedgerows and trees around the site (see Appendix H for suggested species).

- ii. Construction works carried out in accordance with British Standards Institution (2012), BS 5837:2012, Trees in relation to design, demolition and construction – recommendations, to protect trees which are to be retained and their root protection areas.
- iii. Construction work is carried out in accordance with British Standards Institution (2013), BS 42020:2013, Biodiversity – Code of Practice for planning and development, to protect waterways from runoff and pollution via the implementation of a Construction Environmental Management Plan (“CEMP”).
- iv. Good construction management practices will be adopted to reduce the risks of accidental discharge of pollutants into any watercourses. This includes storing any concrete and cement mixing or chemical products away from any watercourses and cleaning contaminated materials or machineries within a designated washout area, ensuring no pollutants are discharged into the watercourses at any point.

## Bats

- 7.7. The proposed works are expected to result in a low scale loss of potential foraging and commuting habitats for bats through the conversion of the existing building and increased noise and light levels.
- 7.8. As a precautionary measure, the following mitigation will be implemented to avoid impacts on bats from the proposed works:
  - i. Any lighting schemes will follow guidance from the Bat Conservation Trust and CIE 150:2003. Warm-white (long wavelength) lights with UV filters will be fitted as close to the ground as possible. Lighting units will be angled below 70° and equipped with movement sensors, baffles, hoods, louvres and horizontal cut off units at 90°.
- 7.9. Building Regulations state that the energy efficiency of buildings must be improved where possible and that contractors must assess the condensation risk within the roof space and make appropriate provisions in line with BS 5250:2011. This British Standard states that both High Resistance (bitumen type 1F) and Low Resistance (non-bitumen coated roofing membranes (NBCRM)) underlays are acceptable as long as appropriate ventilation is provided. As NBCRM are proven to entangle bats through regular contact, which also compromises the integrity of the membrane, the Bat Conservation Trust recommend only NBCRM that have passed the snagging propensity test (must be supplied/installed with the necessary certification) or traditional type 1F bitumen are used.
- 7.10. As enhancements, the following will be implemented:

- i. One integrated bat box (Bat Block – Appendix F).
  - ii. One standalone bat box (Schwegler 1FF Bat Box with built-in wooden rear panel – Appendix F).
- 7.11. After these precautionary mitigation measures, we predict no impact on bats as a result of the development plans. We consider that a European Protected Species Licence will not be required, and no further surveys are necessary.

### Birds

- 7.12. The proposed works are expected to result in a low scale loss of bird nesting habitat through the conversion of the buildings.
- 7.13. Any works affecting bird nesting habitat such as management of trees or buildings would ideally need to be conducted outside the main nesting season, which lasts from March to August. If work is planned during the bird nesting season, then a precautionary check of all habitats will be conducted by a qualified ecologist immediately prior to starting any work. If any nesting birds are found, an appropriate protection zone from the nest will be required and will be maintained until the young have fledged.
- 7.14. As enhancements, the following will be implemented:
- i. One integrated swift box (Swift Block – Appendix F).
  - ii. Three small bird boxes (Schwegler 1B or 2H Nest Box – Appendix F).
- 7.15. Natural England and Local Planning Authorities (“LPA”) have recognised a significant decline in swift populations across the country, and are actively endorsing integrated swift boxes to provide a net gain in biodiversity, as is encouraged by NPPF 2021.

### Great crested newts

- 7.16. The proposed works are expected to result in a low scale loss of terrestrial habitats ( $\approx 0.02$ ha of bare ground), with aquatic habitats unaffected.
- 7.17. Taking a worst-case scenario of 0.01-0.1ha of land being lost or damaged within 100m of a breeding pond, with the risk of killing/injuring a GCN, the risk assessment calculation (set out in the GCN method statement template provided by Natural England) indicates an “offence highly likely”.
- 7.18. As GCN may commute across the site to reach ponds in the local vicinity, further steps are required to inform the planning application. This can be in the form of the following methods:
- i. Further GCN surveys:

- a. Presence/likely absence surveys on ponds within 250m of the site which contain sufficient levels of water during the GCN breeding season (can only be conducted between mid-March and mid-June). Please note, a number of visits are required in the peak season (mid-April to mid-May).
  - b. eDNA surveys on ponds within 250m of the site which contain sufficient levels of water during the GCN breeding season (can only be conducted between mid-April and June).
  - c. Obtaining the raw survey data from the GCN surveys conducted on the neighbouring ponds in 2021, along with the EPS mitigation licence.
  - d. The outcomes of the presence/likely absence or eDNA surveys will inform a detailed mitigation strategy for GCN and whether a district level license or EPS Mitigation Licence will be required from Natural England for the proposed development to proceed.
- ii. Apply to join a district level licensing (“DLL”) scheme (can be completed all year round). Please note, all ponds will be assumed to contain GCN unless presence/likely absence surveys or eDNA tests have confirmed likely absence.

#### Other animals

- 7.19. The surrounding habitat of the site is considered suitable for hedgehogs. To maintain potential hedgehog routes within the site and between the site and further habitats, any fencing installed will be porous and provide access openings for hedgehogs (see Appendix G for examples).
- 7.20. To enhance habitats for stag beetles, a log pile will be created within the ownership boundary using the remains of logs (Appendix I). Once the wood has begun to decay/rot, it will become suitable for a wide variety of wildlife, including stag beetles.
- 7.21. General mitigation to protect wildlife during the construction period are as follows:
- Any excavations will have a rough sawn plank placed inside to act as a ramp to allow any animals that have fallen in to escape. The excavations will be checked each morning works are scheduled for, to remove any animals trapped.
- Construction materials will be stored off the ground on pallets and waste materials in skips, to prevent providing shelter for animals and subsequent harm when materials are moved.
- 7.22. As enhancements, the following will be implemented:
- i. The installation of one bee brick on converted building (Bee brick – Appendix J).

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# Appendix A

## Methods

### Desktop Review

A desktop review of published data, such as records of protected sites and species, OS maps and satellite images has been carried out. A data search was carried out with the Suffolk Biodiversity Information Service ("SBIS").

A field survey visit was conducted to confirm the findings of the desktop review and to record habitats and species located on site.

Equipment available for use during the survey were binoculars, ladders, torches, endoscope and a digital camera.

### Habitats

The habitats on site have been defined using the UK Habitat Classification (Butcher et al., 2020). Natural Environment and Rural Communities (NERC) Act (2006) habitats listed under section 41 have been identified where appropriate.

### Bats

An assessment of the habitats on and surrounding the site for bat interest was made, in accordance with latest bat survey guidelines (Collins, 2016).

The building on site was assessed for its potential to support roosting bats and involved a thorough internal and external search of all suitable cavities, holes and crevices. All suitable areas, including objects, ledges and floors were inspected for the following signs:

- Bat droppings

- Stains around roosting places and entrance points

- Urine marks

- Prey remains

- Areas devoid of cobwebs

- Live or dead bats

- Suitable cracks and crevices for bats to enter

In exposed conditions, the signs of bat usage such as droppings and urine marks can be obliterated by heavy rain.

