
Preliminary Ecological Appraisal

The Cedars, Helhoughton

for

NKF Planning Consultancy

17 December 2020



Client

NKF Planning Consultancy

Planning authority

North Norfolk District Council
 Council Offices
 Holt Road
 Cromer
 NR27 9EN

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).


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Version	1.0
Date	17 December 2020
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Reviewer	Etienne Swarts B.Compt (Hons), F.Deg.Sc, ACIEEM, Natural England licences (Bat survey level 2, Great crested newt level 2, Hazel dormouse level 1)
<i>Signed disclosure</i> <i>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.</i> <i>Etienne Swarts, ACIEEM</i>	
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SUMMARY

- Greenlight Environmental Consultancy Ltd. has been commissioned to carry out a Preliminary Ecological Appraisal for a proposed development at The Cedars, The Street, Helhoughton, Norfolk, NR21 7BH (grid reference: TF 86771 26276).
- 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 demolition of the existing structures on site, and construction of a new 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 **moderate** ecological value and that there are no significant ecological constraints that would prevent the proposed works.
- 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	One statutory and six non-statutory protected sites within 2km.	No significant impacts on protected sites and their qualifying features.	None required.
Protected habitats and habitats subject to conservation designations	Areas of improved grassland and scrub to be cleared from site. 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.
Bats	Negligible bat roosting potential in buildings on site. Low-moderate bat roosting potential in a number of trees located on site. Moderate value commuting and foraging habitat on site.	Potential disturbance of bat roosts if present in trees. Low scale loss and potential light disturbance of commuting and foraging habitats on site.	<u>Mitigation</u> Lighting schemes should comply with Bat Conservation Trust and CIE 150:2003 guidance. If trees with low bat roosting potential are to be felled, these should be soft felled. If trees with medium bat roosting potential are to be affected by proposed works, further bat surveys should be conducted. <u>Enhancement</u> Installation of one integrated and one standalone bat box on the new dwelling and suitable tree, respectively.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Breeding birds	Nesting habitats for scrub, tree, hedgerow and building nesting birds present on site. No suitable barn owl nesting habitat but foraging habitat present on site.	Low scale loss of nesting habitat on site. Potential disturbance to breeding birds.	<u>Mitigation</u> Works to any scrub, trees, hedgerows, 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 two integrated swift boxes on new dwelling. Installation of two small new bird boxes on suitable trees. Installation of two new owl boxes on site.
Great crested newts	Suitable and unsuitable terrestrial habitats on site. Small garden pond onsite assessed as below average suitability for GCN. No further ponds within 250m No GCN record within 2km.	No impacts predicted.	<u>Precautionary mitigation</u> Cut and maintain vegetation short (maximum height of 10cm) on and around the site until the start of works.
Reptiles	Northern half of the site is unsuitable for reptiles whilst the southern half is suitable with irregularly managed grassland and scrub. No reptile records within 2km.	Reptile presence in small areas of suitable habitat unlikely. Risk of injury/death to individual reptiles if present on site during works.	<u>Mitigation</u> The clearance of vegetation in the southern half of the site will be conducted in a phased manner starting at the southern boundary of the site and working north. The vegetation clearance will be conducted outside of the hibernating season, which for reptiles. The development site will be kept clear of any debris, rubble, or other arisings. Any waste materials will be removed from the development site. Construction materials will be kept off the ground on pallets. Any excavations will not be left open overnight to prevent animals from falling in. If any reptiles are found at any time on site during the development, all works will cease immediately, and a qualified ecologist contacted to move the animal to safety and advise on how to proceed with the remaining works
Badgers	No badger signs on site.	No impacts predicted.	None required.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
	No badger records within 2km.		
Other animals	N/A	Potential harm to animals.	<p><u>Mitigation</u></p> <p>Porous hedgehog friendly fencing should be used within and around the site.</p> <p>Rough sawn planks placed inside any open excavations.</p> <p>Night lighting of the construction site should be minimised as far as possible.</p> <p>Construction materials should be stored off the ground on pallets.</p>

1. METHOD

- 1.1. A walkover of the site was conducted on 10th December 2020 by Lucy Reed – an independent, qualified and experienced ecologist. Survey conditions were as follows: 7°C, 6mph wind, overcast 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 and 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*
 - 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 on the southern edge of the village of Helhoughton, Norfolk with the closest town of Fakenham located approximately 5.5km northeast of the site.
- 2.3. The site is enclosed by a mixture of arable fields to the south and west, rough grassland to the north and the street to the east. The wider surroundings are comprised of a mixture of residential dwellings, large blocks of woodland and arable fields. The river Wensum is located approximately 0.5km east of the site.



Figure 1
Satellite image of site surroundings, site indicated by red line.
Image © Google, date accessed 11/12/20

3. DESCRIPTION OF THE DEVELOPMENT

- 3.1. The proposals are for the demolition of the existing structures, and construction of a new residential dwelling. Please refer to Appendix I for the proposed plans.

4. DESKTOP REVIEW

Protected sites

Statutory

- 4.1. There is one statutory protected site located within 2km – one Sites of Special Scientific Interest (“SSSI”) and Special Conservation Area (“SAC”). Please refer to Appendix C for the full citation.
- i. River Wensum SSSI & SAC, approximately 0.5km east.
- “The Wensum has been selected as one of a national series of rivers of special interest as an example of an enriched, calcareous lowland river. With a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor, it is probably the best whole river of its type in nature conservation terms, although short stretches of other similar rivers may show a slightly greater diversity of species.”*
- 4.2. The proposed development falls outside of all SSSI Impact Risk Zones, being a residential development of under 100 units.

Non-statutory

- 4.3. There are six non-statutory protected sites located within 2km – six County Wildlife Sites (“CWS”). Please refer to Appendix C for the full citations.
- i. Helhoughton Common (south) CWS, approximately 0.4km northeast.
- “This site is an area of grazed, marshy neutral grassland on the western bank of the River Wensum and is subject to flooding. The area ranges in quality from rather poor improved pasture characterised by Yorkshire fog (*Holcus lanatus*), fescues (*Festuca* spp.) and meadow-grass (*Poa* spp.) through to pockets of common-spotted orchids (*Dactylorhiza fuchsii*).”*
- ii. Raynham Park Lake CWS, approximately 0.5km southeast.
- “This site is a large man-made lake surrounded by tall wetland vegetation with parkland. The lake itself is surrounded by tall herbs including abundant reed canary-grass (*Phalaris arundinacea*), yellow iris (*Iris pseudacorus*), great willowherb (*Epilobium hirsutum*), hemp-agrimony (*Eupatorium cannabinum*) and less frequently lesser pond-sedge (*Carex acutiformis*),*

selfheal (Prunella vulgaris), silverweed (Potentilla anserina) and gipsywort (Lycopus europaeus)."

- iii. Helhoughton Common (East) CWS, approximately 0.9km northeast.

"This site is a birch (Betula spp.) dominated broad-leaved semi-natural woodland with some evidence of past coppice. A disused railway line crosses the site. The west of the site is dominated by open, but encroaching silver birches (Betula pendula) with occasional oak (Quercus robur) and scattered gorse (Ulex europaeus)."

- iv. Helhoughton Common (North) CWS, approximately 0.9km north.

"This is a large complex site comprising broad-leaved semi-natural high forest, which is wet in places, together with tall fen and marshy grassland areas. The majority of the site is dominated by mature silver birches (Betula pendula) forming a close canopy."

- v. Wicks Wood CWS, approximately 1.5km south.

"This site is a broad-leaved semi-natural coppice with standards woodland. The site is well managed through coppicing activity. Standards are of variable ages and the ground flora shows evidence of disturbance. It is however, obvious that this is a site of interest with a diverse ground flora."

- vi. Tatterford Common CWS, approximately 1.7km northeast.

"This site is an area of tall herb vegetation adjacent to the River Tat, together with woodland. To the east is mixed emergent vegetation with scattered scrub."

