
Preliminary Ecological Appraisal

Bridge Barn, Badley

for

Sarah Drummound

8 September 2021

Client

Sarah Drummound

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).

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Version	1.0
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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 Bridge Barn, Stowmarket Road, Badley, Ipswich, Suffolk, IP6 8RJ (grid reference: TM 08097 55903).

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 construction of a stable block and menage.

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.

Further surveys for badgers, great crested newts, reptiles, and otters are required to inform an ecological impact assessment of the site and an appropriate mitigation strategy.

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 13 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	Improved grassland and hedgerow will be removed 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 along the northern and western boundary of the ownership site Construction work to be carried out in accordance with BSI (2012), BS 5837:2012, to protect trees and their root protection areas. Aquatic habitats to be protected from runoff and pollution from the proposed development.
Bats	Negligible bat roosting potential in trees located 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> Lighting schemes should comply with Bat Conservation Trust and CIE 150:2003 guidance. <u>Enhancement</u> Installation of one integrated bat box on stable block on site and one bat box on trees.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Breeding birds	Nesting habitats for tree and hedgerow nesting birds present on site, including potential breeding habitat for one Red and one Amber listed species. 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 hedgerows 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 one small bird box, installed on new buildings and trees respectively.
Great crested newts	Suitable terrestrial habitats on site. Four ponds within 250m of the site, one dry and three could not be accessed for detailed assessment. Site falls within Amber risk zone for district level licensing. Nine GCN records within 2km. eDNA survey conducted on pond one (located within 100m), returned a positive result.	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>Mitigation</u> Further surveys for GCN required. This can be in the form of presence/likely absence surveys conducted between mid-March and mid-June or applying to join a district level licensing scheme which can be conducted at any time of year. The outcome of the surveys will inform a detailed mitigation strategy and whether an EPS Mitigation Licence will be required from Natural England.
Water voles and otters	Suitable habitat on and adjacent the site. 14 water vole and 16 otter records within 2km.	Potential harm to water voles and otters if present on site during works.	<u>Mitigation</u> If the work is to be within 6m of the bank, further water vole survey will be required. Pre-construction survey for otter holts to be conducted within 30 days of the proposed start date. If an otter holt is discovered, the nature of planned works within 30m of the holt will require assessment for potential impacts, and to inform an appropriate mitigation strategy. This may include further surveys and closure under licence.
Reptiles	Habitats on site suitable. 18 reptile records within 2km.	Potential harm to reptiles if present on site during works.	<u>Mitigation</u> A reptile presence/absence survey to be conducted in the appropriate season to determine an appropriate mitigation strategy.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Hazel dormice	Habitats on site suboptimal, but ecologically separated from nearby woodland. One dormouse record within 2km.	No impacts predicted.	None required.
Other animals	N/A	Potential harm to animals.	<u>Mitigation</u> Porous hedgehog friendly fencing should be used within and around the site. Rough sawn planks placed inside any open excavations. Night lighting of the construction site should be minimised as far as possible. Construction materials should be stored off the ground on pallets.

1. METHOD

- 1.1. A walkover of the site was conducted on 26th August 2021 by Nathan Duszynski and Ebonie Lambo-Hills – independent, qualified and experienced ecologists. Survey conditions were as follows: 18°C, 7mph 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 and no further surveys or mitigation for these species are detailed in this report:

White-clawed crayfish *Austropotamobius pallipes*

Natterjack toad *Epidalea calamita*

GCN eDNA survey

- 1.4. The eDNA method detects pond occupancy from GCN using traces of DNA shed into the pond environment. The water samples collected were sent to fera for laboratory analysis.
- 1.5. The method and results of the analysis are defined as follows by fera:
- 1.6. The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., et al, (2014).
- 1.7. The limits of this method are as follows:
 - i. The results are based on analyses of the samples supplied by the client and as received by the laboratory,
 - ii. Any variation between the characteristics of this sample and a batch will depend on the sampling procedure used.
 - iii. The method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve,
 - iv. A 'not detected' result does not exclude presence at levels below the limit of detection.
- 1.8. The results are defined as follows:
 - i. Positive: eDNA Score: DNA from the species was detected.

- ii. Negative: DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
- iii. Inconclusive: Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided

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 the village of Badley, with the A14 located approximately 1.1km northeast. The town of Needham Market is approximately 250m west, and the town of Stowmarket is located approximately 3km northwest of the site.
- 2.3. The site is enclosed by the Norwich/London railway line to the north, the River Gipping to the east, Stowmarket Road (B1113) to the south and residential dwelling to the west. The wider surroundings are comprised of a mixture of residential dwellings, 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 02/09/21

3. DESCRIPTION OF THE DEVELOPMENT

- 3.1. The proposals are for the construction of a stable block and menage. Please refer to Appendix I for the proposed plans.

4. DESKTOP REVIEW

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. Creeting St Mary Pits SSSI, approximately 1.5km east.

“This complex of old quarry sections allows a very important part of the Lower Pleistocene stratigraphy of Suffolk to be demonstrated. The site is of great importance as the type-site of the recently defined Creeting Sands, thought to be shallow marine/intertidal sediments laid down during an early Pleistocene interglacial.”

- ii. Baking Woods SSSI, approximately 2km southeast.

“The Barking Woods are an inter-related group of ancient woodlands, whose history has been well documented since 1251. The majority of the medieval earth banks still remain and are marked by large pollards of oak and ash. The woodland structure is predominantly coppice-with-standards, composed of a variety of different stand-types. The diverse ground flora is typical of ancient woods and reflects a change in soils from the heavy boulder clay of Priestley and Swingen’s Woods to the chalky sand of Titley Hill Wood.

- 4.2. The proposed development falls outside of all SSSI Impact Risk Zones, being a non-residential development.

Non-statutory

- 4.3. There are 13 non-statutory protected sites located within 2km – 13 County Wildlife Sites (“CWS”). Please refer to Appendix C for the full citations.

- i. River Gipping (Sections) CWS, approximately 0.5km northeast.

“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.”

- ii. RNR 200 CWS, approximately 0.7km northwest.
“Chalk Flora. This is also a Roadside Nature Reserve.”
- iii. Fen Alder Carr CWS, approximately 1km northeast.
“It consists of a mosaic of habitat ranging from open water and tall fen vegetation to dense alder carr.”
- iv. RNR 217 CWS, approximately 1km east.
“Chalk Flora. This site is also a Roadside Nature Reserve.”
- v. Creting St Mary Meadow CWS, approximately 1.2km northeast.
“It consist of three, low-lying wet meadows enclosed by hedges which border a tributary of the River Gipping.”
- vi. Little Newton Wood CWS, approximately 1.2km southwest.
“This small woodland is one of several woodlands listed in English Nature’s Inventory of Ancient Woodlands, situated to the west and south of Needham Market. Little Newton Wood, together with Great Newton Wood situated close by, are important both as refuges for wildlife and as features in an intensively-farmed landscape.”
- vii. Keyfield Groves CWS, approximately 1.2km northwest.
“Keyfield Groves is listed in English Nature’s Ancient Woodland Inventory. This small woodland is divided into two sections by a wide, shrubby track, known as the Badley Walk.”
- viii. Creting St Mary Churchyard CWS, approximately 1.3km northeast.
“Creting St Mary Churchyard is of high wildlife value as it supports an unimproved, herb-rich, dry grassland flora characteristic of the sands and gravels of this part of Suffolk. The soils are very drought prone and this is reflected in the flora.”
- ix. Flordon Road Grassland CWS, approximately 1.3km southeast.
“This site provides a matrix of grassland, scrub and woodland between the corridor of the River Gipping, Needham Lakes and the Geological SSSI at Creting St Mary Pits. The soils are a mix of chalk, calcareous clay and more neutral sands.”
- x. RNR 157 CWS, approximately 1.6km southeast.
“Chalk flora. This site is also a Roadside Nature Reserve.”
- xi. Great Newton Wood CWS, approximately 1.6km southwest.
“Great Newton Wood lies to the west of Needham Market and is situated close to another small ancient woodland, namely Little Newton Wood.”

xii. Lion Inn Meadow & Chalk pit CWS, approximately 1.8km southeast.

“This site is adjacent to the Lion Inn, Needham Market and comprises a mosaic of herb-rich chalky dry grassland (a Priority habitat) and part of a disused chalk pit to the south. The site is bordered to the west by an ancient green lane containing ancient hedgerows which may be of medieval origin.”

xiii. Suffolk Business Park Meadow CWS, approximately 2km northwest.