An evaluation system was applied to the building(s) using the following criteria:

- Negligible roost suitability for bats. These buildings have no potential roosting features for bats, or very few or minor features in an isolated or unsuitable location such that the presence of a bat roost is considered highly unlikely. Such buildings usually fall into two main types: generally, well maintained without cracks and crevices, no gaps between bargeboard or soffit and wall, or without an attic space; or those which contain some or all of the above features, but are both draughty and thick in cobwebs



or contain strong odours such as solvents, diesel etc. It must be borne in mind that a building from this latter group can become suitable for bats following refurbishment. This often happens to houses once the attic space has been cleaned and under-felted prior to timber treatment. When no suitable habitats for bats are found, no further surveys or European Protected Species (“EPS”) mitigation licence are required.

Low roost suitability for bats. Buildings in this category have one or more potential roost sites that could be used by individual bat opportunistically. These buildings do not however provide suitable conditions (such as space, shelter, temperature, humidity, or light and noise disturbance) to be used on a regular basis by a large number of bats. Structures with low roost suitability for bats will require one dusk emergence or one dawn re-entry survey conducted between May and August to assess their current use by bats.

Moderate roost suitability for bats. These buildings contain one or more potential roosting sites which could be regularly used by bats owing to their size, shelter, protection and conditions. These buildings are however unlikely to support a roost of high conservation status (maternity roost or hibernation roost). Structures with moderate roost suitability for bats will require two surveys, one dusk emergence and one dawn re-entry survey conducted between May and September with at least one of the surveys undertaken between May and August, to assess their current use by bats.

High roost suitability for bats. This group includes buildings with one or more potential roost sites which are obviously suitable for use by a larger number of bats on a regular basis and potentially for longer periods of time owing to their size, shelter, protection and conditions. These buildings may support a roost of high conservation status (maternity roost or hibernation roost) and will require three activity surveys to assess their current use by bats. The surveys should include at least one dusk emergence and at least one dawn re-entry survey (the third survey can either be at dusk or dawn) and should be conducted between May and September with at least two of surveys undertaken between May and August.

Trees on and around the site were assessed for their suitability to support roosting bats. The assessment involved a ground level inspection of the exterior of the trees to search for features offering roosting potential to bats such as split limbs, woodpecker holes, cavities, lifted bark and dense thick-stemmed ivy.

An evaluation system was applied to the trees using the following criteria:

Negligible roost suitability for bats. Trees unlikely to be used by roosting bats.

Low roost suitability for bats. A tree of sufficient size and age to contain Potential Roosting Features (“PRFs”), but with none seen from the ground or features seen with only very limited roosting potential.

Moderate roost suitability for bats. A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.

High roost suitability for bats. A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection and surrounding habitat.

The habitats on and around the site were assessed for their commuting and foraging potential for bats. An evaluation system was applied to the commuting and foraging potential using the following criteria.

Negligible commuting and foraging potential for bats. Habitat features unlikely to be used by commuting or foraging bats.

Low commuting and foraging potential for bats. Habitats that could be used by a small number of commuting or foraging bats such as, a gappy hedgerow, unvegetated stream or lone trees, but are isolated and not well connected to the surrounding landscape.

Moderate commuting and foraging potential for bats. Habitats that are continuous and connected to the wider landscape such as, lines of trees, scrub, linked back gardens, grasslands and water features.

High commuting and foraging potential for bats. Habitats that are continuous and connected to the wider landscape such as, river valleys, watercourses, hedgerows, lines of trees, deciduous woodland, and grazed parkland. These habitats are likely to be used regularly by commuting or foraging bats and are likely to be close to, or connected to, known roosts.

## Birds

The site and its surrounding habitats were assessed for their potential to support breeding birds. Bird nesting habitat could include grassland, hedgerows, scrub, trees and buildings.

Bird species noted during the site visit were recorded. Trees, buildings and grassland were checked for use by barn owls, swifts and skylarks.

## Great crested newts

Habitats on and near the site were assessed for their suitability for great crested newts ("GCN").

Water features on and near the site were assessed for their suitability for occupation by GCN, according to a Habitat Suitability Index ("HSI"). The HSI is a theoretical index of a waterbody's suitability to support a breeding population of GCN and is calculated from a series of ten variables recorded on site, as detailed in Table 3.

Indices	Name	Description
SI1	Geographic Location	Lowland England or upland England, Scotland and Wales
SI2	Pond area	To the nearest 50m <sup>2</sup>
SI3	Permanence	Number of years' pond dry out of ten
SI4	Water quality	Measured by invertebrate diversity
SI5	Shade	Percentage shading of pond edge at least 1m from shore
SI6	Fowl	Level of waterfowl use
SI7	Fish	Level of fish population
SI8	Pond count	Number of ponds within 1km divided by 3.14
SI9	Terrestrial habitat	Quality of surrounding terrestrial habitat
SI10	Macrophytes	Percentage extent of macrophyte cover on pond surface

Table 3, HSI indices.

The HSI score is the geometric mean of the ten suitability indices calculated:

$$HSI = (SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10)^{1/10}$$

Once calculated, the HSI score for a waterbody can be categorised as follows:

Excellent (>0.8)

Good (0.7 – 0.79)

Average (0.6 – 0.69)

Below Average (0.5 – 0.59)

#### Water voles, otters and white-clawed crayfish

Water features on and adjacent to the site were assessed for use by water vole, otter and white-clawed crayfish. Otters in England typically use areas of fresh water and streams and ditches for moving between habitats. Otter holts are usually located underneath tree roots, in tunnels. Field signs of presence include spraints on prominent features such as bridges, tree bases or boulders, and footprints.

Water voles inhabit burrows in the banks of ponds, ditches, streams and rivers. Field signs include droppings left in latrine spots, burrow entrances or feeding remains.

White-clawed crayfish inhabit streams and rivers with a moderate flow rate, and lakes. Clear, well-oxygenated water is preferred. Typical habitat features include crevices in rocks, gaps between stones, submerged plants and tree roots.

#### Reptiles

The habitats on the site and within the proposed area of works were assessed for suitability for reptiles.

Reptiles rely on conditions that allow them to maintain their body temperature through basking. They require access to direct sunlight, shelter from the elements, sufficiently large populations of prey species and hibernation sites.

Reptiles typically favour a habitat mosaic with a diverse vegetation structure, which could include grassland, scrub and woodland.

#### Dormice

Dormice habitats include deciduous woodland, hedgerows and scrub. Dormice are found mainly in the south of England, including Kent and Sussex, with sporadic populations elsewhere. An assessment of the suitability of site habitats for occupation by dormice was made.