Protected habitats and habitats subject to conservation designations

- 4.4. Priority Habitats, as listed under the NERC Act 2006 Section 41 Habitats of Principal Importance found on site include: Hedgerows.
- 4.5. Other Priority Habitats to occur within 2km (identified using MAGIC – managed by Natural England), include Coastal and Floodplain Grazing Marsh, Lowland Heathland, Lowland Fens, Lowland Meadows, Lowland Calcareous Grassland, Deciduous Woodland, and Woodpasture and Parkland BAP Priority Habitat. The closest of which, is Deciduous Woodland located approximately 200m southeast of the site.

Protected species

- 4.6. The biodiversity data search within 2km of the site indicated 447 records from a number of species.

4.7. Records of note within 2km and relevant to the proposed development works are:

- 19 barn owl *Tyto alba* records, with the most recent from 2015.
- 7 swift *Apus apus* records, with the most recent from 2013.
- 2 otter *Lutra lutra* records, with the most recent from 2014.
- 6 water vole *Arvicola amphibius* records, with the most recent from 2016.
- 5 hedgehog *Erinaceus europaeus* records, with the most recent from 2015.
- 210 bat records, with the most recent from 2018, including common pipistrelles *Pipistrellus pipistrellus*, soprano pipistrelles *Pipistrellus pygmaeus*, brown long-eared bats *Plecotus auritus*, serotines *Eptesicus serotinus*, noctules *Nyctalus noctula*, Daubenton's *Myotis daubentonii*, Natterer's *Myotis nattereri*, barbastelles *Barbastella barbastellus*, Whiskered/Brandt's bat *Myotis mystacinus/brandtii* and other unidentified bat species.

Protected species licences

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

- Bats (case reference: 2016-25090-EPS-MIT-1) from 2017, approximately 175m northwest. Species on the licence include: common pipistrelle, Natterer's bat and Whiskered bat.

5. FIELD STUDY

Habitats

- 5.1. The habitats on the site are of **moderate** ecological value, being a mixture of improved grassland, scattered trees, scrub and hedgerows.
- 5.2. Figure 2 provides a phase 1 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.

Improved grassland (phase 1 habitat classification B4)

- 5.3. The site is comprised predominately of improved grassland. The northern half of the site is regularly managed as lawn whilst the southern half of the site is managed irregularly with a high herbaceous content. Species present include: perennial rye grass *Lolium perenne*, cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, cow parsley *Anthriscus sylvestris*, hogweed *Heracleum sphondylium*, ground ivy *Glechoma hederacea*, creeping thistle *Cirsium arvense*, teasel *Dipsacus fullonum*, cleavers *Gallium aparine*, common nettle *Urtica dioica*, cranesbill sp. *Geranium sp.*, common vetch *Vicia sativa*, rosebay willowherb *Chamerion angustifolium*, pampas grass *Cortaderia sp.*, yarrow *Achillea millefolium* and apple mint *Mentha suaveolens*.

Scrub (phase 1 habitat classification A2)

- 5.4. The site features some areas of scrub in the southern section of the site dominated by bramble *Rubus fruticosus*. Other species present include dog rose *Rosa canina*, hawthorn *Crataegus monogyna* and spindle *Euonymus europaeus*. An area of scrub to the west of the site also contains some introduced shrub species.

Scattered trees (phase 1 habitat classification A3)

- 5.5. The site contains several scattered trees including an area of predominately hazel *Corylus avellana* coppice in the centre of the site. Species include: silver birch *Betula pendula*, ash *Fraxinus excelsior*, oak *Quercus robur*, goats willow *Salix caprea*, yew *Taxus baccata*, sweet chestnut *Castanea sativa*, magnolia sp. *Magnolia sp.*, and Norway spruce *Picea abies*.

Intact, hedgerow with trees (phase 1 habitat classification J2.3)

- 5.6. The site features several intact, hedgerows with trees around the site boundaries. Species include: ash, holly *Ilex aquifolium*, hawthorn, oak, dog rose, cotoneaster sp., *Cotoneaster sp.*, cherry laurel *Prunus laurocerasus* and leylandii *Cupressus x leylandii*.
- 5.7. These hedgerows are classified as Priority Habitats under the NERC Act 2006 Section 41 Habitats of Principal Importance, but do not qualify as “important” under The Hedgerow Regulations 1997, lacking the required number of native woody species per 30m length.

Arable (phase 1 habitat classification J1.1)

- 5.8. The site contains a small vegetable plot to the northeast and another smaller plot to the east of the polytunnel.

Pond (phase 1 habitat classification G1)

- 5.9. There is a small, lined pond in the centre of the northern half of the site. Please refer to the great crested newt section detailed below for further information.

Buildings (phase 1 habitat classification J3.6)

- 5.10. There are several buildings on site which are a mixture of constructions and uses. Please refer to the bat section detailed below for further information.

Hardstanding (phase 1 habitat classification J5)

- 5.11. The site features an area of hardstanding to the northeast of the site which acts as a driveway for the bungalow on site.

Target note number	Comments
1	Area of hazel coppice and scattered trees.
2	Mature oak with low bat roosting potential.
3	Group of semi-mature ash and oak along the boundary with low bat roosting potential.
4	Semi-mature ash with moderate bat roosting potential.
5	Semi-mature ash with moderate bat roosting potential.

Table 1, phase 1 target notes.



Figure 2
Phase 1 habitats on site.
Image © Google, date accessed 15/12/20



Photo 1, looking southeast across the front garden of the bungalow on site comprised of an area of improved grassland managed as lawn.



Photo 2, looking west across the northern half of the site comprised of improved grassland managed as lawn.



Photo 3, looking southwest across the southern half of the site which is less regularly managed improved grassland with a high herbaceous content.



Photo 4, looking west along the southern boundary hedgerow with trees (TN3).



Photo 5, looking north along the hedgerow on the eastern boundary with some areas of scrub to the west of the hedge.



Photo 6, area of scrub in the southwestern corner of the site.