“This site is a gently sloping area of unimproved species rich grassland (Priority habitat) adjacent to Suffolk Business Park, off the B1113 Needham to Stowmarket road.”

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, Good Quality Semi-Improved Grassland, Lowland Calcareous Grassland, Lowland Meadows, Deciduous Woodland and Traditional Orchards. The closest of which, is Traditional Orchard located adjacent northwest of the site.

Protected species

- 4.6. The biodiversity data search within 2km of the site indicated 1,479 records from 195 species.

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

23 barn owl *Tyto alba* records, with the most recent from 2015.

15 skylark *Alauda arvensis* records, with the most recent from 2020.

70 swift *Apus apus* records, with the most recent from 2020.

Nine GCN *Triturus cristatus* records, with the most recent from 2020. The closest record is located within pond one (Figure 3), within the ownership boundary.

18 reptile records, with the most recent from 2020. The closest record is located approximately 80m northeast. Species include: slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara* and grass snake *Natrix helvetica*.

Nine badger *Meles meles* records, with the most recent from 2020. The closest record is located approximately 0.5km northwest.

16 otter *Lutra lutra* records, with the most recent from 2008. The closest record is located within the ownership boundary, 15m southeast of the development site.

14 water vole *Arvicola amphibius* records, with the most recent from 2015. The closest record is located within the ownership boundary, 15m southeast of the development site.

262 hedgehog *Erinaceus europaeus* records, with the most recent from 2020.

One harvest dormouse *Muscardinus avellanarius* record, from 2019. The record is located approximately 1.7km southeast.

Nine bat records, with the most recent from 2017, including common pipistrelles *Pipistrellus pipistrellus*, soprano pipistrelles *Pipistrellus pygmaeus* and other unidentified bat species.

Protected species licences

- 4.8. A 2km search on <http://www.magic.gov.uk/> indicated no records of granted European Protected Species ("EPS") Mitigation Licences.

5. FIELD STUDY

Habitats

- 5.1. The habitats on the site are of moderate ecological value, being predominantly improved grassland, scattered trees and hedgerows on the site peripheries.
- 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.

Scrub (phase 1 habitat classification A2)

- 5.3. The site features three thin rows of scrub which are blackcurrant *Ribes nigrum* and raspberry *Rubus idaeus* shrubs, which were previously managed within a vegetable plot.

Parkland and scattered trees (phase 1 habitat classification A3)

- 5.4. The site several areas of scattered trees. Species include: alder *Alnus glutinosa*, apple *Malus* sp., cherry *Prunus avium*, corkscrew willow *Salix matsudana*, Horse chestnut *Aesculus hippocastanum*, Sitka spruce *Picea sitchensis* and weeping willow *Salix babylonica*.

Improved grassland (phase 1 habitat classification B4)

- 5.5. The site is dominated by improved grassland, which varies in management. The meadow to the east of the ownership boundary is hay cut once yearly. The northern quarter is irregularly managed, with areas which are more regularly managed than others. Species include: bird's-foot trefoil *Lotus corniculatus*, bristly oxtongue *Helminthotheca echioides*, broad-leaved dock *Rumex obtusifolius*, cocks-foot *Dactylis glomerata*, creeping cinquefoil *Potentilla reptans*, dove's foot cranesbill *Geranium mole*, field bindweed *Convolvulus arvensis*, hawkweed *Hieracium* sp., hogweed *Heracleum sphondylium*, meadow grass *Poa* sp., nettle *Urtica dioica*, timothy grass *Phleum pratense*, yarrow *Achillea millefolium* and Yorkshire fog *Holcus lanatus*.

Pond (phase 1 habitat classification G1)

- 5.6. The site features a pond within the ownership boundary which is currently dry, and dries yearly over the summer months.

Defunct, species-poor hedge with trees(phase 1 habitat classification J1.1.1)

- 5.7. The site features a defunct ash *Fraxinus excelsior* hedgerow to the north of the site. This hedgerow is classified as Priority Habitats under the NERC Act 2006 Section 41 Habitats of Principal Importance, but does not qualify as “important” under The Hedgerow Regulations 1997, lacking the required number of native woody species.

Intact, species-poor hedge (phase 1 habitat classification J2.1.2)

- 5.8. The site features several intact, species-poor hedgerows. The hedgerow within the site boundary features coppiced damson *Prunus sp.* and hawthorn *Crataegus monogyna*, with lilac *Syringa sp.*, which varies in width and is approximately 1.5m high. Other hedgerows within the ownership boundary include a hawthorn hedgerow which is 1.3m high and 1m wide and a bay laurel *Laurus nobilis* hedgerow along the northern boundary which is approximately 1.2m high and 1m wide. 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. The bay laurel hedgerow is not classified as a Priority Habitat under the NERC Act 2006 Section 41 Habitats of Principal Importance, being non-native.

Intact, species-rich hedge with trees (phase 1 habitat classification J2.2.1)

- 5.9. The site features two intact, species-rich hedgerows along the northern and southern periphery of the ownership boundary. These hedgerows are approximately 2m high and 1.5m in width, with the northern hedgerow recently planted. Species include: apple, ash, blackthorn *Prunus spinosa*, cherry, dog rose *Rosa canina*, elder *Sambucus nigra*, field maple *Acer campestre*, hawthorn, hazel *Corylus avellana* and hornbeam *Carpinus betulus*. 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 associated features.

Fence (phase 1 habitat classification J2.4)

- 5.10. The site contains a mixture of closeboard and concrete post and wire fencing along the western and northern periphery of the ownership boundary.

Hardstanding (phase 1 habitat classification J5)

5.11. The site features an area of gravel hardstanding.

Target note number	Comments
1	Rabbit burrows.
2	Earth bund.
3	Compost heap.

Table 1, phase 1 target notes.