#### Other protected species

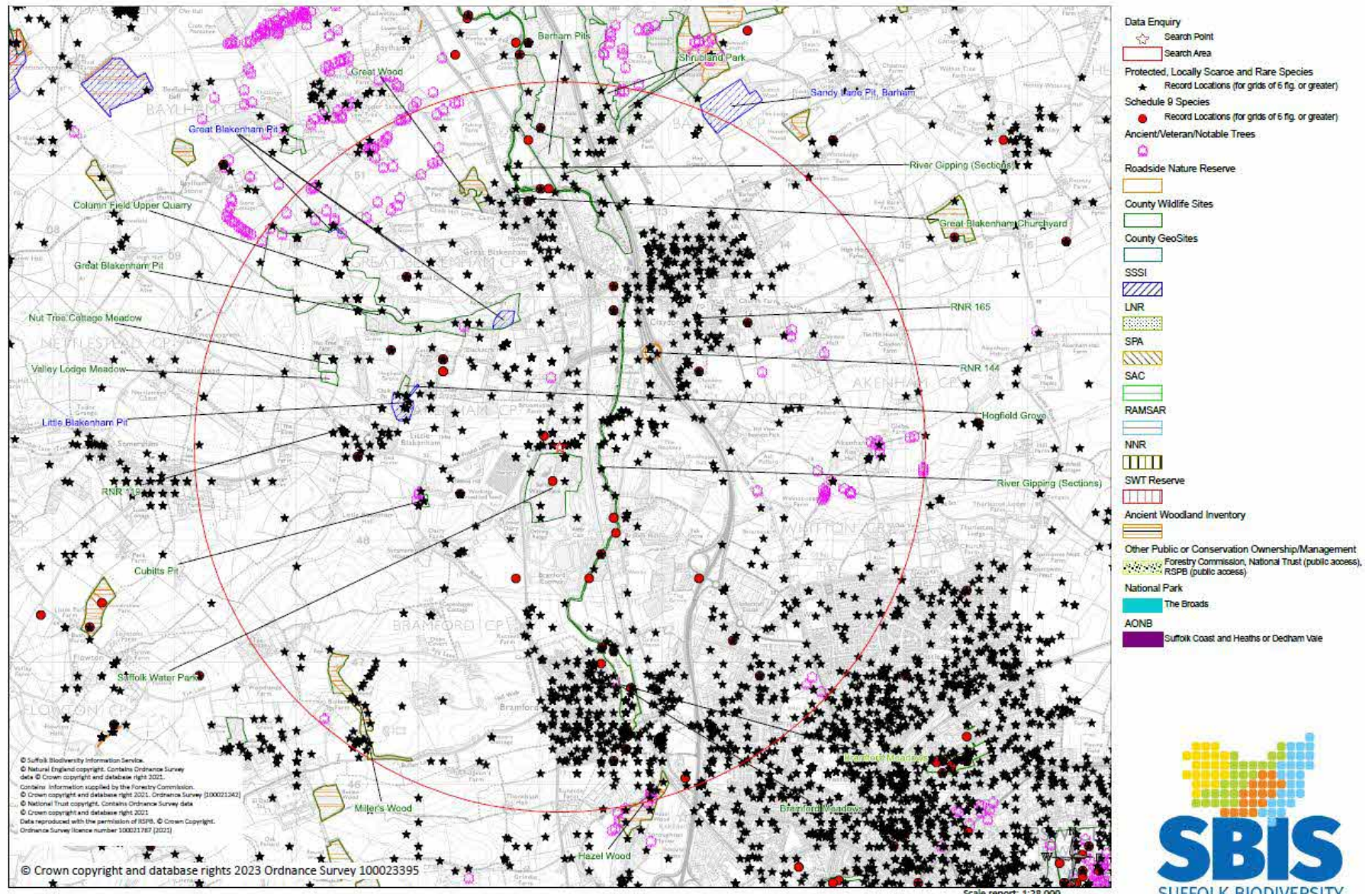
Particular regard was made to the nature of the proposed development and the potential of impact upon any other protected species, species which are nationally or locally scarce, or species subject to other conservation designations such as Red Data Book or Priority S41 species, from the development work, should these be present in the area.

#### Constraints

The field survey was conducted outside of the optimal survey period for flowering plants. Although the habitats recorded on site are unlikely to change to those described in this report, flora biodiversity is likely to be under recorded.

## Appendix B

### Map of protected sites within 3km



**Greenlight (The Common, Little Blakenham TM12159 48780) 3km Data Enquiry**

Date: 20/01/2023 | Drawn by: Andy Mercer



## Appendix C

### Protected sites citations

#### SSSI citations

COUNTY: SUFFOLK      SITE NAME: GREAT BLAKENHAM PIT

DISTRICT: MID SUFFOLK

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981

Local Planning Authority: SUFFOLK COUNTY COUNCIL, Mid Suffolk District Council

National Grid Reference:    TM 103506    Area: 2.08 (ha.) 5.14 (ac.)  
    TM 109504  
    TM 117498

Ordnance Survey Sheet 1:50 000: –      1:10 000:    TM 15 SW  
    TM 14 NW

Data Notified (Under 1949 Act): 1966      Date of Last Revision: –

Date Notified (Under 1981 Act): 1992      Date of Last Revision: –

Other Information:

A site of geological interest.

Description and Reasons for Notification:

The Great Blakenham site exposes a sequence through Early and Middle Pleistocene sediments and soils. These include residual Crag, a thick body of estuarine sands, a thin layer of Thames river gravels, a buried soil complex, an extensive glacial till and associated outwash gravels. The present top-soil developed on the till includes periglacial soil structures and lenses of wind-blown sand. All these deposits make the site of great importance in interpreting the glacial history of southern Britain in Middle Pleistocene times. The Thames river deposits are part of a terrace sequence which represents the former course of the Thames through East Anglia. The buried soil shows a bright red colour caused by redeposited hematite, resulting from temperate weathering during several stages of the Middle Pleistocene, in addition to a periglacial soil formed in the early part of the Anglian Glaciation but before the Anglian glaciers reached the site. Formerly, the till was considered to be evidence for two separate glacial stages, but recent analysis show that differences in appearance are due to the upper part being oxidised and the sediment is now considered to represent only one glacial event, of Anglian age, but within the till three facies are represented. In the western part of the quarry there is lodgement till; to the east, on the valley-side, melt-out till overlies a sheared basal till. In this part of the quarry the till is associated with chalky ice-proximal outwash gravels. The quarry is very important for showing the spatial relationship of the till facies and the topographic position of the outwash gravels. The wind-blown sands in the top-soil are Devensian. This is a key locality for Pleistocene studies.

COUNTY: SUFFOLK      SITE NAME: LITTLE BLAKENHAM PIT

DISTRICT: MID SUFFOLK

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981

Local Planning Authority: MID SUFFOLK DISTRICT COUNCIL

National Grid Reference: TM 109491      Area: 4.3 (ha.) 10.6 (ac.)  
TM 112485

Ordnance Survey Sheet 1:50,000: 155      1:10,000: TM 14 NW

Date Notified (Under 1949 Act): 1966      Date of Last Revision: N/A

Date Notified (Under 1981 Act): 1987      Date of Last Revision: N/A

Other Information:

Part of the site is managed as a nature reserve by the Suffolk Trust for Nature Conservation.

Description and Reasons for Notification:

This site consists of former chalk workings which support one of the few examples of chalk grassland flora in East Suffolk. Amongst the more unusual plants present is the locally rare Greater Broomrape *Orobanche rapum-ganistae*. A tunnel, totalling about 127m in length, radiates outwards from one pit which also contains two disused lime-kilns. This tunnel is extremely important, as it contains one of the largest underground roosts for hibernating bats known in Great Britain.