Bats

5.12. There are four buildings located on site, as indicated in Figure 3 and photos 7-14.

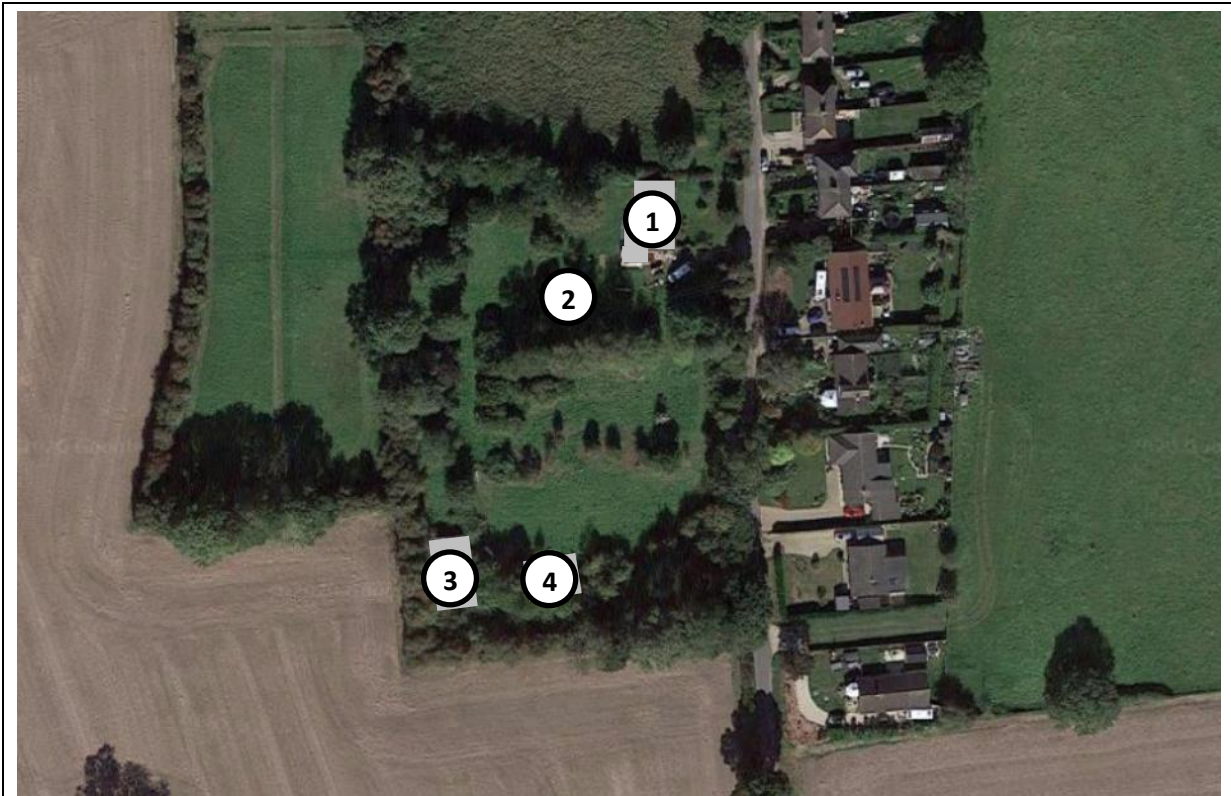


Figure 3

Location and numbering of buildings located on site.

Image © Google, date accessed 15/12/20

The bungalow - building one

- 5.13. The 20th century bungalow is of brick construction with a pitched, concrete tile roof. There is a small brick flat-roofed extension that wraps around the west and southern aspects. There are PVC fascias and soffit boxes which are tightly fitted with no gaps between the PVC and wall.
- 5.14. There are three skylight windows on the eastern aspect of the roof and two dormer windows on the western aspect with bitumen felt flat roofs. The exterior of the bungalow was in a good state of repair with no gaps or cracks in brickwork or tiles.
- 5.15. Internally, the bungalow has been converted to feature an upper level useable as living space. There are small loft spaces used for storage along the eaves on both sides of the building which are less than a metre wide. The roof is lined with non-bitumen coated roofing membrane (NBCRM) with modern sawn timbers.
- 5.16. No signs of bats were observed internally or externally, and no suitable roosting opportunities were identified.

5.17. The bungalow is assessed as **negligible** roost suitability for bats due to its lack of roosting features and signs of bats.



Photo 7, east and north aspects of the bungalow, looking southwest.



Photo 8, west and south aspects of the bungalow, looking northeast.



Photo 9, example of the small loft voids along the eaves of the upper level in the bungalow.

Buildings 2-4

5.18. The buildings vary in construction and are comprised of:

- Building two – small poly-tunnel within the garden area of the bungalow.
- Building three – breezeblock and timber framed construction with a corrugated asbestos roof. The southern half of the building does not feature a roof and is heavily vegetated with scrub. The building is light and draughty.
- Building four – a timber framed, corrugated metal sheeting and timber construction. The building is light and draughty.

5.19. There were no signs of use by bats on the building exteriors or interiors and the structures provide unsuitable roost environments, with no suitable cavities for roosting bats. The buildings are assessed as **negligible** roost suitability for bats.



Photo 10, building two, a small poly-tunnel in the garden area of the bungalow.



Photo 11, looking south towards the northern aspect of building three.



Photo 12, building three, a breezeblock and corrugated asbestos sheeting construction. Looking south towards the open end of the building which is heavily vegetated with scrub.



Photo 13, looking southeast towards building four.



Photo 14, internal view of building four.

Trees

- 5.20. The trees around the site boundary were assessed for bat roosting potential.
- 5.21. A number of trees on or adjacent to the site were assessed as having **low** to **moderate** roost suitability for bats based on their location, age and suitable features (Table 2, Figure 3).
- 5.22. The remaining trees are assessed as **negligible** bat roosting potential, due to their age and/or lack of features.

Tree No.	Tree species	Bat roosting potential	Potential roosting features
1	English Oak	Low	Ivy cover.
2	Group of ash and English oak along the southern boundary	Low	Ivy cover.
3	Ash	Moderate	Ivy cover and small cavities/splits.
4	Ash	Moderate	Ivy cover and small cavities/splits.

Table 2, trees with bat roosting potential.



Photo 15, tree one, mature English oak with ivy cover (TN2).



Photo 16, group of semi-mature ash and oaks along the southern boundary with ivy cover (TN3).



Photo 17, ash on western boundary with ivy cover and small cavities/splits (TN4).



Photo 18, ash on western boundary with ivy cover and small cavities/splits (TN5).

Foraging and commuting links

- 5.23. The landscape immediately adjacent to the site is considered of **low** to **moderate** value for foraging and commuting bats, with linked gardens, hedgerows and treelines providing links to the wider landscape.
- 5.24. The site itself provides **moderate** value foraging habitat for bats along the boundary hedgerows, and over scattered trees, with bats mainly using nearby woodlands and river corridor for foraging.

Birds

- 5.25. 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.
- 5.26. The following bird species were observed during the site visit:

Amber listed:

Dunnock

*Prunella modularis****Green listed:***

Blackbird

Turdus merula

Blue tit

Cyanistes caeruleus

Goldfinch

Carduelis carduelis

Great tit

Parus major

Magpie

Pica pica

Robin

Erithacus rubecula

Woodpigeon

Columba palumbus

Wren

Troglodytes troglodytes

- 5.27. The site provides suitable nesting habitats for scrub, hedgerow, tree and building nesting species. There are several small wooden bird boxes erected around the site on the bungalow and on trees within the northern half of the site.
- 5.28. The site provides potential breeding habitat for the following Amber listed species: dunnock *Prunella modularis*.
- 5.29. No signs of barn owl were found on the site, but foraging habitat is present over the southern half of the site and over the rough grassland adjacent to the north.

Great crested newts

- 5.30. There is one pond within the survey site and no 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).
- 5.31. The terrestrial habitats on the site are considered a mixture of suitable (irregularly managed improved grassland, scrub and hedgerows) and unsuitable for GCN (regularly managed improved grassland).
- 5.32. Terrestrial habitats adjacent the site include a mixture of unsuitable (arable fields and residential dwellings with associated gardens and hardstanding) and suitable (rough grassland) GCN foraging, commuting and hibernating habitats.
- 5.33. Pond 1 was assessed as **below average** suitability for GCN (Table 3).

Pond	1
Geographic location	Zone A
	1.00
Pond surface area (m ²)	<50m ²
	0.05
Desiccation rate	Sometimes
	0.50
Water quality/invert density	Moderate
	0.67
Shoreline shade (%)	0%
	1.00
Waterfowl impacts	Absent
	1.00
Fish impacts	Absent
	1.00
Ponds within 1km	12
	0.99
Terrestrial habitat quality	Moderate
	0.67
Macrophyte cover (%)	10%
	0.40
HSI Score	Below average
	0.58

Table 3, HSI score for ponds within 250m of the proposed site.



Photo 18, pond one, small, lined garden pond in the centre of the northern half of the site.