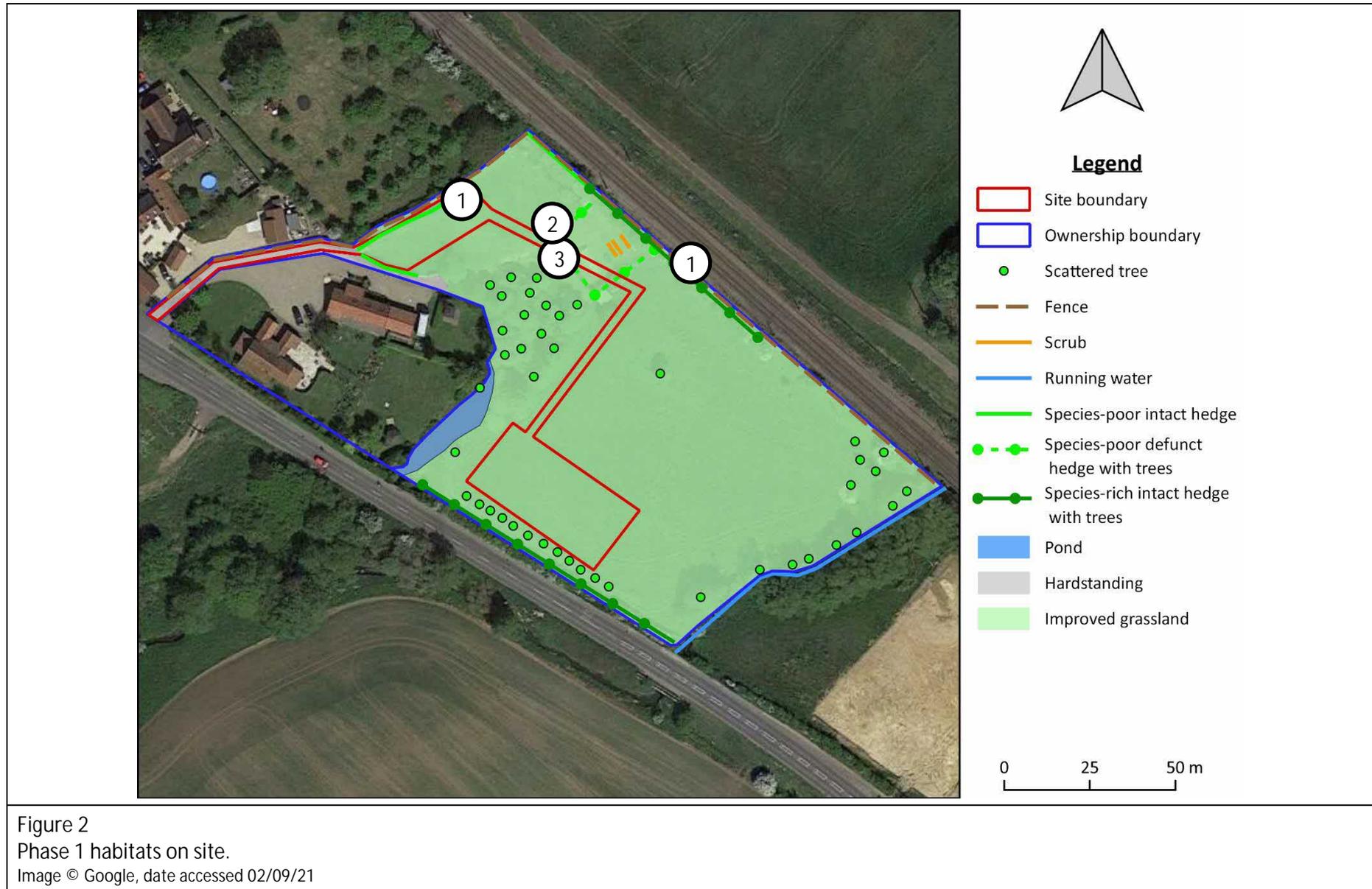




Photo 1, improved grassland and scattered trees along the southern boundary, looking east.



Photo 2, improved grassland and scattered trees, looking northwest.



Photo 3, improved grassland and scattered trees, looking south.



Photo 4, scattered trees and improved grassland, looking southeast.



Photo 5, improved grassland and species poor hedgerow, looking southwest.



Photo 6, improved grassland and species poor hedgerow, looking northeast.



Photo 7, improved grassland and scrub and hedgerow, looking northeast.



Photo 8, TN2 earth bund and TN3 compost heap, looking southwest.



Photo 9, the River Gipping along the eastern boundary of the ownership.

Bats

Trees

- 5.12. 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

- 5.13. The landscape immediately adjacent to the site is considered of high value for foraging and commuting bats, with linked gardens, river, hedgerows and treelines providing links to the wider landscape. Residential dwellings adjacent the site and within Badley have the potential to provide roosting opportunities for bats.
- 5.14. The site itself provides low value foraging habitat for bats along the boundary hedgerows, with bats mainly using nearby woodlands for foraging.

Birds

- 5.15. 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.
- 5.16. The following bird species were observed during the site visit:

Red listed:

Starling

Sturnus vulgaris

Amber listed:

Black-headed gull

Chroicocephalus ridibundus

Dunnoek

Prunella modularis

Green listed:

Blackbird

Turdus merula

Great tit

Parus major

Kestrel

Falco tinnunculus

Robin

Erithacus rubecula

Swallow

Hirundo rustica

Wood pigeon

Columba palumbus

Wren

Troglodytes troglodytes

- 5.17. The site provides suitable nesting habitats for hedgerow and tree nesting species.

- 5.18. The site provides potential breeding habitat for the following Red listed species: house sparrow *Passer domesticus*.
- 5.19. The site provides potential breeding habitat for the following Amber listed species: dunnock *Prunella modularis*.
- 5.20. Although no barn owl nests were identified on site, the site provides suitable foraging habitat within the irregularly managed improved grassland.

Great crested newts

- 5.21. There are no ponds within the survey site and four 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 3). GCN are most likely to occupy good quality terrestrial habitat within 250m of a breeding pond (English Nature, 2001).
- 5.22. The terrestrial habitats on the site are considered suitable for GCN, consisting of improved grassland which varies in management and hedgerows.
- 5.23. Terrestrial habitats adjacent the site includes suitable (improved grassland and hedgerows) GCN foraging, commuting and hibernating habitats.
- 5.24. Pond one was dry for a prolonged period of time and ponds 2-4 were not assessed in detail, as authorised access to the ponds was not available.
- 5.25. The data search identified previous GCN surveys which have been conducted during 2016, identifying a medium population within ponds one and two.
- 5.26. 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).
- 5.27. Stowmarket Road (B1113) to the south and railway line to the north could act as habitat barriers and ecologically separate the site from ponds in the local vicinity, albeit culverts are present in areas.



Photo 10, pond one, looking west.

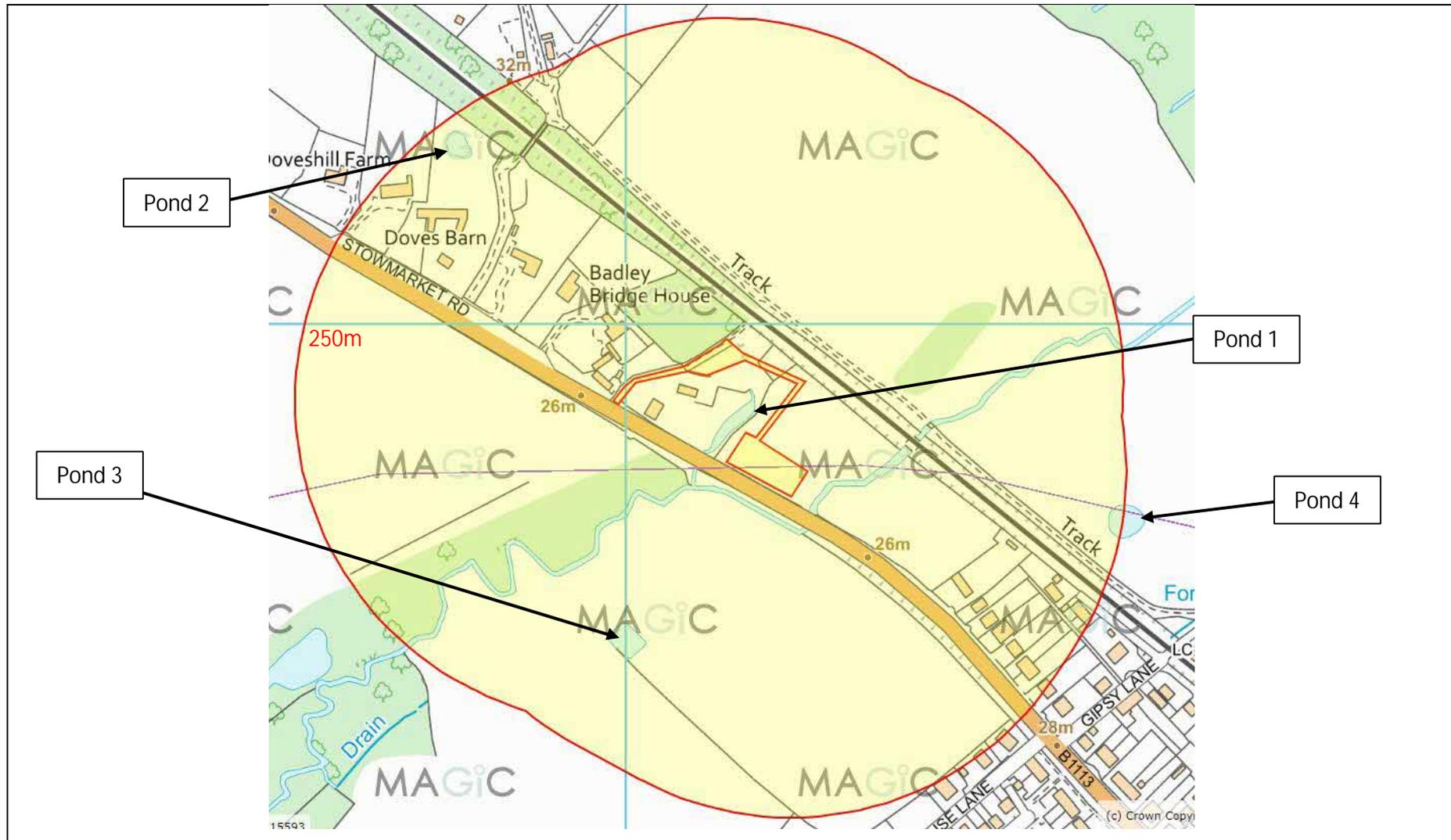


Figure 3
Ponds within 250m of the proposed site.
Image © MAGiC, date accessed 02/09/21

eDNA

- 5.28. There are no ponds within the survey site and four 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 3).
- 5.29. An eDNA survey was conducted on pond one, being located within 100m of the site boundary within the site ownership.
- 5.30. The results of the eDNA survey indicated that pond one is used by GCN, with a positive result and eight positive replicates. The eDNA sample analysis provided by fera is shown in Table 2.