The botanical interest of the site centres on areas of chalk grassland which are dominated by Yorkshire Fog *Holcus lanatus* and Brown Bent-grass *Agrostis canina* with frequent Yellow Oat Grass *Trisetum flavescens*, Slender False-brome grass *Brachypodium sylvaticum* and Quaking Grass *Briza media*. Characteristic herb species include Wild Strawberry *Fragaria vesca*, Purging Flax *Linum catharticum*, Rock Rose *Helianthemum nummularium* and Salad Burnet *Sanguisorba minor*. There are populations of Pyramidal Orchid *Anacamptis pyramidalis* and Bee Orchid *Ophrys apifera* and other unusual species include Man Orchid *Aceras anthropophorum* and Southern Marsh Orchid *Dactylorhiza praetermissa*. In recent years there has been a successful programme of transplanting Man Orchids from other sites.

Three species of bat regularly use the tunnel between September and April, in numbers often totalling 450 or more. It is used principally by Daubenton's bat *Myotis daubentoni*, Natterer's bat *Myotis nattereri* and Brown Long-eared bat *Plecotus auritus*, but occasional visitors are Whiskered bat *Myotis mystacinus* and Brandt's bat *Myotis brandti*. Bats also use one of the lime-kilns, sharing it with a badger sett.

Elsewhere in this particular pit is a mixture of sycamore woodland and rank herbage. The shelter provided by this vegetation helps to maintain a suitable microclimate

## County Wildlife Sites citations

CWS Number	Name	Description	NGR
Babergh 120	HAZEL WOOD	Hazel Wood, situated on the outskirts of Ipswich is bordered along its north western boundary by the River Gipping, in the north eastern corner by the railway line and in the south by the gardens of Sproughton Manor. Hazel Wood has a number of characteristics associated with old woodland; for example a well-defined woodbank separates the wood from a riverside footpath. In addition, a number of mature pollards and some areas of old hornbeam coppice are present, which are also indicative of ancient woodlands. The wood consists of two distinct compartments. Firstly, a plantation of beech and sycamore situated in the northern section. Further to the south is an area of hornbeam and hazel coppice with mature Turkey oak standards scattered throughout. Dead wood, a valuable habitat for invertebrates and birds, is present in reasonable quantities in the form of diseased standing elm trees. Although dominated by dog's mercury, the ground flora also contains patches of bluebell, moschatel and violets. Several depressions, thought to be the remains of chalk pits, are present in the wood. Due to its close proximity to Ipswich, the site is well used as a recreational area by local residents.	TM128458
Mid Suffolk 10	RIVER GIPPING (Sections)	Many stretches of the River Gipping as it flows between Stowmarket and Ipswich are of considerable conservation value. Some sections support a diverse emergent fringe consisting of reed, pond sedge and bur-reed. This provides suitable habitat for breeding water birds, for example moorhen and coot. Channel vegetation is dominated by yellow water-lily but also contains some uncommon plants, for example arrowhead and spiked water-milfoil. A river corridor survey carried out in 1990 showed that kingfisher, reed bunting, reed and sedge warblers and tufted duck breed on the River Gipping. In addition grey wagtails are known to breed in old river structures, mainly locks, including Baylham Mill Lock and Sharmford Lock amongst many others. Furthermore the River Gipping supports a valuable mixed coarse fishery (Class A). Good populations of roach, dace, eel, tench, perch and pike occur in the river. In addition to its wildlife value the River Gipping is important as a leisure facility. A towpath which runs the length of the valley from Stowmarket to Ipswich is well-used by local people.	TM073568 - TM124471
Mid Suffolk 100	HOGFIELD GROVE	Hogfield Grove is a small woodland which is thought to be a fragment of ancient woodland. Situated in the parish of Little Blakenham, it is bordered in the south by a chalk pit which is designated as a Site of Special Scientific Interest. A woodbank separates the wood from arable fields on the eastern side; the remainder of the wood is enclosed by a fence. Hogfield Grove consists of ash, field maple and hazel coppice in the scrub layer with oak and ash standards forming the tree canopy. A notable feature of the wood is a	TM108493



		few overmature cherry trees. Dog's mercury dominates about two thirds of the flora of the wood; bluebell interspersed with patches of bramble cover the rest of the area. A number of uncommon plants, for example foetid iris and early-purple orchid have been recorded in a few places in the wood. The wood is used extensively for pheasant rearing.	
Mid Suffolk 11	BARHAM PITS	Barham Pits are situated to the east of Great Blakenham in the Gipping valley and are a series of steep sided flooded gravel pits well-used by local anglers. The pits are of considerable ornithological importance for significant numbers of wildfowl, providing food and shelter in winter and also used in summer for breeding. The pits are a regular stop-over for birds on passage such as common tern, common sandpiper and osprey.	TM120514
Mid Suffolk 12	SHRUBLAND PARK	Shrubland Park is situated to the east of the A14, south west of the village of Coddendam. A large proportion of the park has been planted with mixed woodland. The formal plantations contain a range of woody species, and shrubs have been planted. A number of glades and rides which cross the wood support a diverse flora. Some sections are colonised by plants typically associated with acid grassland. Other more chalky areas support calcicolous species such as pyramidal orchid, wild basil and old man's-beard. A good range of woodland birds has been observed in the woods. Shrubland Park is also of considerable importance for invertebrate conservation. It has been described in Natural England's Invertebrate Site Register as an outstanding site for beetles associated with a dead wood habitat. Three Red Data Book (nationally rare) insect species and a number of nationally notable species have been recorded in the park.	TM120351
Mid Suffolk 141	BRAMFORD MEADOWS	"Bramford Meadows are a good example of floodplain grazing marsh (Priority habitat) and comprise a series of low-lying wet meadows in the valley of the River Gipping, crossed and bounded by a network of ditches, typical of grazing marsh. The site also includes an area of wet woodland (Priority habitat) and scattered blocks of ditch and riverside scrub.	TM126468
Mid Suffolk 145	GREAT BLAKENHAM CHURCHYARD	The high water quality of the ditches means that they are important for a diverse aquatic and emergent flora including flowering-rush (scarce in Suffolk and restricted to the fringes of clean watercourses), water-plantain and purple loosestrife. This is also key habitat for Priority mammals including water vole, otter and bats, particularly Daubenton's.	TM118508
Mid Suffolk 151	CUBITTS PIT	A detailed invertebrate survey of the meadows carried out in 1993 showed that the site is also of considerable importance for its invertebrates, with seven species of Orthoptera (grasshoppers and crickets) recorded. The long vegetation and bare mud along ditch edges were found to be of particular importance for this group with significant populations of two bush cricket species recorded that are considered to be scarce in Suffolk. Fourteen species of butterfly have also been recorded here.	TM110483