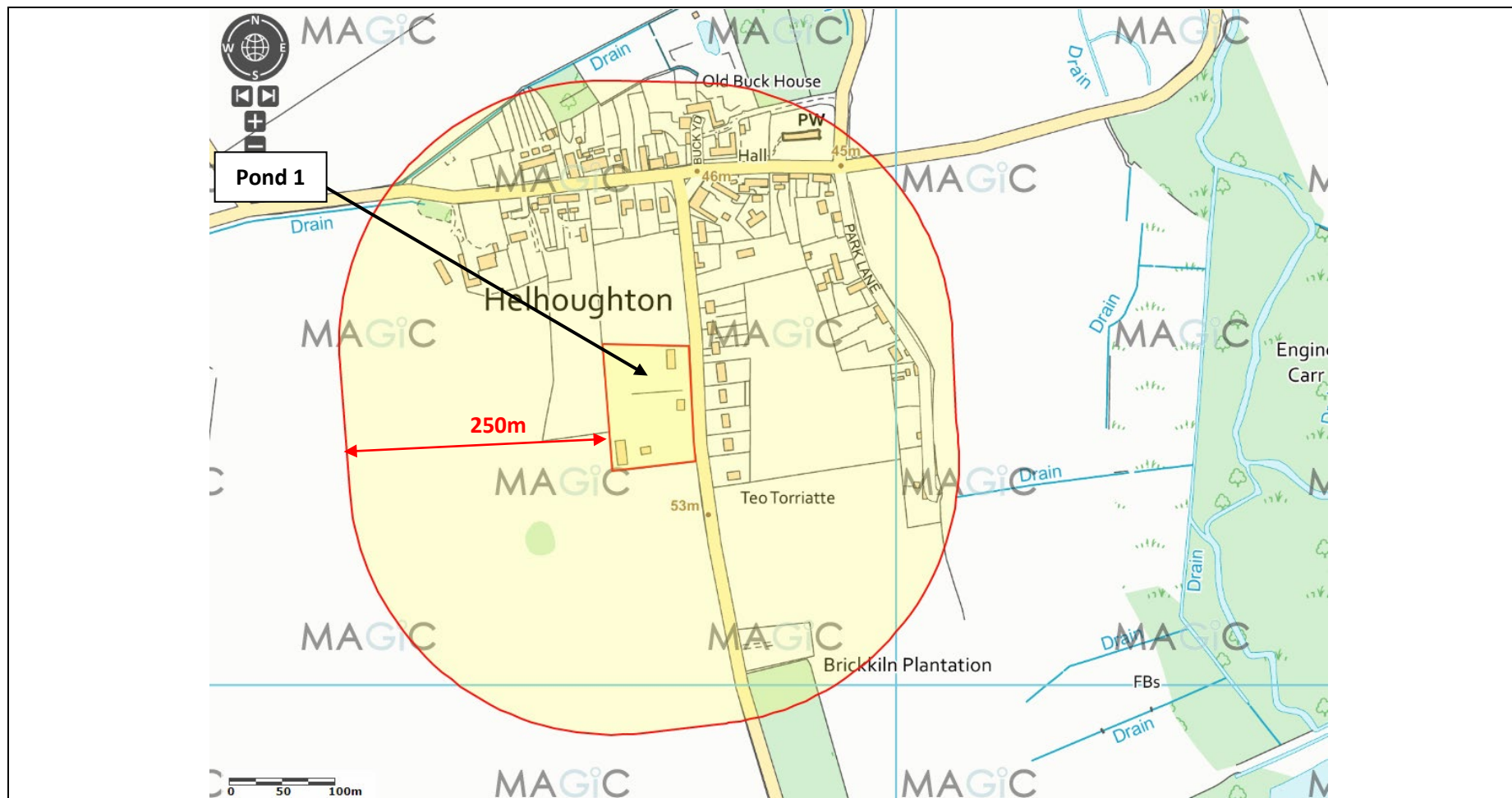


Figure 4
Ponds within 250m of the proposed site.
Image © MAGiC, date accessed 15/12/20

Reptiles

- 5.34. The habitats on the site are considered a mixture of suitable for reptiles (irregularly managed improved grassland, scrub and hedgerows) and unsuitable (regularly managed improved grassland and buildings).
- 5.35. Habitats located on the site boundaries including the base of the hedgerows which could be used as commuting habitats by reptiles if they were present in the area.
- 5.36. Terrestrial habitats adjacent the site include a mixture of unsuitable (arable fields and residential dwellings with associated gardens and hardstanding) and suitable (rough grassland and hedgerows) reptiles foraging, commuting and hibernating habitats.

Badgers

- 5.37. No signs of badger presence were found on or near the site, although the habitats on site are considered suitable for badger foraging and commuting.
- 5.38. No badger setts or suitable locations were identified on or near the site.
- 5.39. Habitats within the local vicinity include arable fields, hedgerows, treelines and deciduous woodland, providing suitable habitats for badger setts, foraging and commuting.

6. DISCUSSION AND CONCLUSIONS

Protected sites

- 6.1. The development footprint falls outside all identified protected sites (statutory and non-statutory). There is one statutory protected site and six non-statutory protected sites located within 2km of the site.
- The closest statutory protected site (River Wensum SSSI & SAC), is located approximately 0.5km east and designated for its calcareous lowland river.
 - The closest non-statutory protected site (Helhoughton Common south CWS), is located approximately 0.4km northeast of the site and designated for its marshy neutral grassland.
- 6.2. The proposed development falls outside of any SSSI Impact Risk Zones relating to residential developments under 100 units.
- 6.3. The proposed development is expected to have no effects on statutory or non-statutory protected sites or their qualifying features, owing to its relatively small scale, distance to protected sites and limited predicted impacts beyond the area of works.

Habitats

- 6.4. The proposed works will require the demolition of buildings on site and clearance of vegetated habitats on site including an area of improved grassland and scrub. There are no proposals to remove any trees or hedgerows as part of the plans. No priority habitats will be affected by the proposed development.
- 6.5. As a precautionary measure, the following mitigation is recommended 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). A soft landscaping scheme has been proposed (see Appendix J) which includes gapping up the existing hedgerows, new tree, and hedgerow planting.
 - ii. Hedgerows on the site boundaries should be retained where possible.
 - iii. 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.

Bats

- 6.6. The proposed works are expected to result in a low scale loss of potential roosting, foraging and commuting habitats for bats through the demolition of all the buildings on site, clearance of vegetation and through increased noise and light levels.
- 6.7. The following mitigation is recommended to avoid impacts on bats from the proposed works:
- i. If the trees identified as having low bat roosting potential are to be felled as part of the works, these should be soft felled with cut segments remaining on the ground for a period of 24 hours before being cleared from the site.
 - ii. If trees identified as having moderate bat roosting potential are to be impacted by the proposed works, further survey will be required.
 - iii. A soft roof strip and demolition of the bungalow walls should be undertaken with special care. If any bats are found, work should cease immediately, and a licenced bat worker contacted to remove any bats to safety and advise on the appropriate mitigation.
 - iv. Hedgerows on the site boundaries should be retained where possible.
 - v. Lighting schemes should follow guidance from the Bat Conservation Trust and CIE 150:2003. Warm-white (long wavelength) lights with UV filters should be fitted as close to the ground as possible. Lighting units should be angled below 70° and equipped with movement sensors, baffles, hoods, louvres and horizontal cut off units at 90°.
- 6.8. 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 (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 traditional type 1F bitumen is used.
- 6.9. As enhancements, we recommend the installation of:
- i. One integrated bat box installed on the new dwelling (Schwegler 1FR Bat Tube – Appendix F).
 - ii. One standalone bat box installed on a suitable tree on site (Schwegler 1FF Bat Box with built-in wooden rear panel – Appendix F).
- 6.10. 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

- 6.11. The proposed works are expected to result in a low scale loss of bird nesting habitat through the demolition of all the buildings and clearance of vegetation, including areas of scrub.
- 6.12. Any works affecting bird nesting habitat such as management of scrub, hedgerows, 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, should 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 should be maintained until the young have fledged.
- 6.13. As enhancements, we recommend the installation of:
- i. Two integrated swift boxes installed on the new dwelling (Schwegler Brick Nest Box Type 25 – Appendix F).
 - ii. Two small new bird boxes (Schwegler 1B or 2H Nest Box – Appendix F) to be installed on suitable trees on site and the existing bird boxes should be retained where possible.
 - iii. It is proposed in the landscaping plan (see Appendix J) that two new owl boxes are installed. It is recommended that one tawny owl box is installed as marked on the plan, the other barn owl box should be installed on a suitable tree on one of the boundaries (see appendix F for recommended boxes).
- 6.14. 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 2019.