DNA Analysis Report - Commercial in Confidence

CustomerReference	Fera Reference	GCN Detection	eDNA Score	Inhibition	Degradation
-	S21-027325	Positive	8	n/a	n/a

The results indicate that eDNA for great crested newts was detected in the sample submitted. Analysis was conducted in the presence of the following controls: 1) extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs.

Issuing officer: Steven Bryce
Tel: 01904 462 070
Email: e-dna@fera.co.uk

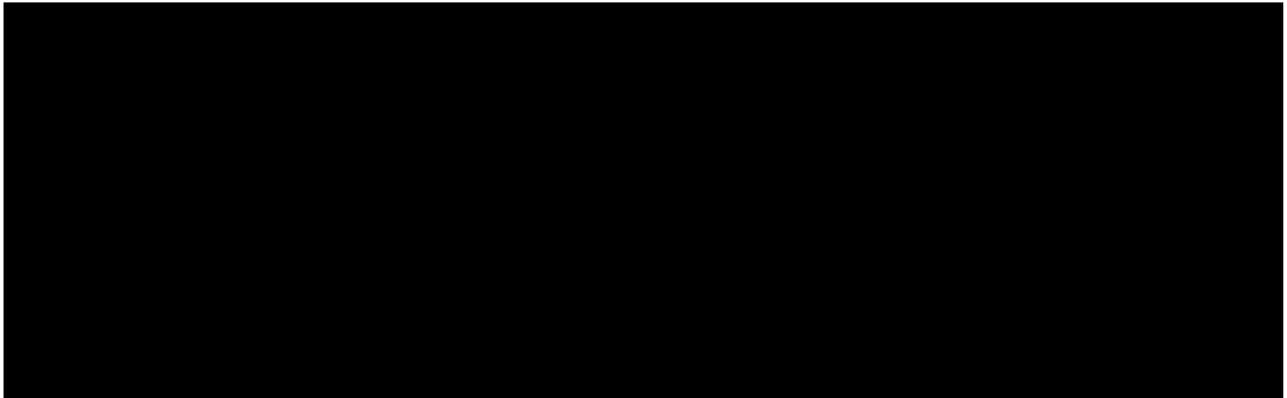
Table 2, results of the eDNA survey as provided by fera.

Water voles and otters

- 5.31. The bank along the eastern ownership boundary is considered suitable for water voles, having steep earth banks for burrowing, slow flowing water and a mixture of short grass, submerged weed, herbaceous plants, and bushes for foraging.
- 5.32. Although no water vole signs were observed, this may have been obscured by vegetation surrounding the river.
- 5.33. The site was considered suitable for otters due to the amount of water present. No holts or signs of use by otters were observed on site.

Reptiles

- 5.34. The habitats on the site are considered suitable for reptiles, consisting of irregularly managed improved grassland and hedgerows.
- 5.35. Habitats located on the site boundaries including the base of the hedgerows and train tracks which could be used as commuting habitats by reptiles if they were present in the area.
- 5.36. Terrestrial habitats adjacent the site includes suitable (improved grassland and hedgerows) reptile foraging, commuting and hibernating habitats
- 5.37. Stowmarket Road (B1113) to the south could act as a habitat barrier and ecologically separates the site from habitats further afield, albeit culverts are present in areas.



Dormice

- 5.40. The hedgerows on the northern and southern periphery of the ownership boundary are considered suboptimal for hazel dormice.
- 5.41. The closest deciduous woodland (identified using MAGIC) is 40m southwest of the site ($\approx 70\text{m}$, Bright et al., 2006), although ecologically separated by Stowmarket Road (B1113).

6. DISCUSSION AND CONCLUSIONS

Protected sites

- 6.1. The development footprint falls outside all identified protected sites (statutory and non-statutory). There are two statutory protected sites and 13 non-statutory protected sites located within 2km of the site.

The closest statutory protected site (Creeping St Mary SSSI) is located approximately 1.5km east and designated for its Lower Pleistocene stratigraphy.

The closest non-statutory protected site (River Gipping (Sections) CWS), is located approximately 0.5km northeast of the site and designated because it supports a diverse emergent fringe.

- 6.2. The proposed development falls outside of any SSSI Impact Risk Zones relating to rural residential developments.
- 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 clearance of vegetated habitats on site, including ≈0.2ha of improved grassland and ≈40m of species poor hedgerow. This is expected to result in a low scale loss of nesting habitat for hedgerow nesting birds, and a low scale loss of foraging features for bats. Please refer to the bat section below for predicted impacts on trees with potential bat roosts.
- 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 along the northern and western boundary of the ownership 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. Aquatic habitats adjacent the site to be protected from runoff and pollution from the proposed development, by the prevention of soil spill along the boundaries.

Bats

- 6.6. The proposed works are expected to result in a low scale loss of potential foraging and commuting habitats for bats through the clearance of vegetation and through increased noise and light levels.
- 6.7. As a precautionary measure, the following mitigation is recommended to avoid impacts on bats from the proposed works:
- i. 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°.
 - ii. A soft landscaping scheme to include the planting of new native species-rich (≥ 5 species), hedgerows and trees along the northern and western boundary of the ownership site (see Appendix H for suggested species).
- 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 (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 traditional type 1F bitumen is used.
- 6.9. As enhancements, we recommend the installation of:
- i. One integrated bat box (Schwegler 1FR Bat Tube – Appendix F).
 - ii. One standalone bat box (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 clearance of vegetation, including several scattered trees and a hedgerow.
- 6.12. Any works affecting bird nesting habitat such as management of hedgerows or trees 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. One integrated swift box (Schwegler Brick Nest Box Type 25 – Appendix F).
- ii. One small bird box (Schwegler 1B or 2H Nest Box – Appendix F).
- iii. A soft landscaping scheme to include the planting of new native species-rich (≥ 5 species), hedgerows and trees along the northern and western boundary of the ownership site (see Appendix H for suggested species).

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 suboptimal GCN terrestrial habitat through the clearance of ≈ 0.2 ha of improved grassland. Aquatic habitats will be unaffected by proposed works.

6.16. An eDNA survey conducted on pond one, within 100m of the proposed development, provided a positive result for GCN, and confirming GCN are still using the pond.

6.17. Taking a worst-case scenario of 0.1-0.5ha of land being lost or damaged within 100m of a breeding pond, the risk assessment calculation (set out in the GCN method statement template provided by Natural England) indicates an “offence likely”, although goes on to state:

“This generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined.”

6.18. As GCN may commute across the site to reach ponds in the local vicinity, further surveys for GCN are required to determine the likeliness of GCN being present on the site. This can be in form of the following methods:

- i. 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).

- ii. Apply to join a district level licensing scheme (conducted year round). Please note, all ponds will be assumed to contain GCN unless presence/likely absence surveys or eDNA tests have confirmed likely absence.
- 6.19. The outcomes of the presence/likely absence, eDNA surveys or district level licensing will inform a detailed mitigation strategy for GCN and whether a EPS Mitigation Licence will be required from Natural England for the proposed development to proceed.