Mid Suffolk 156	NUT TREE COTTAGE MEADOW	The habitat mosaic on the meadows supports a range of birds including Priority species barn owl, reed bunting and song thrush. The site also supports grass snake, slow-worm and common lizard."	TM102494
Mid Suffolk 166	RNR 165	St Mary's Church is located in the village of Great Blakenham and lies 35 metres south-west of the River Gipping. There is some connectivity via a tree belt between the north-eastern boundary and habitats associated with the river. It is bordered by residential properties and gardens as well as the B113 on the western boundary. Despite its small size and position the churchyard supports a species-rich plant community of neutral grassland and also notable chalky grassland species such as small scabious and fairy flax. The churchyard supports a number of uncommon Suffolk species, for example meadow saxifrage, early forget-me-not and burnet-saxifrage as well as a small population of lesser meadow-rue, a rare plant which has only been recorded from a few sites in Suffolk.	TM13294984 - TM13314983
Mid Suffolk 167	RNR 144	"This County Wildlife Site is a small remnant of a much more extensive area of chalk grassland which was once part of Blood Hill SSSI, now de-notified following use of the area for landfill.	TM12834955 - TM12994957
Mid Suffolk 173	RNR 119	The site which is partially enclosed by dense scrub supports an area of unimproved species rich grassland (biodiversity priority habitat) which reflects the chalky substrate beneath. Typical plants include fairy flax, pyramidal orchid, southern marsh orchid and wild parsnip.	TM 10364896 - TM 10404890
Mid Suffolk 185	COLUMN FIELD UPPER QUARRY	The site is noted for a large population of Roman snail, one of only a few sites in Suffolk where this species has been recorded. The snail has some protection under the Wildlife and Countryside Act.	TM 10355020
Mid Suffolk 31	MILLERS WOOD	White letter hairstreak butterfly has also been recorded on the elm around the perimeter of the site."	TM103468
Mid Suffolk 33	SUFFOLK WATER PARK	"Nut Tree Cottage Meadow is a species-rich grassland (Priority habitat) supporting a flora typical of a chalky boulder clay and is strongly influenced by the fact that the underlying chalk geology is close to the surface. The steep sloping topography of the meadow also reflects the underlying chalk, which creates a 'downland' landscape that is very unusual in Suffolk.	TM123485
Mid Suffolk 69	GREAT BLAKENHAM PIT	The species supported by the grassland include some that are typical of chalk grassland, such as yellow-wort, pyramidal orchid, wild basil and sulphur clover. The grassland provides further habitat opportunities for wildlife, particularly invertebrates such as butterflies. The meadow lies adjacent to another County Wildlife Site of similar grassland and is bordered by thick native hedgerows which add to its structural diversity and connectivity."	TM10674986
Mid Suffolk 70	GREAT WOOD	Tower Mustard. This site is also a Roadside Nature Reserve.	TM114509
Mid Suffolk 99	VALLEY LODGE MEADOW	Chalk flora including Pyramidal orchids. This site is also a Roadside Nature Reserve.	TM103494

## Appendix D Legislation

### European Protected Species

The Ramsar Convention (1971) on Wetlands of International Importance especially as Waterfowl Habitat seeks to promote the conservation and wise use of wetlands, particularly those which support internationally significant numbers of water birds. This is achieved through the designation of Ramsar Sites.

The European Community Council Directive on the Conservation of Wild Birds (79/409/EEC) sets out general rules for the conservation of all naturally occurring wild birds, their nests, eggs and habitats. It requires member states to designate Special Protection Areas (SPAs) for protection of certain species.

The main piece of legislation relating to nature conservation in Great Britain is The Wildlife and Countryside Act 1981 (as amended). This Act is supplemented by provision in The Countryside and Rights of Way (CRoW) Act 2000 and The Natural Environment and Rural Communities Act 2006 (in England and Wales). This act provides varying degrees of protection for the listed species of flora and fauna, including comprehensive protection of wild birds, their nests and eggs.

The Countryside and Rights of Way Act 2000 strengthens the protection given to SSSIs. It revises the procedures for the notification of SSSIs and for the consenting of operations which may damage the special interest of a SSSI. Local authorities have a duty to take steps, consistent with the proper exercise of their functions, to further the conservation and enhancement of SSSIs. The act also strengthens the existing provisions of the Wildlife and Countryside Act 1981 for the enforcement of wildlife legislation, including a new offence of "recklessly" destroying or damaging the habitats of certain protected species.

UK wildlife is also protected under The Conservation (Natural Habitats &c.) Regulations 1994 (which were issued under the European Communities Act 1972), through inclusion on Schedule 2. In 2017, these Regulations, together with subsequent amendments, were consolidated into The Conservation of Habitats and Species Regulations 2017.

The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.



The Hedgerows Regulations 1997 aim to protect important hedgerows in the countryside. They make it illegal to remove most countryside hedges without first notifying the local planning authority, and provide protection for 'important hedgerows'.

County Wildlife Site is a non-statutory designation used to identify high quality wildlife habitats in a county context. Local Authorities have a responsibility as part of their planning function to take account of sites of substantial nature conservation value and to consider them alongside other material planning considerations. The location of County Wildlife Sites will be included in Local Plans and Development Documents.

#### National Planning Policy - National Planning Policy Framework (NPPF)

Section 15 of the National Planning Policy Framework 2021 (NPPF): Conserving and enhancing the natural environment states that 'planning policies and decisions should contribute to and enhance the natural and local environment by ... minimising impacts on and providing net gains for biodiversity.'

Office of The Deputy Prime Minister ("ODPM") Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the planning system.

Paragraph 98 of Circular 06/2005 states that 'the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat'.

#### Implications of legislation and policies

Without this ecological assessment, the potential developer would be unable to demonstrate due diligence in his responsibilities. Furthermore, the local planning authority would not have been provided with sufficient information for a planning decision to be made. This could result in non-determination or refusal of the application.

With legal responsibilities and planning implications, it is essential that any ecological assessment of a potential development site, including the area of this report, must determine the possible presence or absence of any protected species as part of any planning development consideration.

Where mitigation or compensation measures are required to ensure that no significant impacts will result on biodiversity from the development, the proposed measures may be secured through planning conditions or by EPS Mitigation Licences from Natural England.

#### Bats

All bat species in Britain are protected under the Wildlife and Countryside Act 1981 through inclusion on Schedule 5. They are also protected under the Conservation (Natural Habitats &c.) Regulations 1994 (which were issued under the European Communities Act 1972), through inclusion on Schedule 2. On 30<sup>th</sup> November 2017, these Regulations, together with subsequent amendments, were consolidated into the Conservation of Habitats and Species Regulations 2017.

European protected animal species (“EPS”) and their breeding sites or resting places are protected under Regulation 42. It is an offence for anyone to deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs. It is an offence to damage or destroy a breeding or resting place of such an animal. It is also an offence to have in one's possession or control, any live or dead European protected species.

The threshold above which a person will commit the offence of deliberately disturbing a wild animal of a European protected species has been raised. A person will commit an offence only if he deliberately disturbs such animals in a way as to be likely significantly to affect (a) the ability of any significant groups of animals of that species to survive, breed, or rear or nurture their young, or (b) the local distribution of abundance of that species. The existing offences under the Wildlife and Countryside Act (1981) as amended which cover obstruction of places used for shelter or protection (for example, a bat roost), disturbance and sale still apply to European protected species.

This legislation provides defences so that necessary operations may be carried out in places used by bats, provided the appropriate Statutory Nature Conservation Organisation (in England this is Natural England) is notified and allowed a reasonable time to advise on whether the proposed operation should be carried out and, if so, the approach to be used. The UK is a signatory to the Agreement on the Conservation of Bats in Europe, set up under the Bonn Convention. The Fundamental Obligations of Article III of this Agreement require the protection of all bats and their habitats, including the identification and protection from damage or disturbance of important feeding areas for bats.