Great crested newts

- 6.15. The proposed works are expected to result in a low scale loss of terrestrial habitats with aquatic habitats unaffected.
- 6.16. The pond on site is a small, lined garden pond which is assessed as **below average** suitability for GCN and there are no other ponds within 250m of the site.
- 6.17. GCN are most likely to use suitable terrestrial habitat within only 250m of a breeding pond (English Nature, 2001) and we consider it highly unlikely that GCN would be present on site.
- 6.18. As a precautionary measure, the following mitigation is recommended to avoid impacts on GCN from the proposed works:

- i. Vegetation on site should be cut and maintained short (maximum height of 10cm) until the start of works, to discourage animals from using these areas.
- 6.19. After these precautionary mitigation measures, we predict no impact on GCN as a result of the development plans, and no further surveys are necessary.

Reptiles

- 6.20. The proposed works are expected to result in a low scale loss of terrestrial habitats, through the clearance of a small area of improved grassland which is irregularly managed and scrub for building works. This involves a risk of injuring or killing individual reptiles potentially present within the site.
- 6.21. Although suitable habitat is present on site, they are in small quantities (<0.5ha) with the northern half of the site considered unsuitable for reptiles due to being regularly managed as lawn. We consider it unlikely that there would be a population of reptiles within the southern half of the site and therefore the following mitigation is recommended to avoid injury or killing individual reptiles potentially present within the site:
- ii. The clearance of vegetation in the southern half of the site (improved grassland and scrub) will be conducted in a phased manner starting at the southern boundary of the site and working north. The vegetation will be strimmed to a height of 10cm from two weeks before groundworks proceed to discourage animals from the main areas of works before and during construction.
 - iii. The vegetation clearance will be conducted outside of the hibernating season, which for reptiles generally lasts from the end of October to March. This is to ensure any animals present on site can escape to a safe location outside of the working area.
 - iv. The development site will be kept clear of any debris, rubble, or other arisings.
 - v. Any waste materials, such as green waste, rubble or other debris resulting from ground clearance will be removed from the development site; it will be taken off-site at the earliest opportunity for appropriate disposal (i.e., daily).
 - vi. Construction materials will be kept off the ground on pallets to prevent reptiles from potentially using them as refuges.
 - vii. Any excavations will not be left open overnight to prevent animals from falling in. Where they are to be left open for any reason, the excavations will be checked for sheltering amphibians or reptiles before works re-commence. Open excavations will incorporate 'ramps' (such as wooden boards) at either end to allow amphibians or reptiles and small mammals falling into them to escape.

viii. If any reptiles are found at any time on site during the development, all works will cease immediately, and a qualified ecologist contacted to move the animal to safety and advise on how to proceed with the remaining works

6.22. After these mitigation measures, we predict no impact on reptiles as a result of the development plans, and no further surveys are necessary.

Badgers

6.23. No impacts are expected on badger setts from the proposed development and no mitigation is required.

Other animals

6.24. 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, we recommend that any fencing installed is porous and provides access openings for hedgehogs (see Appendix G for examples).

6.25. General mitigation to protect wildlife during the construction period are as follows:

- Any excavations should have a rough sawn plank placed inside to act as a ramp to allow any animals that have fallen in to escape. The excavations should be checked each morning works are scheduled for, to remove any animals trapped.
- Lighting of the construction site at night should be minimised as far as practicable, to reduce the risk of possible disruption to nocturnal animals such as bats and badgers.
- Construction materials should be stored off the ground on pallets, to prevent providing shelter for animals and subsequent harm when materials are moved.

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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 Norfolk Biodiversity Information Service (“NBIS”).

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 Handbook for Phase 1 habitat survey (JNCC, 2010). 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(s) 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 4.

Indices	Name	Description
SI1	Geographic Location	Lowland England or upland England, Scotland and Wales
SI2	Pond area	To the nearest 50m ²
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 4, 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.

Badgers

An inspection of all habitats with the potential to support badger *Meles meles* sett construction and foraging activities on the application site was undertaken. Any incidental observations of badger signs were also recorded. The survey comprised searching for evidence of badger activity in the form of setts, droppings, pathways, snuffle holes, hair and footprints.

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.

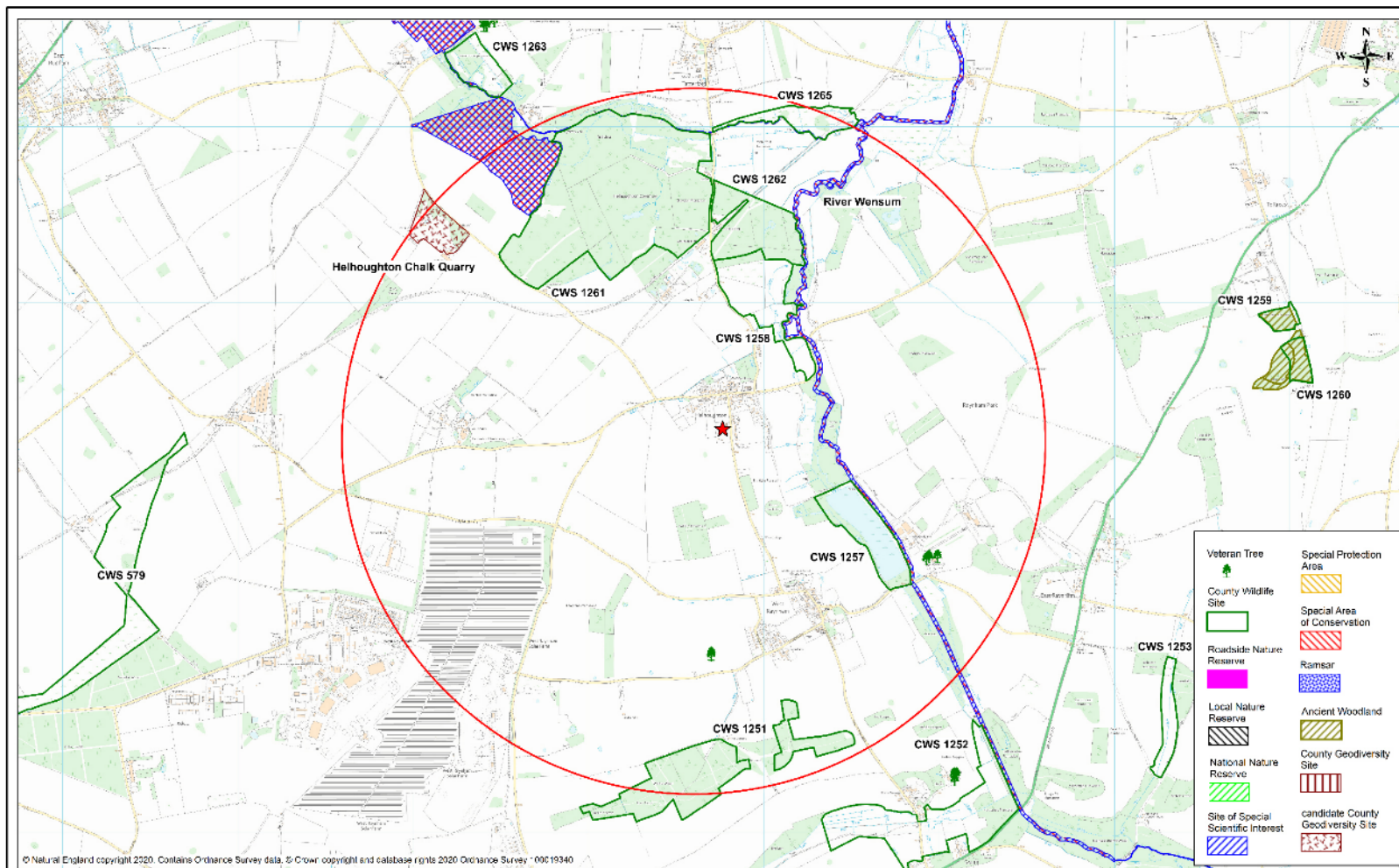
Other protected species

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 2km



2km Data Search Around TF86764 26289, Helhoughton

for Greenlight Environmental Consultancy

Scale 1:20000

Compiled by L. Oddy on 8 December 2020



Norfolk Biodiversity Information Service
County Hall
Martineau Lane
Norwich NR1 2SG

Tel: 01603 224458 Fax: 01603 223219

Appendix C

Protected sites citations

Date of Notification: 4 February 1993

COUNTY: Norfolk

SITE NAME: RIVER WENSUM

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981, section 17 of the Water Resources Act 1991, Section 4 of the Water Industry Act 1991 and Section 13 of the Land Drainage Act 1991.

