Preliminary Ecological Appraisal

Land adjacent The Stagers, Redgrave

for

Donna Nevitt

12 January 2024

greenlight
environmental consultancy

Client
Donna Nevitt

Planning authority
Mid Suffolk District Council

Time limit of reliance

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

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

Document	Preliminary Ecological Appraisal
Version	1.0
Date of site visit	10 January 2024
Date of report	12 January 2024
Reference number	3405
Author	Miranda Proctor B.Sc (Hons), Natural England licences (Bat level 1 2020-44596-CLS-CLS, Great crested newt level 1 2018-37838-CLS-CLS)
Reviewer	Nathan Duszynski M.Sc, B.Sc (Hons), ACIEEM, Natural England licences (Bat level 2 2017-31943-CLS-CLS, Great crested newt level 1 2016-24303-CLS-CLS, Barn owl level 1 2023-11104-CL29-OWL)

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.

Nathan Duszynski, ACIEEM

Greenlight Environmental Consultancy Limited
Diss Business Hub
Hopper Way
Diss
Norfolk
IP22 4GT
www.greenlightco.uk

Table of Contents

SUMMARY

Greenlight Environmental Consultancy Ltd. has been commissioned to carry out a Preliminary Ecological Appraisal for a proposed development at land adjacent The Stagers, B1113, Redgrave, Suffolk, IP22 1RY (grid reference: TM 04358 77950).

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 single residential dwelling with associated cart lodge, driveway and garden space.

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

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

A pre-construction survey for badgers is required post-planning and prior to works commencing to inform an appropriate mitigation strategy if necessary.

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	Four statutory and two 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	Other developed land and modified grassland 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 on and around site. Species-rich wildflower mixtures in garden areas, rich in nectar and pollen. Construction work to be carried out in accordance with BSI (2012), BS 5837:2012, to protect trees and their root protection areas.
Bats	Buildings 1-4 have negligible summer and hibernation bat roosting potential. Low value commuting and foraging habitat on site.	Low scale loss and potential light disturbance of commuting and foraging habitats on site.	<u>Mitigation</u> Any lighting schemes will comply with Bat Conservation Trust (GN08/23) and CIE 150:2017 guidance. <u>Enhancement</u> Installation of one integrated bat box installed on new dwelling.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Breeding birds	Nesting habitats for hedgerow, tree and building nesting birds present on site, including potential breeding habitat for Red and Amber listed species. No suitable barn owl foraging habitat on site.	Low scale loss of nesting habitat on site. Potential disturbance to breeding birds.	Mitigation Works to any hedgerow, trees and buildings on site to be conducted outside bird nesting season or under watching brief of ecologist if during nesting season. Enhancement Installation of one integrated swift box and one sparrow terrace on new dwelling on site.
Great crested newts	Predominantly unsuitable terrestrial habitats on site. One pond within 250m of the site, assessed as average suitability. Site falls within Amber risk zone for district level licensing. Four GCN records within 2km.	GCN unlikely to be on site due to predominantly unsuitable habitats. Rapid Risk Assessment indicates *"*offence highly unlikely*"*.	Precautionary mitigation Cut and maintain vegetation short (maximum height of 10cm) on and around the site until the start of works.
Reptiles	Habitats on site predominantly unsuitable. 17 reptile records within 2km.	Reptiles unlikely to be found on site due to predominantly unsuitable habitats. No impacts predicted.	Precautionary mitigation Cut and maintain vegetation short (maximum height of 10cm) on and around the site until the start of works.
Badgers	No badger signs on site, but habitat suitable for badger setts. Two badger records within 2km.	Disturbance/ destruction of newly excavated badger setts.	Mitigation Pre-construction survey for badger setts conducted within 30 days of proposed start date. If a badger sett is discovered, the nature of planned works within 30m of the sett will require assessment for potential impacts, and to inform an appropriate mitigation strategy. This may include further surveys and sett closure under licence.
Other animals	N/A	Potential harm to animals.	Mitigation If fencing is required, this will be porous and provide openings for hedgehogs. Rough sawn planks will be placed inside any open excavations. Construction materials will be stored off the ground on pallets and waste materials in skips. Enhancement Installation of one bee brick.

1. METHOD

1.1. A walkover of the site was conducted on 10th January 2024 by Miranda Proctor – an independent, qualified and experienced ecologist. Survey conditions were as follows: 4ºC, 12ph wind, sunny and dry.

1.2. All survey methods were carried out in accordance with the most up to date good practice guidance for the relevant protected species. Please refer to Appendix A for the full methodology and species breakdown.