#### Barn Owls

The Habitats Regulations (1994), as amended, states that a person commits an offence in the case of Barn Owl only if this species is disturbed in the breeding season. This applies equally to all those bird species listed under Schedule 1.

#### Breeding Birds

It is an offence to kill, injure or take any wild bird; take, damage or destroy the nest of any wild bird while that nest is in use or being built (even of “pest” species); take or destroy the eggs of any wild bird.

#### Great Crested Newts

Great crested newts are protected under both English and European law. It is an offence to kill, injure, disturb or take great crested newts or to damage or destroy their places of shelter, whether the animals are present or not.

#### Water Vole

The water vole received limited legal protection in April 1998 through its inclusion in Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) for some offences. Legal protection makes it an offence to:

intentionally kill, injure or take (capture) a water vole;

possess or control a dead or live water vole, or any part of a water vole;  
intentionally or recklessly damage or destroy access to any structure or place which water voles use for shelter or protection or disturb Water Voles while they are using such a place;  
sell, offer for sale or advertise for sale live or dead Water Voles

Water voles, their breeding sites and resting places are protected by law. In most cases, work can be planned to avoid harming water voles. If works cannot avoid disturbing them or damaging their habitats, you may be able to get a licence from Natural England.

#### Otters

Otters are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended) and revised by the Countryside and Rights of Way Act 2004, making it an offence to:

intentionally kill, injure or take an otter;  
possess or control any (live or dead) otter, or any part of or anything derived from an otter;  
intentionally or recklessly damage or destroy or obstruct access to any structure or place used for shelter or protection by an otter;  
intentionally or recklessly disturb an otter while it is occupying a structure or place for that purpose;  
to sell, offer for sale, possess or transport for the purpose of sale any (live or dead) otter or part or derivative of an otter;  
to advertise for buying and selling such things.

Furthermore, otters are included on Schedule 2 of the Conservation (Habitats &c.) Regulations (1994), making it an offence to:

deliberately to capture or kill a wild animal of a European protected species;  
deliberately to disturb any such animal;  
deliberately to take or destroy the eggs of such an animal; or  
damage or destroy a breeding site or resting place of such an animal.

Otters are also listed as a priority species on the UK and Biodiversity Action Plans.

#### White-Clawed Crayfish

This crayfish is listed under Annex II of the habitats directive and areas are designated as Special Areas of Conservation to protect this species. Outside of this a licence is required to capture this species. It is listed as a priority species under the Biodiversity Action Plan and is a Species of Principal Importance under section 41 of the NERC Act 2006.

#### Reptiles

Reptiles such as common lizard, slowworm, grass snake or adder are protected under Section 9 of the Wildlife & Countryside Act (1981) as amended. The legislation makes it illegal to deliberately or recklessly kill or injure

any native reptile. This protection therefore requires that reasonable effort be made to avoid harm to reptiles during developments on land occupied by reptiles.



#### Dormice

Dormice are protected from being killed, injured, captured or disturbed and their resting and breeding places should not be damaged or destroyed.

#### Natural England Licensing - EPS Mitigation Licensing

Licences can be obtained from the Wildlife Management and Licensing Service at Natural England to allow certain activities that would otherwise constitute an offence, for the purposes of development (e.g. destruction of a bat roost, loss of great crested newt aquatic and terrestrial habitat, etc).



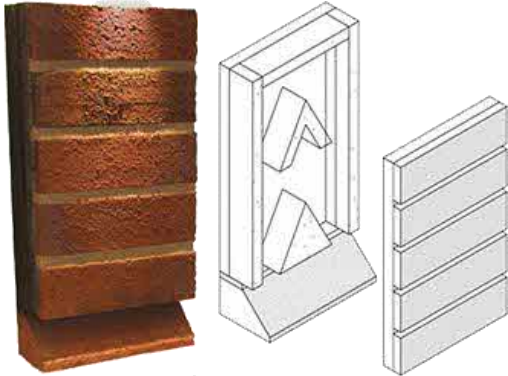



## Appendix E

### Plant species recorded on site

English name	Scientific name
Annual meadow grass	<i>Poa annua</i>
Ash	<i>Fraxinus excelsior</i>
Bramble	<i>Rubus fruticosus</i>
Cleavers	<i>Galium aparine</i>
Cock's-foot	<i>Dactylis glomerata</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping cinquefoil	<i>Potentilla reptans</i>
Daisy	<i>Bellis perennis</i>
Dandelion	<i>Taraxacum officinale</i>
English oak	<i>Quercus robur</i>
Foxgloves	<i>Digitalis purpurea</i>
Hazel	<i>Corylus avellana</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Ivy	<i>Hedera helix</i>
Leyland cypress	<i>Cupressus × leylandii</i>
Nettle	<i>Urtica dioica</i>
Perennial ryegrass	<i>Lolium perenne</i>
Red dead-nettle	<i>Lamium purpureum</i>
Snowdrop	<i>Galanthus sp.</i>
Spear thistle	<i>Cirsium vulgare</i>
White clover	<i>Trifolium repens</i>
Yorkshire fog	<i>Holcus lanatus</i>

## Appendix F Examples of bat and bird boxes

(images sourced from [www.nhbs.com](http://www.nhbs.com), [www.habibat.co.uk](http://www.habibat.co.uk) and [www.manthorpe.co.uk](http://www.manthorpe.co.uk))

<p style="text-align: center;">Integrated bat box Habibat Bat Box</p> 	<p style="text-align: center;">Integrated bat box Bat Block</p> 
<p style="text-align: center;">Standalone bat box 2F Schwegler Bat Box (General purpose)</p> 	<p style="text-align: center;">Standalone bat box 1FF Schwegler Bat Box with built-in wooden rear panel</p> 

**Recommendations for installing bat boxes:**  
(Sourced from Bat Conservation Trust [www.bct.org](http://www.bct.org))

Ideally, several boxes should be put up facing in different directions to provide a range of conditions.

**Locate boxes:**

Where bats are known to feed close to hedges and treelines (some bats use a treeline or hedgerow for navigation, putting boxes near these features may help the bats find the box).

On trees: boxes should be placed on the trunk of a mature tree, where there is a clear flight line/accessible entrance.

On buildings: boxes should be placed as close to the eaves as possible.

As high as possible (ideally, at least 3 to 4m above the ground, where safe installation is possible).

In sunny places, sheltered from strong winds (usually between south-west and south-east).

**Make sure the boxes are secured.**

Boxes can be installed on trees using adjustable ties to avoid damaging the trees. Otherwise, timber screw bolts or nails can be used. Aluminium alloy nails are less likely to damage saws and chipping machinery.

Bats need time to find and explore new homes, and it may be several months or even years before boxes have residents. Once bats find a place they want to live they can return over and over again. Droppings on the landing area, urine stains around the lower parts of the box and chittering noises from inside on warm afternoons and evenings are signs of occupation.