National Rivers Authority Region: Anglian

International Drainage Board: River Wensum

Water Company: Anglian Water Plc

Local Planning Authorities: North Norfolk District Council, Norfolk County Council, Kings Lynn & West Norfolk District Council, South Norfolk District Council, Breckland District Council, Broadland District Council

National Grid Reference: TF 942246 to TG 250078

Length of River SSSI: Approx 71km

Area: 393.31 (ha) 971.9 (ac)

Ordnance Survey Sheet 1:50,000: 132 133 134

1:10,000: TF 82 SE NE NW, TF 93

SE, TF 92 SE NE NW, TF

83 SE, TG 01 NE NW, TG

02 SW, TG 11 SE SW NW

Date of Notification (under 1981 Act): 1993

Other Information:

New site.

Description and Reasons for Notification:

Key features

The Wensum has been selected as one of a national series of rivers of special interest as an example of an enriched, calcareous lowland river. With a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor, it is probably the best whole river of its type in nature conservation terms, although short stretches of other similar rivers may show a slightly greater diversity of species.

The upper reaches are fed by springs that rise from the chalk and by run-off from calcareous soils rich in plant nutrients. This gives rise to dense beds of submerged and emergent vegetation characteristic of a chalk stream. Lower down, the chalk is overlain with boulder clay and river gravels, resulting in aquatic plant communities more typical of a slow-flowing river on mixed substrate. Diversity of plant species is further enhanced by mills and weirs; upstream the river slows to produce characteristic deep water plant communities, whilst below the barriers they are replaced by species tolerant of swirling and turbulent water.

Unusually for a lowland river in England, much of the adjacent land is still traditionally managed for hay crops and by grazing, giving a wide spectrum of grassland habitats some of which are seasonally inundated. The mosaic of meadow and marsh habitats, including one of the most extensive reedbeds in the country outside the Broads, provide niches for a wide variety of specialised plants and animals.

The River itself supports an abundant and diverse invertebrate fauna including the native freshwater crayfish *Austropotamobius pallipes* as well as a good mixed fishery. Brown trout *Salmo trutta fario* form the major component of the fish community of the upper

Wensum, whilst the middle and lower reaches are dominated by chub *Leuciscus cephalus*, pike *Esox lucius*, eel *Anguilla anguilla* and barbel *Barbus barbus*. Kingfisher *Alcedo atthis* and little grebe *Tachybaptus ruficollis* breed along the River, whilst the adjacent wetlands have good populations of reed warblers *Acrocephalus scirpaceus*, sedge warblers *Acrocephalus schoenobaenus* and barn owls *Tyto alba*.

Flora

In the upper reaches on gravel substrates lesser water-parsnip *Berula erecta* and the brook water-crowfoot *Ranunculus penicillatus* form a large component of the flora. Where silt has been deposited, spiked water milfoil *Myriophyllum spicatum*, blue water-speedwell *Veronica anagalis-aquatica*, opposite leaved pondweed *Groenlandia densa*, willow moss *Fontinalis antipyretica* and the nationally rare short-leaved starwort *Callitriche truncata* occur.

The middle and lower stretches of the river are characterised by rich lowland plant communities. The dominants are yellow water-lily *Nuphar lutea*, flowering rush *Butomus umbellatus*, fennel pondweed *Potamogeton pectinatus*, perfoliate pondweed *Potamogeton perfoliatus*, arrowhead *Sagittaria sagittifolia* and unbranched bur-reed *Sparganium erectum*. Variations in the aquatic plant community reflect the alternation of fast-flowing shallows with deep slow-moving water. Other species with widespread distribution along the Wensum include rigid hornwort *Ceratophyllum demersum*, spiked water-milfoil *Myriophyllum spicatum*, fan-leaved water-crowfoot *Ranunculus circinatus*, branched bur-reed *Sparganium erectum*, common club-rush *Scirpus lacustris*, horned pondweed *Zannichellia palustris* and the nationally scarce river water-dropwort *Oenanthe fluviatilis*.

The marginal and bankside communities are typical of lowland rivers. Often there are dense and continuous stands of reeds or sedges. Reed sweet-grass *Glyceria maxima* is dominant in the lower reaches. Elsewhere stands of reed canary-grass *Phalaris arundinacea*, greater pond-sedge *Carex riparia*, reedmace *Typha latifolia* and common reed *Phragmites australis* are widespread. Where edges are not dominated by tall emergents, straggling or low-growing herbs such as fool's water-cress *Apium nodiflorum*, water-mint *Mentha aquatica*, water forget-me-not *Myosotis scorpioides* and brooklime *Veronica becaabunga* occur.

Of the semi-natural habitats associated with the River, the most frequently occurring are acidic or neutral unimproved wet grasslands. The flora of these grasslands is typified at Helhoughton and Turf Common by bogbean *Menyanthes trifoliata*, marsh marigold *Caltha palustris*, yellow rattle *Rhinanthus minor*, ragged robin *Lychnis flos-cuculi*, southern marsh orchid *Dactylorhiza praetermissa*, common spotted orchid *Dactylorhiza fuchsii*, water mint *Mentha aquatica* and yellow iris *Iris pseudacorus*.

Elsewhere the land is seasonally inundated so that grazing is restricted; extensive areas of reedbed and tall mixed fen communities have developed which provide valuable breeding and hunting grounds for birds such as the barn owl *Tyto alba* and hen harrier *Circus cyaneus*. Examples include Guist Common which is reed dominated; Goggs Mill Reserve near Fakenham which has a mixed fen community with species such as meadowsweet *Filipendula ulmaria*, angelica *Angelica sylvestris* and meadow rue *Thalictrum flavum*, and Sculthorpe Moor, which although gradually being invaded by willow *Salix* spp. scrub has a fen community of saw sedge *Cladium mariscus* and black bog-rush *Schoenus nigricans*. Although there are several areas of alder swamp interspersed with the above communities, Guist Carr forms the main example of wet woodland within the SSSI.

All of the habitats within the SSSI are intrinsically linked to and dependent on the River for their continued existence. Appropriately, in times of drought, these adjacent wetlands have a vital role in buffering the river against low flows; in wetter periods they absorb river flood waters and become swamp-like in nature.

Two tributaries have been included in the SSSI, the Tat and the Langor Drain. They are both major flow contributors to the main river; historically, the Tat may have been the

original Wensum. The Langor valley comprises an extensive area of semi-natural habitat which is dominated by fen vegetation. The specific composition ranges from almost exclusively reed to a mixture of meadowsweet and sedge species. Parts of Little Ryburgh Common are grazed, having bittersweet *Solanum dulcamara*, branched bur-reed *Sparganium erectum*, water cress *Rorippa nasturtium-aquaticum*, greater tussock sedge *Carex paniculata*, lesser water parsnip *Berula erecta*, water mint *Mentha aquatica*, and marsh marigold *Caltha palustris* as elements in their flora. The vegetation of the drier areas of Little Ryburgh Common includes bracken *Pteridium aquilinum*, honeysuckle *Lonicera periclymenum*, field scabious *Knautia arvensis*, harebell *Campanula rotundifolia* and soft rush *Juncus effusus*.