1.3. The habitats on and directly adjacent the site were considered unsuitable for the following protected species, with no evidence or signs of use observed. No further surveys or mitigation for these species are detailed in this report:

Water vole Arvicola amphibius

Otter Lutra lutra

White-clawed crayfish Austropotamobius pallipes

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 in the village of Redgrave, with The Street (B1113) located immediately northeast of the site, the Little Ouse River located 0.9km southwest, the A143 located 2.7km south and the A1066 located approximately 3.4km north. The closest town is Diss located approximately 6.6km northeast of the site.

2.3. The site is enclosed by The Street (B1113) to the northeast, grassland to the southwest and residential dwellings to the northwest and southeast. The wider surroundings are comprised of a mixture of residential dwellings, blocks of woodland, fens, grassland and arable fields lined with mature trees and hedgerows.

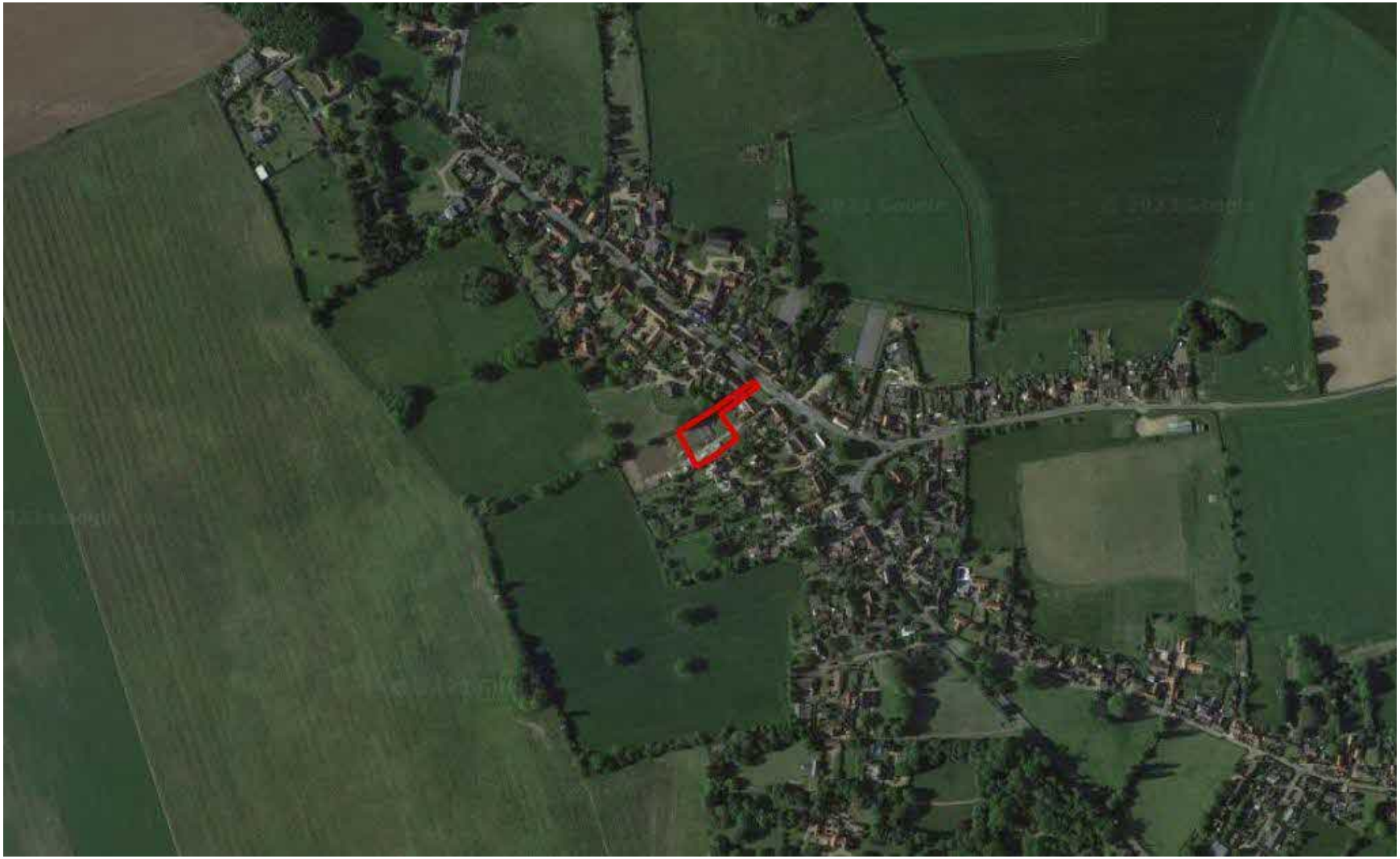


Figure 1
Satellite image of site surroundings, site indicated by red line.
Image © Google, date accessed 03/01/24

3. DESCRIPTION OF THE DEVELOPMENT

3.1. The proposals are for the demolition of the existing structures on site and construction of a single residential dwelling with associated cart lodge, driveway and garden space. Please refer to Appendix J for the proposed plans.