Small bird nesting box  
1B Schwegler Nest Box



Small bird nesting box  
2H Schwegler Robin Box



Integrated swift box  
Swift Block



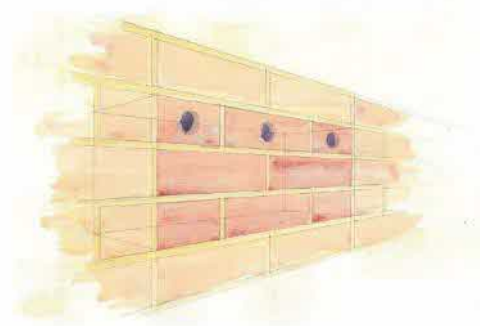
Integrated swift box  
Manthorpe Swift Brick



Integrated sparrow terrace  
1SP Schwegler Sparrow Terrace



Integrated sparrow terrace  
Terraced Sparrow Box



**Recommendations for installing bird boxes:**

(Sourced from British Trust for Ornithology [www.bto.org](http://www.bto.org) and Manthorpe [www.manthorpe.co.uk](http://www.manthorpe.co.uk))

The highest priority when siting a nest box must be to provide a safe and comfortable environment in which birds can nest successfully.

**Tips for putting up a nest box:**

Boxes should be sited 1-3m from the ground, ideally on tree trunks but can be placed on the side of a shed or wall. Avoid areas where foliage obscures the entrance hole.

Don't place boxes too close to another nest box of the same type, as this may promote aggressive behaviour between neighbours.

Shelter your nest box from prevailing wind, rain and strong sunlight. The box should face between north and east, and angled vertically or slightly downwards to prevent rain entering.

Make sure cats cannot get into the box.

Keep nest box away from bird feeders.

Use galvanized or stainless steel screws or nails. If fixing boxes to trees, galvanised wire can be used to tie the box to the trunk or hang it from a branch. Make sure to regularly inspect these fittings (every two or three years) to ensure the box remains securely attached.

**Tips for putting up house sparrow terraces and swift bricks/boxes:**

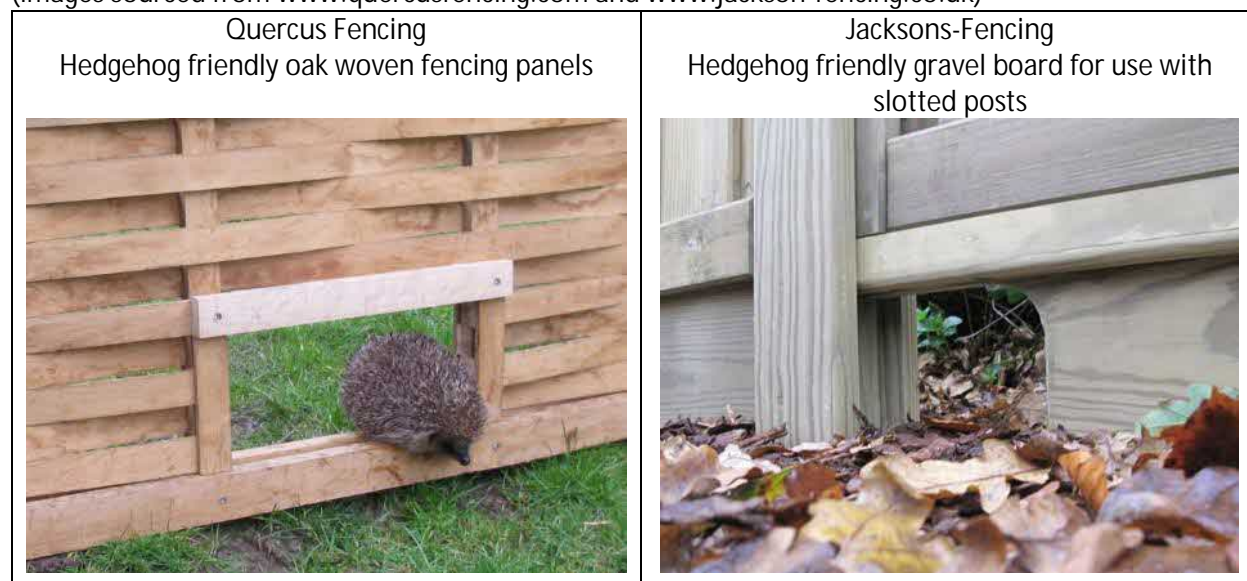
Locate  $\geq 5\text{m}$  high on the gable wall of the property and above the level of the insulation zone.

Where possible, install in locations that are unlikely to receive large amounts of direct sunlight during the hottest times of the day, ideal places include below the overhang of the verge and barge board.

## Appendix G

### Examples of hedgehog friendly fencing

(images sourced from [www.quercusfencing.com](http://www.quercusfencing.com) and [www.jackson-fencing.co.uk](http://www.jackson-fencing.co.uk))



Recommendations for installing hedgehog friendly fencing:  
(Sourced from Hedgehog Street [www.hedgehogstreet.org](http://www.hedgehogstreet.org))

A hedgehog friendly fence should have a gap measuring at least 13cm by 13cm in the gravel board. These gaps allow any hedgehog to pass through but are too small for nearly all pets.

At least one hedgehog friendly fence panel should be located on each side of your garden, to provide unimpeded access.

Almost all fencing materials can be made hedgehog friendly, but may require DIY adaptations. Please note that some concrete gravel boards contain metal rods running along the length of the boards to provide strength and rigidity, and cannot be cut. To overcome this, a gap can be left between the gravel board and post to provide the required gap.



## Appendix H

### Native species suitable for planting and sowing

Plants should be obtained from specialist nurseries and preferably be of local genetic stock.

Key: (f) – fruit and berry species; (e) – evergreen species; (se) semi-evergreen species; (d) – deciduous species

Trees	
Alder (d)	<i>Alnus glutinosa</i>
Apples (f; d)	<i>Malus</i> spp. (local varieties)
Ash (d)	<i>Fraxinus excelsior</i>
Beech (d)	<i>Fagus sylvatica</i>
Bird cherry (f; d)	<i>Prunus padus</i>
Elder (f; d)	<i>Sambucus nigra</i>
Elm (d)	<i>Ulmus procera</i>
Field maple (d)	<i>Acer campestre</i>
Pedunculate oak (d)	<i>Quercus robur</i>
Rowan (f; d)	<i>Sorbus aucuparia</i>
Pears (f; d)	<i>Pyrus</i> spp.
Silver birch (d)	<i>Betula pendula</i>
Small-leaved lime (d)	<i>Tilia cordata</i>
White willow (d)	<i>Salix alba</i>
Wild cherry (f; d)	<i>Prunus avium</i>
Walnut (d)	<i>Juglans regia</i>

Shrubs	
Blackthorn (f; d)	<i>Prunus spinosa</i>
Buckthorn (f; d)	<i>Rhamnus catharticus</i>
Crab apple (f; d)	<i>Malus sylvestris</i>
Dog rose (f; d)	<i>Rosa canina</i>
Dogwood (f; d)	<i>Cornus sanguinea</i>
Field maple (d)	<i>Acer campestre</i>
Guelder-rose (f; d)	<i>Viburnum opulus</i>
Hawthorn (f; d)	<i>Crataegus monogyna</i>
Hazel (d)	<i>Corylus avellana</i>
Holly (e)	<i>Ilex aquifolium</i>
Honeysuckle (f; d)	<i>Lonicera periclymenum</i>
Spindle (f; d)	<i>Euonymus europaeus</i>
Wild privet (f; se)	<i>Ligustrum vulgare</i>
Yew (f; e)	<i>Taxus baccata</i>