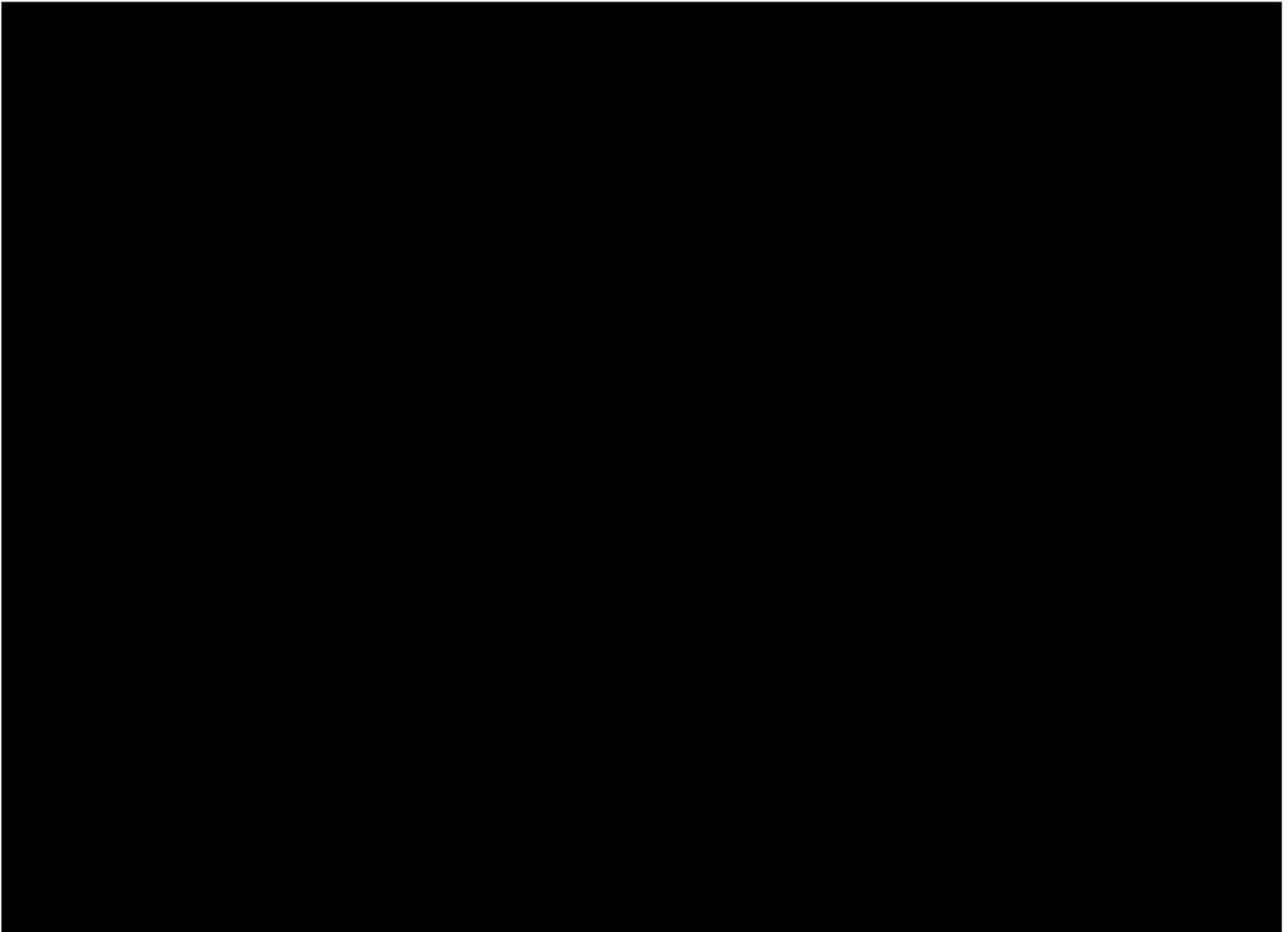
Water voles and otters

- 6.20. The proposed works are not expected to result in the loss of water vole or otter habitat, with the proposed construction of the menage located 20m from the riverbank, with the riverbank unaffected. Although no signs of water vole or otters were present during the site visit, there are records of both species within the ownership boundary and within 30m of the proposed works.
- 6.21. The following mitigation is recommended to avoid impacts on water voles and otters from the proposed works:
- i. If the work is to be within 6m of the bank, further water vole survey consisting of at least two visits in suitable weather between April and September to inform a relative population density is currently being conducted.
 - ii. A pre-construction survey for otter holts to be conducted within 30 days of the proposed start date. If an otter holt is discovered, the nature of planned works within 30m of the holt will require assessment for potential impacts, and to inform an appropriate mitigation strategy. This may include further surveys and holt closure under licence.
- 6.22. After these precautionary mitigation measures, we predict no impact on water voles and otters as a result of the development plans.

Reptiles

- 6.23. The proposed works are expected to result in a low scale loss of terrestrial habitats, through the conversion and clearance of ≈ 0.2 ha of improved grassland to a menage and stable block.
- 6.24. Although the proposed development site is not large enough to sustain a population of reptiles, the suitable habitat within the ownership site is large enough to support a population, with ≈ 1.9 ha of improved grassland which is irregularly managed. The remaining ≈ 1.7 ha of improved grassland meadow within ownership boundary will be converted into horse pasture.

- 6.25. The data search has highlighted previous records of reptiles along the train tracks, 15m from the ownership boundary and 80m from the proposed development site.
- 6.26. The development involves a risk of injuring or killing individual reptiles potentially present within the site.
- 6.27. The following mitigation is recommended to avoid impacts on reptiles from the proposed works:
- i. A reptile presence/absence survey to be conducted in the appropriate season (optimally in April, May or September) to determine an appropriate mitigation strategy, which could include trapping and translocation of animals on site, and creation of reptile hibernacula.
- 6.28. The outcomes of the presence/likely absence surveys will inform the detailed mitigation for reptiles. We consider that the development will be able to accommodate this in the form of habitat creation, hibernacula construction and translocations, if required.



Dormice

- 6.32. No impacts are expected on this species from the proposed development and no mitigation is required.

Other animals

- 6.33. 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).
- 6.34. 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 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 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).

There were no permanent structures on site to be assessed for their potential to support roosting bats. The site is comprised predominantly of improved grassland, hedgerows and scattered trees.

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 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 3, HSI indices.

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

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

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.

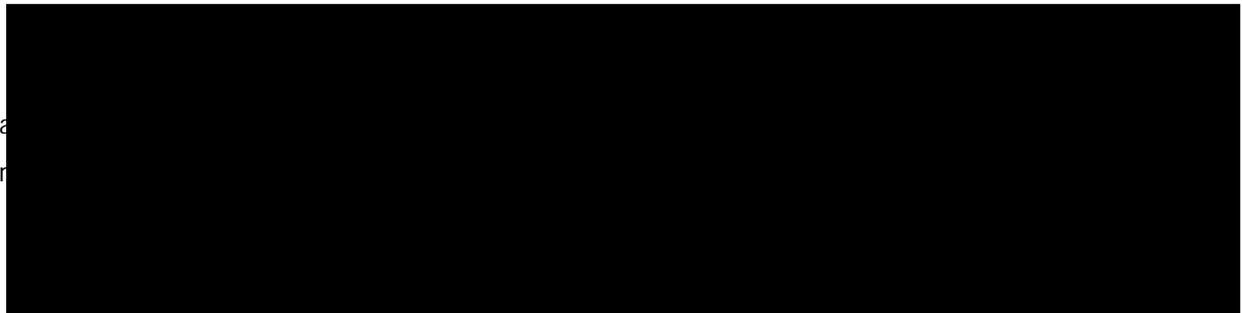
White-clawed crayfish inhabit streams and rivers with a moderate flow rate, and lakes. Clear, well-oxygenated water is preferred. Typical habitat features include crevices in rocks, gaps between stones, submerged plants and tree roots.