Invertebrates

The Wensum has an abundant and diverse mollusc fauna which includes the nationally rare, small snail *Vertigo moulinsiana*, which is associated with aquatic vegetation at the river edge. Two other aquatic molluscs which occur, *Valvata piscinalis* and *Gyraulus albus*, have a localised distribution in England. Water beetles are well represented; *Brychnus elevatus*, of localised distribution in England, is found in deep slow-flowing sections of the river. The mayflies *Ephemerella ignita*, *Caenis luctuosa*, *Centroptilium luteolum* and *Centroptilium pennulatum* are also of local distribution. There is a species of stonefly, *Amphinemura standfussi*, more usually associated with upland rivers. The flatworm *Crenobia alpina* is of note, being a relict in southern England where it is confined to cold-water springs.

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	River Wensum
Unitary Authority/County:	Norfolk
SAC status:	Designated on 1 April 2005
Grid reference:	TG022176
SAC EU code:	UK0012647
Area (ha):	381.74
Component SSSI:	River Wensum SSSI

Site description:

The Wensum is a naturally enriched, calcareous lowland river. The upper reaches are fed by springs that rise from the chalk and by run-off from calcareous soils rich in plant nutrients. This gives rise to beds of submerged and emergent vegetation characteristic of a chalk stream. Lower down, the chalk is overlain with boulder clay and river gravels, resulting in aquatic plant communities more typical of a slow-flowing river on mixed substrate. Much of the adjacent land is managed for hay crops and by grazing, and the resulting mosaic of meadow and marsh habitats, provides niches for a wide variety of specialised plants and animals.

Ranunculus vegetation occurs throughout much of the river's length. Stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans* is the dominant *Ranunculus* species but thread-leaved water-crowfoot *R. trichophyllus* and fan-leaved water-crowfoot *R. circinatus* also occur in association with the wide range of aquatic and emergent species that contribute to this vegetation type. The river supports an abundant and rich invertebrate fauna including the native freshwater crayfish *Austropotamobius pallipes* as well as a diverse fish community, including bullhead *Cottus gobio* and brook lamprey *Lampetra planeri*. The site has an abundant and diverse mollusc fauna which includes Desmoulin's whorl-snail *Vertigo moulinsiana*, which is associated with aquatic vegetation at the river edge and adjacent fens.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation. (Rivers with floating vegetation often dominated by water-crowfoot)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Bullhead *Cottus gobio*
- Brook lamprey *Lampetra planeri*
- Desmoulin's whorl snail *Vertigo moulinsiana*

This citation relates to a site entered in the Register of European Sites for Great Britain.

Register reference number: UK0012647

Date of registration: 14 June 2005

Signed: *Trev Salmon*

On behalf of the Secretary of State for Environment, Food and Rural Affairs



County Wildlife Sites citations

CWS Number	Name	Description	Last surveyed
1261	Helhoughton Common (North)	This is a large complex site comprising broad-leaved semi-natural high forest, which is wet in places, together with tall fen and marshy grassland areas. The majority of the site is dominated by mature silver birches (<i>Betula pendula</i>) forming a close canopy. There are many scattered oaks (<i>Quercus robur</i>) and sallows (<i>Salix cinerea</i>) in wet hollows. Little or no shrub layer exists and the ground flora is mainly creeping bent (<i>Agrostis stolonifera</i>), mosses with bell heather (<i>Erica cinerea</i>) and cross-leaved heath (<i>Erica tetralix</i>). In the north-west part of the site the woodland is alder (<i>Alnus glutinosa</i>) dominated. On the western edge of the site there is an area of tall fen dominated by reed (<i>Phragmites australis</i>) and willowherb (<i>Epilobium</i> spp.) and marsh-marigold (<i>Caltha palustre</i>) with drier, open areas of short acid grassland with heath bedstraw (<i>Galium saxatile</i>). Tall fen vegetation also occurs within the north-eastern part of the site with a pool towards the northern edge. Species present include reed and various rushes (<i>Juncus</i> spp.), meadowsweet (<i>Filipendula ulmaria</i>) and watermint (<i>Mentha aquatica</i>) on its margins. Towards the south-eastern part of the site, Gravel Pit Plantation is birch dominated woodland underplanted with oak and a bramble (<i>Rubus fruticosus</i> agg.) and bracken (<i>Pteridium aquilinum</i>) ground flora. Further south is an area of marshy grassland with orchids (<i>Dactylorhiza</i> spp.), marsh cinquefoil (<i>Potentilla palustris</i>), ragged-Robin (<i>Lychnis flos-cuculi</i>) and water dock (<i>Rumex hydrolaphum</i>). In the extreme south-east there is a mixed plantation of Scot's pine (<i>Pinus sylvestris</i>), silver birch, oak and poplar (<i>Populus</i> spp.). (Based on the Wensum Valley Project 1993 Survey.)	1993
1251	Wicks's Wood	This site is a broad-leaved semi-natural coppice with standards woodland. The site is well managed through coppicing activity. Standards are of variable ages and the ground flora shows evidence of disturbance. It is however, obvious that this is a site of interest with a diverse ground flora. Small sections of wood have though been planted with conifers after felling of broad-leaves. To the north adjacent to the access track is a small area of unimproved, well drained, neutral grassland. (Based on the 1985 habitat survey (NWT))	1985

1257	Raynham Park Lake	<p>This site is a large man-made lake surrounded by tall wetland vegetation with parkland. The lake itself is surrounded by tall herbs including abundant reed canary-grass (<i>Phalaris arundinacea</i>), yellow iris (<i>Iris pseudacorus</i>), great willowherb (<i>Epilobium hirsutum</i>), hemp-agrimony (<i>Eupatorium cannabinum</i>) and less frequently lesser pond-sedge (<i>Carex acutiformis</i>), selfheal (<i>Prunella vulgaris</i>), silverweed (<i>Potentilla anserina</i>) and gipsywort (<i>Lycopus europaeus</i>).</p> <p>Characteristic tree species found towards the edges of the site include alders (<i>Alnus glutinosa</i>) and scattered willows (<i>Salix</i> spp.) with some planted poplar and ash (<i>Fraxinus excelsior</i>). (Based on the Wensum Valley Project 1993 Survey)</p>	1993
1258	Helhoughton Common (South)	<p>This site is an area of grazed, marshy neutral grassland on the western bank of the River Wensum and is subject to flooding. The area ranges in quality from rather poor improved pasture characterised by Yorkshire fog (<i>Holcus lanatus</i>), fescues (<i>Festuca</i> spp.) and meadow-grass (<i>Poa</i> spp.) through to pockets of common-spotted orchids (<i>Dactylorhiza fuchsii</i>). There is an area of grass heath to the north with marshy mires. Here tormentil (<i>Potentilla</i> spp.), heath bedstraw (<i>Galium saxatile</i>) and sheep's sorrel (<i>Rumex acetosella</i>), locally abundant marsh cinquefoil (<i>Potentilla palustris</i>) occur and cotton-grass (<i>Eriophorum</i> spp.) and heath wood-rush (<i>Luzula multiflora</i>). The majority of the site contains yellow-rattle (<i>Rhinanthus minor</i>), oval sedge (<i>Carex ovalis</i>), slender sedge (<i>Carex lasiocarpa</i>), common spotted-orchids and field wood-rush (<i>Luzula campestris</i>). The most diverse area lies to the south and is unimproved with common spotted-orchids, ragged-Robin (<i>Lychnis flos-cuculi</i>), pink water-speedwell (<i>Veronica catenata</i>), cuckooflower (<i>Cardamine pratensis</i>), meadow saxifrage (<i>Saxifraga granulata</i>), water avens (<i>Geum rivale</i>), and greater tussock-sedge (<i>Carex paniculata</i>). (Based on the Wensum Valley Project 1993 Survey.)</p>	1993