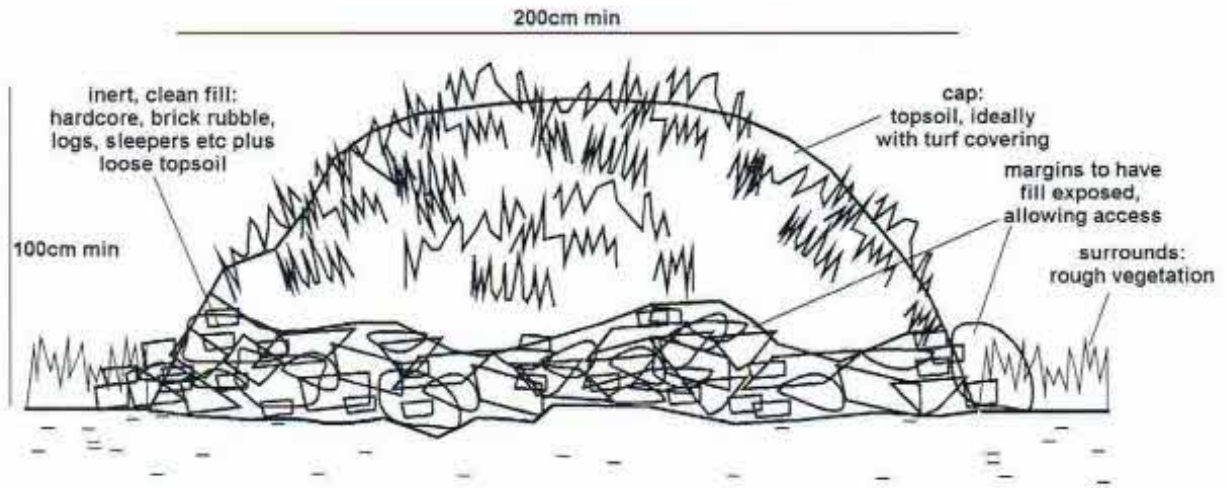
Flowering plants	
Bird's-foot trefoil	<i>Lotus corniculatus</i>
Black knapweed	<i>Centaurea nigra</i>
Common cat's-ear	<i>Hypochoeris radicata</i>
Common sorrel	<i>Rumex acetosa</i>
Common vetch	<i>Vicia sativa</i>
Cowslip	<i>Primula veris</i>
Field scabious	<i>Knautia arvensis</i>
Foxglove	<i>Digitalis purpurea</i>
Lady's bedstraw	<i>Galium verum</i>
Meadow buttercup	<i>Ranunculus acris</i>
Meadow vetchling	<i>Lathyrus pratensis</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Primrose	<i>Primula vulgaris</i>
Red clover	<i>Trifolium pratense</i>
Selfheal	<i>Prunella vulgaris</i>
Sweet violet	<i>Viola odorata</i>
Wild daffodil	<i>Narcissus pseudonarcissus</i>
Yarrow	<i>Achillea millefolium</i>

Grasses	
Common bent	<i>Agrostis capillaris</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Meadow fescue	<i>Festuca pratensis</i>
Red fescue	<i>Festuca rubra</i>
Rough meadow-grass	<i>Poa trivialis</i>
Small timothy	<i>Phleum bertolonii</i>
Smooth meadow-grass	<i>Poa pratensis</i>
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Yellow oat-grass	<i>Trisetum flavescens</i>

## Appendix I Habitat piles

**Figure 3: Suggested hibernaculum design**

This design mimics artificial and natural conditions in which great crested newts have frequently been found over-wintering. Dimensions should not be below 2m length x 1m width x 1m height. The illustrated design would be suitable for locating on an impermeable substrate. On free-draining substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground. Hibernacula should ideally be positioned across a site, both close to and distant from breeding ponds, always in suitable terrestrial habitat and above the flood-line.



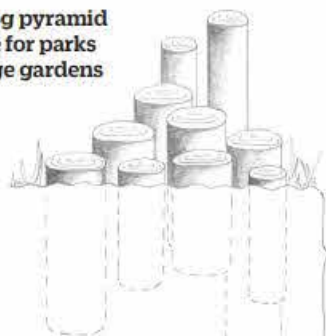
Source: English Nature (2001) Great Crested Newt Mitigation Guidelines, Peterborough.

- ▶ Log pyramids can be built at any time of year
- ▶ Use wood from any broadleaved tree
- ▶ The logs should be at least the thickness of an adults arm
- ▶ Site the logs in partial shade if possible to prevent them drying out
- ▶ Partially bury the logs in the soil so that they don't dry out
- ▶ Allow plants to grow over the log pyramid to retain moisture and provide shade

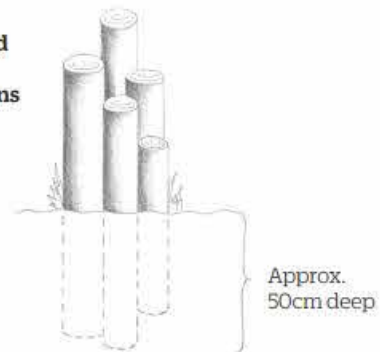
Your log pyramid will also benefit a range of other species including fungi, dead wood invertebrates and the animals that feed on them. It will be a great place for foraging small mammals, basking reptiles and potentially solitary bees.



**Large log pyramid  
suitable for parks  
and large gardens**



**Log pyramid  
suitable for  
small gardens**



Peoples Trust for Endangered Species (2022) Build a log pyramid for stag beetles. London

## Appendix J Bee Bricks



Bee Post



Bee Brick

Recommended bee brick installation  
(Sourced from nhbs, <https://www.nhbs.com>)

Bee bricks will be installed on a south facing sunny spot of an external wall of the residential dwelling, at a minimum height of 1m. No vegetation should be obstructing the holes.  
Bee posts will be positions south facing in a sun exposed spot, with no vegetation covering the fascia.  
The posts must be set in a concrete base at a minimum of 30mm, similar to installing a fencepost.

## Appendix K Proposed plans



B AMENDMENTS FOLLOWING CLIENT MEETING. A AMENDMENTS FOLLOWING CLIENT MEETING. 03/20 MC CW 01/20 MC CW DATE DRAWN CHECK PRELIMINARY	TITLE <b>Proposed Block Plan</b>	DRAWING NO. <b>5482</b>	 <b>WINCER KIEVENAAR</b> Chartered Architects MARKET PLACE HADLEIGH IPSWICH SUFFOLK IP7 5DN T:01473 627392 E:enquiries@wkcarchitects.co.uk	 <b>RIBA</b> Chartered Practice
	PROJECT <b>PROPOSED CONVERSION</b> <b>No.07 The Common, Little Blakenham</b> <b>SUFFOLK IP8 4JX</b> CLIENT <b>Mrs. J. Knott</b>	SCALE <b>1:200</b>		
		DATE <b>Dec-19</b>	DRAWN BY mc	CHECKED BY CW

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