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

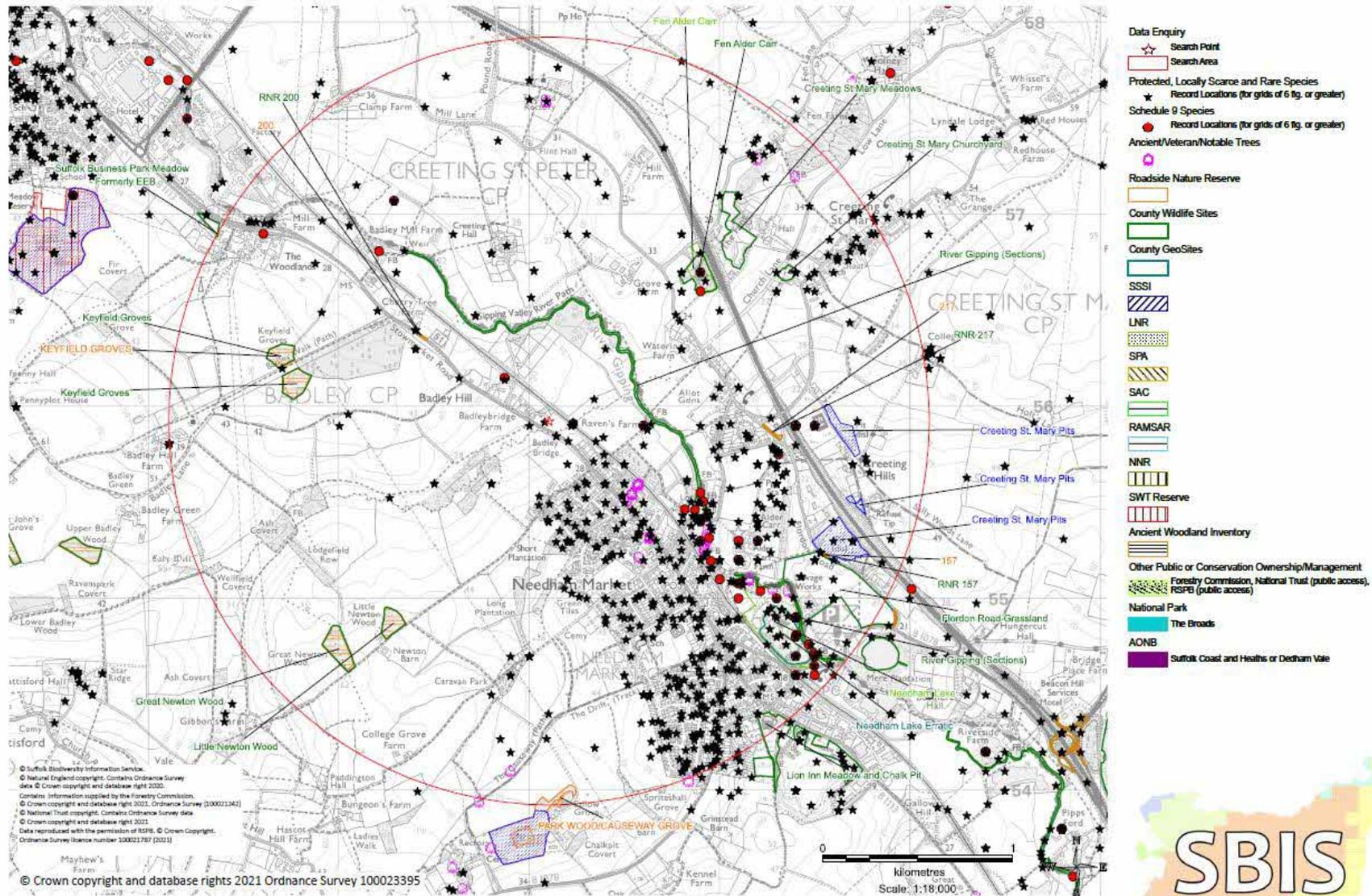
Particular regard was made to the nature of the proposed development and the potential of impact upon any other protected species, species which are nationally or locally scarce, or species subject to other conservation designations such as Red Data Book or Priority S41 species, from the development 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 2km



Greenlight (Bridge Barn, Badley TM0810355924) 2km Data Enquiry



Suffolk Biodiversity Information Service

Date: 18/08/2021 | Drawn by: Jane Mason

Appendix C

Protected sites citations

SSSI citations

COUNTY: SUFFOLK SITE NAME: CREETING ST MARY PITS

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 097555 Area: 5.2 (ha.) 12.8 (ac.)

Ordnance Survey Sheet 1:50,000: 155 1:10,000: TM 05 NE

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

Date Notified (Under 1981 Act): 1987 Date of Last Revision: –

Other Information:

This new site partially overlaps the former Creeting Hill Sand Pits site denotified in October 1986.

Description and Reasons for Notification:

This complex of old quarry sections allows a very important part of the Lower Pleistocene stratigraphy of Suffolk to be demonstrated. The site is of great importance as the type-site of the recently defined Creeting Sands, thought to be shallow marine/intertidal sediments laid down during an early Pleistocene interglacial. These occur at the base of the sequence and are overlain by gravels, either early Thames deposits (Kesgrave Formation) or Anglian outwash, which are in turn overlain by till (Lowestoft Formation). The description of these newly defined marine/intertidal beds and the appraisal of their relationship to better established parts of the East Anglian stratigraphy are at an early stage, but will clearly focus considerable attention on the Creeting St Mary Pits. The latter therefore have considerable research potential as well as great importance as a key stratigraphic site.

COUNTY: SUFFOLK

SITE NAME: BARKING WOODS

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

National Grid Reference: TM 080530

Area: 95.1 (ha.) 234.9 (ac.)

Ordnance Survey Sheet 1:50,000: 155

1:10,000: TM 05 SE

Date Notified (Under 1949 Act): 1965

Date of Last Revision: 1972

Date Notified (Under 1981 Act): 1985

Date of Last Revision: –

Other Information:

Site extended on re-notification.

Reasons for Notification:

The Barking Woods are an inter-related group of ancient woodlands, whose history has been well documented since 1251. The majority of the medieval earthbanks still remain and are marked by large pollards of oak and ash. The woodland structure is predominantly coppice-with-standards, composed of a variety of different stand-types. The diverse ground flora is typical of ancient woods and reflects a change in soils from the heavy boulder clay of Priestley and Swingen's Woods to the chalky sand of Titley Hill Wood.

The major stand-type is oak-ash-hazel. Oak standards form a sparse canopy with scattered ash *Fraxinus excelsior* and silver birch *Betula pendula*. The coppice layer consists of ash, maple *Acer campestre*, hazel *Corylus avellana*, hornbeam *Carpinus betulus* and sallow *Salix caprea*, with various types of elm woodland, notably at Titley Hill. Priestley Wood also contains cherry *Prunus avium*, aspen *Populus tremula* and small-leaved lime *Tilia cordata* and is one of the few sites in southern England for the rare wild pear tree *Pyrus pyraster*. Shrub species present within these woods include common hawthorn *Crataegus monogyna*, midland hawthorn *C. laevigata*, blackthorn *Prunus spinosa* and spindle tree *Euonymus europaeus*.

The wood contains a wide variety of flowering plants, particularly in wet areas and where coppicing has recently occurred. Dog's mercury *Mercurialis perennis* or bramble *Rubus fruticosus* are dominant with large areas of bluebell *Hyacinthoides non-scripta* and primrose *Primula vulgaris*. There is also an extensive colony of woodruff *Galium odoratum* in Priestley and Swingen's Woods. Other notable species include herb paris *Paris quadrifolia*, ramsons *Allium ursinum*, sanicle *Sanicula europaea* and the orchids common twayblade *Listera ovata*, early purple orchid *Orchis mascula*, greater butterfly orchid *Platanthera chlorantha* and broad-leaved helleborine *Epipactis helleborine*.

The rides are generally very narrow and shaded, except in the vicinity of recent coppicing. Despite this, they support a rich flora including bugle *Ajuga reptans*, nettle-leaved bellflower *Campanula trachelium* and yellow archangel *Lamium galeobdolon*.

Titley Hill Wood provides an interesting contrast to the other woods of this group. It lies on a different soil type and until recently, was one of the few almost pure elm coppices on a known ancient site. Unfortunately, most of the trees have been affected by Dutch Elm Disease, but there is evidence of re-generation.

County Wildlife Sites citations

CWS Number	Name	Description	Area
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	12.62
Mid Suffolk 104	LION INN MEADOW & CHALKPIT	This site is adjacent to the Lion Inn, Needham Market and comprises a mosaic of herb-rich chalky dry grassland (a Priority habitat) and part of a disused chalk pit to the south. The site is bordered to the west by an ancient green lane containing ancient hedgerows which may be of medieval origin. The hedges and scrub mosaic of the site provide excellent bird nesting habitat with a number of warbler species and nightingale having been recorded. The flora of the open grassland areas reflects the underlying chalk geology, with typical species including yellow-wort, blue fleabane, pyramidal orchid, carline thistle, purging flax, wild basil and centaury. This plant community is unusual in Suffolk, but quite typical of the chalky hinterland of the River Gipping in and around Needham Market. To the south, the site encompasses part of a chalk pit including steep chalk cliffs and spoil heaps at their base. This area also supports a flora influenced by the chalk, containing similar species to the meadow. The boundary of this site was amended due to part of the site being lost in 2012.	4.96
Mid Suffolk 143	CREETING ST MARY MEADOWS	This County Wildlife Site is located in a small river valley, west of Creeting St Mary and bordered in the west by the A45. It consist of three, low-lying wet meadows enclosed by hedges which border a tributary of the River Gipping. The watercourse itself is fringed by alder carr and is used regularly by kingfisher (specially protected species Wildlife and Countryside Act, 1981). Despite a number of years of neglect, the meadows still support a species-rich plant community characteristic of wet, unimproved pastures. Southern marsh-orchids are abundant (over nine hundred spikes were noted in	3.44