1262	Helhoughton Common (East)	This site is a birch (<i>Betula</i> spp.) dominated broad-leaved semi-natural woodland with some evidence of past coppice. A disused railway line crosses the site. The west of the site is dominated by open, but encroaching silver birches (<i>Betula pendula</i>) with occasional oak (<i>Quercus robur</i>) and scattered gorse (<i>Ulex europaeus</i>). The ground is wet with soft rush (<i>Juncus effusus</i>), heath bedstraw (<i>Galium saxatile</i>), tormentil (<i>Potentilla erecta</i>) and sheep's sorrel (<i>Rumex acetosella</i>) and marsh pennywort (<i>Hydrocotyle vulgaris</i>). To the east the woodland becomes drier and more dense birch with scattered oaks. The shrub layer consists of bramble (<i>Rubus fruticosus</i> agg.) honeysuckle (<i>Lonicera periclymenum</i>), red campion (<i>Silene dioica</i>), and nettle (<i>Urtica dioica</i>). Within this part of the site there is a pool dominated by soft rush and yellow iris (<i>Iris pseudacorus</i>). Along the railway line is rabbit grazed and has a flora including yarrow (<i>Achillea millefolium</i>), field wood-rush (<i>Luzula campestris</i>), common cat's-ear (<i>Hypochoeris radicata</i>), perforate St. John's wort (<i>Hypericum perforatum</i>) and soft-brome (<i>Bromus hordaceus</i>). (Based on the Wensum Valley Project 1993 Survey.)	1993
1265	Tatterford Common	This site is an area of tall herb vegetation adjacent to the River Tat, together with woodland. To the east is mixed emergent vegetation with scattered scrub. Common reed (<i>Phragmites australis</i>), reed canary-grass (<i>Phalaris arundinacea</i>), meadowsweet (<i>Filipendula ulmaria</i>), hogweed (<i>Heracleum sphondylium</i>), bulrush (<i>Typha latifolia</i>) and great willowherb (<i>Epilobium hirsutum</i>) occur. Sweet vernal-grass (<i>Anthoxanthum odoratum</i>), meadow vetchling (<i>Lathyrus pratensis</i>), and bird's-foot trefoil (<i>Lotus corniculatus</i>) are also found. To the west is dominated by woodland of hawthorn (<i>Crataegus monogyna</i>), ash (<i>Fraxinus excelsior</i>), sallow (<i>Salix cinerea</i>), crack willow (<i>Salix fragilis</i>), and oak (<i>Quercus robur</i>). (Based on the Wensum Valley Project 1993 Survey.)	1993

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 Protection of Badgers Act 1992 consolidates previous badger legislation by providing comprehensive protection for badgers and their setts, with a requirement that any authorised sett disturbance or destruction be carried out under licence.

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 2019 (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 30th 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.

Badger

The Wildlife and Countryside Act (1981) and its subsequent amendment in 1985 made it an offence to take, kill, injure or ill-treat a badger. The badger gained further protection under the auspices of The Protection of Badgers Act (1992) which consolidates all former protective legislation in relation to badgers, except their inclusion on Schedule 6 of the Wildlife and Countryside Act 1981.

Under the 1992 Act, the badger sett is protected against obstruction, destruction, and damage; furthermore, the animal's access to and from the sett must not be impeded. It should be noted that the concept/definition of the sett extends beyond the main sett to include annexe, subsidiary and outlying setts. However, although the badger and its sett are protected (including access to the sett), the wider habitat and foraging ground is not.

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

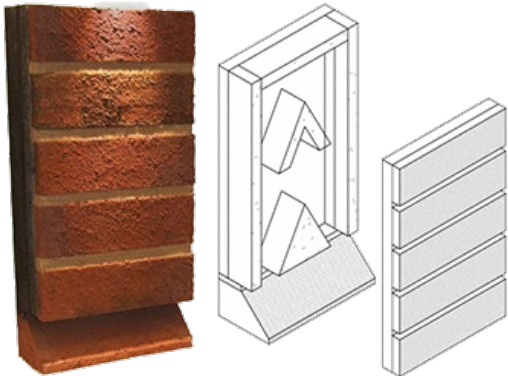
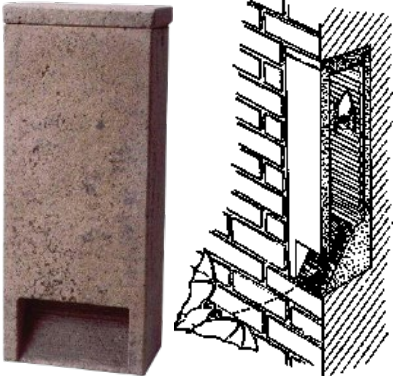


Plant species recorded on site

English name	Scientific name
Apple	<i>Malus sp.</i>
Apple mint	<i>Mentha suaveolens</i>
Ash	<i>Fraxinus excelsior</i>
Bramble	<i>Rubus fruticosus</i>
Buddleja	<i>Buddleja sp.</i>
Cherry laurel	<i>Prunus laurocerasus</i>
Cleavers	<i>Galium aparine</i>
Clover	<i>Trifolium sp.</i>
Cock's foot	<i>Dactylis glomerata</i>
Common vetch	<i>Vicia sativa</i>
Cotoneaster sp.	<i>Cotoneaster sp.</i>
Cows parsley	<i>Anthriscus sylvestris</i>
Cranesbill	<i>Geranium sp.</i>
Creeping thistle	<i>Cirsium arvense</i>
Daisy	<i>Bellis perennis</i>
Dandelion	<i>Taraxacum officinale</i>
Dog-rose	<i>Rosa canina</i>
English oak	<i>Quercus robur</i>
Goats willow	<i>Salix caprea</i>
Ground ivy	<i>Glechoma hederacea</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Hogweed	<i>Heracleum sphondylium</i>
Ivy	<i>Hedera helix</i>
Magnolia	<i>Magnolia sp.</i>
Nettle	<i>Urtica dioica</i>
Norway spruce	<i>Picea abies</i>
Pampas grass	<i>Cortaderia sp.</i>
Perennial ryegrass	<i>Lolium perenne</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Silver birch	<i>Betula pendula</i>
Spear thistle	<i>Cirsium vulgare</i>
Spindle	<i>Euonymus europaeus</i>
Sweet chestnut	<i>Castanea sativa</i>
Teasel	<i>Dipsacus fullonum</i>
Viburnum	<i>Viburnum sp.</i>
Willowherb	<i>Epilobium sp.</i>
Yarrow	<i>Achillea millefolium</i>
Yew	<i>Taxus baccata</i>
Yorkshire fog	<i>Holcus lanatus</i>

Appendix F

Examples of bat and bird boxes

(images sourced from www.nhbs.com, www.habibat.co.uk and www.manthorpe.co.uk)

<p style="text-align: center;">Integrated bat box Habibat Bat Box</p> 	<p style="text-align: center;">Integrated bat box 1FR Schwegler Bat Tube</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)

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.

<p>Small bird nesting box 1B Schwegler Nest Box</p> 	<p>Small bird nesting box 2H Schwegler Robin Box</p> 
<p>Integrated swift box Schwegler Brick Nest Box Type 25</p>  <p>Type 25</p>	<p>Integrated swift box Manthorpe Swift Brick</p> 
<p>Tawny owl box Eco tawny owl nest box</p> 	<p>Barn owl box Eco barn owl nest box</p> 

Recommendations for installing bird boxes:

(Sourced from British Trust for Ornithology www.bto.org and Manthorpe 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 ≥ 5 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 and www.jackson-fencing.co.uk)

Quercus Fencing	Jacksons-Fencing
<p data-bbox="236 398 780 432">Hedgehog friendly oak woven fencing panels</p>  A photograph showing a hedgehog sitting on a wooden fence panel. The fence is made of horizontal wooden slats. There is a gap in the fence where the hedgehog is positioned, demonstrating its ability to pass through.	<p data-bbox="868 398 1406 465">Hedgehog friendly gravel board for use with slotted posts</p>  A close-up photograph of a gravel board installed on a fence. The board is a light-colored, textured material. It is held in place by a vertical post. There is a clear gap between the board and the post, which is designed to allow a hedgehog to pass through.

Recommendations for installing hedgehog friendly fencing:

(Sourced from Hedgehog Street 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 spp.</i> (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 spp.</i>
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 Proposed plans



Appendix J

Soft landscaping scheme