		1993), together with other uncommon wetland species for example marsh valerian, meadow saxifrage and fen bedstraw. In addition, a population of wood club-rush was recorded growing in the northernmost meadow. This species is scarce and declining and has been recorded in less than fifteen sites in Suffolk. d In order to maintain the botanical value of these meadows, it is important that they are maintained regularly by cutting for hay or by grazing or by a combination of both management regimes.	
Mid Suffolk 168	RNR 157	Chalk flora. This site is also a Roadside Nature Reserve.	0.01
Mid Suffolk 194	RNR 200	Chalk flora. This site is also a Roadside Nature Reserve.	0.05
Mid Suffolk 204	RNR 217	Chalk flora. This site is also a Roadside Nature Reserve.	0.12
Mid Suffolk 18	GREAT NEWTON WOOD	Great Newton Wood lies to the west of Needham Market and is situated close to another small ancient woodland, namely Little Newton Wood. A public footpath runs along the southern boundaries of both woods. The dominant species in the dense tree canopy are ash with some oak with smaller amounts of field maple coppice and hornbeam. Hazel coppice and occasional elder forms the shrub layer. The ground flora, although dominated by dog's mercury also contains patches of bluebell and primrose and a number of uncommon ancient woodland indicator species for example wood spurge and wood anemone. A ditch and a dense hedge composed of hawthorn, bramble, blackthorn, hornbeam and field maple enclose the wood. Great Newton Wood which is listed in English Nature's Ancient Woodland Inventory appears to have been neglected for some time.	2.02
Mid Suffolk 19	LITTLE NEWTON WOOD	This small woodland is one of several woodlands listed in English Nature's Inventory of Ancient Woodlands, situated to the west and south of Needham Market. Little Newton Wood, together with Great Newton Wood situated close by, are important both as refuges for wildlife and as features in an intensively-farmed landscape. The entire wood is enclosed by a barbed-wire fence and a dense hedge consisting of hawthorn, dogwood and blackthorn. The tree canopy is dominated by oak and ash with small amounts of hornbeam. Beneath the tree layers, hazel coppice and elder form a dense understorey in places. The woodland floor is carpeted with dog's mercury, bluebell and wood anemone, the latter species being strongly associated with ancient woodland. It appears that Little Newton Wood has been neglected for some time.	1.25
Mid Suffolk 198	FLORDON ROAD GRASSLAND	This site provides a matrix of grassland, scrub and woodland between the corridor of the River Gipping, Needham Lakes and the Geological SSSI at Creting St Mary Pits. The soils are a mix of chalk, calcareous clay and more neutral sands. There is a rich flora with chalk grassland species like Bee and Pyramidal orchids in the mown areas and Carline Thistle, Centaury, Ploughman's Spikenard and Wild Liquorice in the taller grassland. Areas of scrub around the sewage works and	12.64

		the diverse woodland provide a rich habitat for birds as well as reptiles and amphibians.	
Mid Suffolk 47	FEN ALDER CARR	This valuable County Wildlife Site is owned and managed by Suffolk County Council as a statutory Local Nature Reserve. It consists of a mosaic of habitat ranging from open water and tall fen vegetation to dense alder carr. The pond which was dug in 1980 is now colonised by a range of aquatic and emergent species including sedges, rushes and the scarce water violet. In addition it provides a valuable habitat for breeding amphibians. Closeby, the alder plantation contains many mature, multi-stemmed trees. Bird life is abundant in this area of woodland since alder seed provides a valuable food source for siskin, redpoll and chaffinch. The most vociferous birds using the alder carr are rooks, occupying a large rookery high up in the tree canopy. Some parts of the site are managed regularly to prevent the encroachment of alder and willow scrub into patches of open fen. In these areas tall wetland plants for example yellow flag, meadowsweet and reedmace are much admired by visitors to the reserve. Furthermore the diversity of habitat contained within the site supports good numbers of other wildlife, particularly invertebrates. For example forty species of moth were recorded when the site was surveyed in 1987	2.2
Mid Suffolk 48	CREETING ST MARY CHURCHYARD	Creeting St Mary Churchyard is of high wildlife value as it supports an unimproved, herb-rich, dry grassland flora characteristic of the sands and gravels of this part of Suffolk. The soils are very drought prone, and this is reflected in the flora. Typical species found within this lowland meadow priority habitat include field woodrush, lady's bedstraw and bulbous buttercup. However, the churchyard also includes species such as meadow saxifrage, spring sedge and small scabious which are only occasionally found in the county.	0.54
Mid Suffolk 8	SUFFOLK BUSINESS PARK MEADOW - FORMERLY	This site is a gently sloping area of unimproved species rich grassland (Priority habitat) adjacent to Suffolk Business Park, off the B1113 Needham to Stowmarket road. Despite its small size, the grassland community contains a high diversity of flowering plants. In addition to many fairly common meadow species such as common knapweed, selfheal, bird's-foot trefoil and wild carrot, the site also supports a number of species which are becoming increasingly scarce in Suffolk. These include strawberry clover, stone parsley, purging-flax and spiny restharrow. Pyramidal orchids and varying numbers of bee orchids are also present. One plant of greater burnet-saxifrage has also been found previously on this site.	0.41
Mid Suffolk 9	KEYFIELD GROVES	Keyfield Groves is listed in English Nature's Ancient Woodland Inventory. This small woodland is divided into two sections by a wide, shrubby track, known as the Badley Walk. This footpath is well-used by local people from Stowmarket and Needham Market. The northern woodland is composed of hazel and hornbeam coppice. Some old coppiced ash stools which are also present are evidence of the wood's antiquity. Midland hawthorn, a species strongly associated with medieval woodlands, and elder are abundant in the understorey. On the woodland floor, bramble and dog's	2.87

		<p>mercury form a dense layer. The southern woodland consists of field maple, elder, rose, elm and hazel. Large ash standards dominate the tree canopy. The impenetrable shrub layer provides valuable habitat for breeding birds. A significant feature of Keyfield Groves is the abundance of dead and dying wood. This provides a source of food for invertebrates, fungi and birds</p>	
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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.

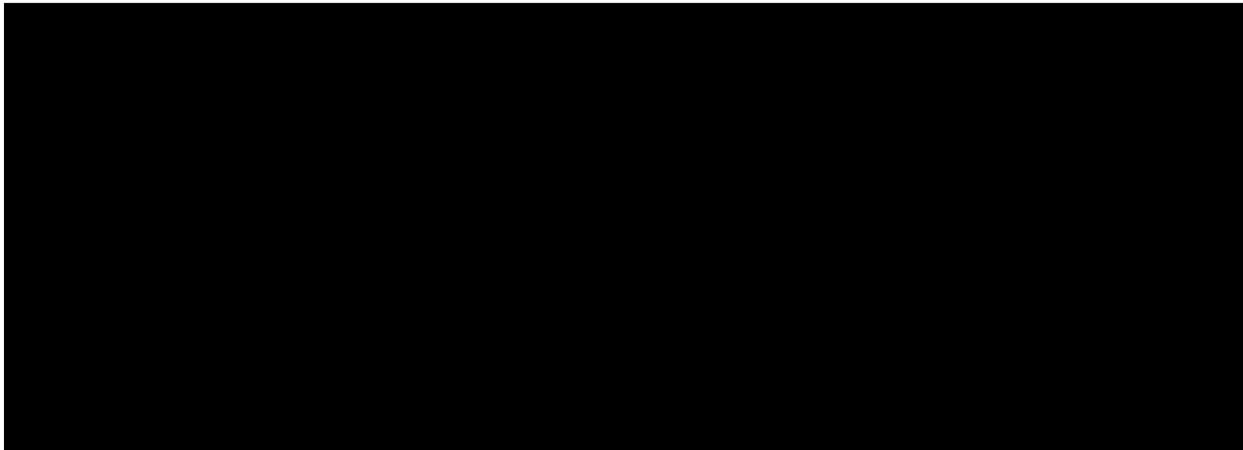
White-Clawed Crayfish

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.



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).

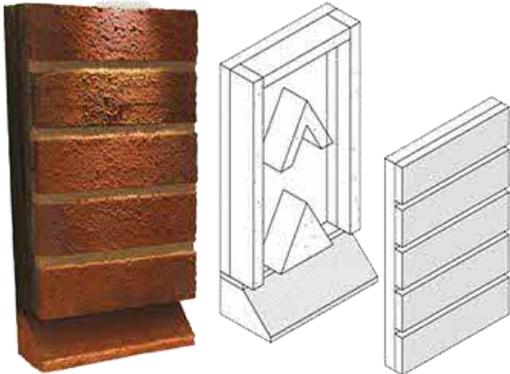
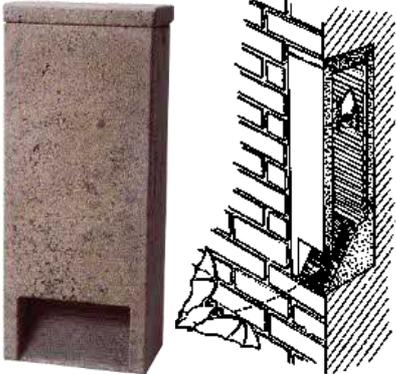
Appendix E

Plant species recorded on site

English name	Scientific name
Alder	<i>Alnus glutinosa</i>
Apple	<i>Malus</i> sp.
Ash	<i>Fraxinus excelsior</i>
Asparagus	<i>Asparagus officinalis</i>
Bird's-foot trefoil	<i>Lotus corniculatus</i>
Blackcurrant	<i>Ribes nigrum</i>
Blackthorn	<i>Prunus spinosa</i>
Bristly oxtongue	<i>Helminthotheca echioides</i>
Broad-leaved dock	<i>Rumex obtusifolius</i>
Timothy grass	<i>Phleum pratense</i>
Cherry	<i>Prunus avium</i>
Cock's-foot	<i>Dactylis glomerata</i>
Common mallow	<i>Malva sylvestris</i>
Corkscrew willow	<i>Salix matsudana</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping cinquefoil	<i>Potentilla reptans</i>
Damson	<i>Prunus</i> sp.
Dandelion	<i>Taraxacum officinale</i>
Field bindweed	<i>Convolvulus arvensis</i>
Dog-rose	<i>Rosa canina</i>
Dove's foot cranesbill	<i>Geranium molle</i>
Elder	<i>Sambucus nigra</i>
Fat hen	<i>Chenopodium album</i>
Field maple	<i>Acer campestre</i>
Greater willowherb	<i>Epilobium hirsutum</i>
Hawkweed	<i>Hieracium</i> sp.
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Hedge woundwort	<i>Stachys sylvatica</i>
Hogweed	<i>Heracleum sphondylium</i>
Hornbeam	<i>Carpinus betulus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Ivy	<i>Hedera helix</i>
Lilac	<i>Syringa</i> sp.
Bay laurel	<i>Laurus nobilis</i>
Meadow grass	<i>Poa</i> sp.
Mugwort	<i>Artemisia vulgaris</i>
Mullien	<i>Verbascum</i> sp.
Nettle	<i>Urtica dioica</i>
Plum	<i>Prunus</i> sp.
Prickly lettuce	<i>Lactuca serriola</i>
Raspberry	<i>Rubus idaeus</i>
Red clover	<i>Trifolium pratense</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Sitka spruce	<i>Picea sitchensis</i>
Spear thistle	<i>Cirsium vulgare</i>
White clover	<i>Trifolium repens</i>
White dead-nettle	<i>Lamium album</i>
Yarrow	<i>Achillea millefolium</i>
Yorkshire fog	<i>Holcus lanatus</i>
Weeping willow	<i>Salix babylonica</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>Integrated sparrow terrace 1SP Schwegler Sparrow Terrace</p> 	<p>Integrated sparrow terrace Terraced Sparrow 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 $\geq 5\text{m}$ 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 and www.jackson-fencing.co.uk)

<p style="text-align: center;">Quercus Fencing Hedgehog friendly oak woven fencing panels</p> 	<p style="text-align: center;">Jacksons-Fencing Hedgehog friendly gravel board for use with slotted posts</p> 
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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

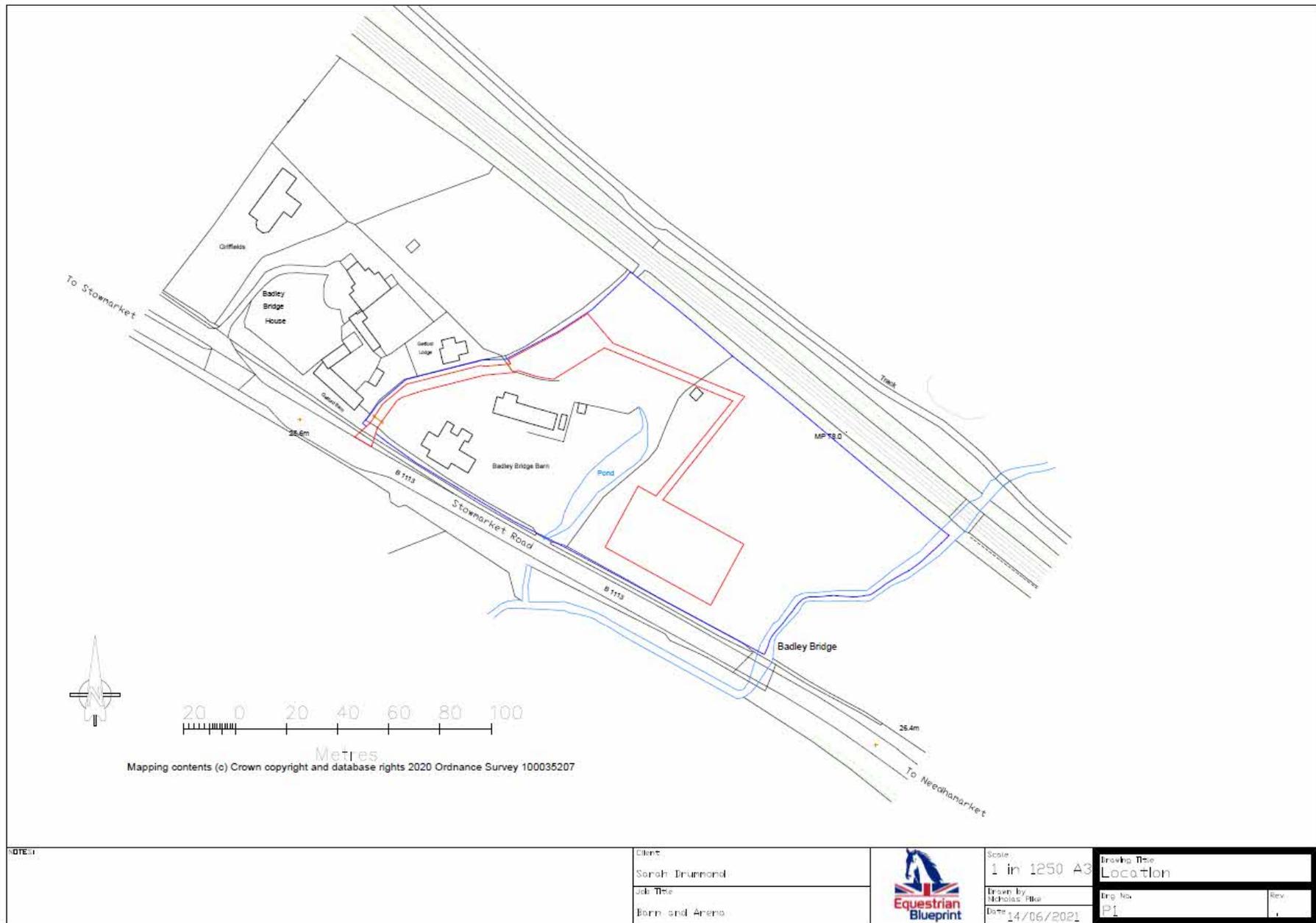
Trees	
Alder (d)	<i>Alnus glutinosa</i>
Apples (f; d)	<i>Malus</i> spp. (local varieties)
Ash (d)	<i>Fraxinus excelsior</i>
Beech (d)	<i>Fagus sylvatica</i>
Bird cherry (f; d)	<i>Prunus padus</i>
Elder (f; d)	<i>Sambucus nigra</i>
Elm (d)	<i>Ulmus procera</i>
Field maple (d)	<i>Acer campestre</i>
Pedunculate 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 Proposed plans



NOTE 1

Client: Sarah Drummond
Job Title: Barn and Arena



Scale: 1 in 1250 A3
Drawn by: Nicholas Pile
Date: 14/06/2021

Drawing Title: Location	
Emp. No.:	Rev.:
P1	1