4. PROTECTED SITES

Statutory

4.1. There are four statutory protected sites located within 2km – one national Nature Reserve ("NNR"), one Ramsar, one Sites of Special Scientific Interest ("SSSI") and one Special Areas of Conservation ("SAC"). Please refer to Appendix C for the full citation.

i. Redgrave & Lopham Fens NNR, Ramsar & SSSI, approximately 0.9km north.

"This site consists of an extensive area of spring-fed valley fen at the headwaters of the River Waveney. It supports several distinct fen vegetation types, ranging from Molinia-based grasslands, mixed Sedge fen to Reed-dominated fen. There are small areas of wet heath, Sallow carr and Birch woodland. The invertebrate fauna is extensive and well studied and the site is the only British locality for the Fen Raft Spider Dolomedes plantarius."

ii. Waveney & Little Ouse Valley Fens SAC, approximately 0.9km north.

"This site occurs in the East Anglian centre of distribution of calcareous fens and contains very extensive great fen-sedge Cladium mariscus beds, including managed examples, as well as stands in contact zones between small sedge mire and species-poor Cladium beds. The habitat type here occurs in a spring-fed valley fen."

4.2. The proposed development falls outside of all SSSI Impact Risk Zones relating to residential developments being a development of less than 100 units.

Non-statutory

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

i. Redgrave Lake CWS, approximately 1.6km southeast.

"Redgrave Lake lies within the grounds of Redgrave Park, a 45 acre, privately owned estate between the villages of Redgrave and Wortham, to the north of the A143. This site represents valuable habitat for wildfowl and waders throughout the year."

ii. Hinderclay Fen CWS, approximately 1.5km northwest.

"This County Wildlife Site is located to the west of Redgrave and Lopham Fens, a Site of Special Scientific Interest (SSSI) and to the east of Thelnetham Fen which is also a valley fen of high conservation value, designated as a SSSI. Hinderclay Fen is a long and narrow site bordered in the north by the Little Ouse River."

5. HABITATS

Desktop review

5.1. Priority Habitats to occur within 2km (identified using MAGIC – managed by Natural England), include Coastal and Floodplain Grazing Marsh, Good Quality Semi-Improved Grassland, Purple Moor Grass and Rush Pasture, Lowland Heathland, Lowland Fens, Deciduous Woodland, Traditional Orchards and Woodpasture and Parkland BAP Priority Habitat. The closest of which, is Good Quality Semi-Improved Grassland located approximately 70m southwest of the site.

Field study

5.2. The habitats on the site are of low ecological value, comprised of buildings, developed land and modified grassland managed as lawn, with hedgerows (Priority Habitat) adjacent the site peripheries.

5.3. Priority Habitats, as listed under the NERC Act 2006 Section 41 Habitats of Principal Importance found adjacent site include: Hedgerows.

5.4. Figure 2 provides a map of the habitats present on the site. NERC Act 2006 Section 41 habitats have been identified where relevant. A full list of plant species recorded on site is attached in Appendix E.

Modified grassland (UK Habitat Classification g4; secondary code: 108 frequently mown and 827 garden)

5.5. The majority of the site features frequently mown modified grassland; whilst perennial ryegrass Lolium perenne and white clover Trifolium repens were not recorded within quadrats, there were <9 species per m^2. Species include: annual meadow Poa annua, cock's-foot Dactylis glomerate, common chickweed Stellaria media, common speedwell Veronica officinalis, cranesbill Geranium sp., daisy Bellis perennis, dandelion Taraxacum officinale, fescue Festuca sp. nettle Urtica dioica, ribwort plantain Plantago lanceolata, thistle Cirsium sp. and yarrow Achillea millefolium.

5.6. An area of the modified grassland has been set aside for food production exposing bare ground.

5.7. Flowerbeds were scattered along the northwest site boundary including species such as buddleia Buddleja sp., dogwood Cornus sanguinea, hazel Corylus avellana and mallow Malva sp.

Other native hedgerow (UK Habitat Classification h2a6; secondary code: 521 unmanaged) – Priority Habitat

5.8. The site features an unmanaged, predominantly native hedgerow with trees adjacent the northwest site boundary. Species include: English oak Quercus robur, holly Ilex aquifolium, ivy Hedera helix and Leyland cypress Cupressus x leylandii.

5.9. This hedgerow does not qualify as "important" under The Hedgerow Regulations 1997, lacking the required number of native woody species or associated features.

Buildings (UK Habitat Classification u1b5)

5.10. There are several buildings on site. Please refer to the bat section detailed below for further information.

Other developed land (UK Habitat Classification u1b6)

5.11. The site features areas of concrete and compacted gravel hardstanding across the site, with encroaching vegetation.

Built linear features (UK Habitat Classification u1e; secondary code: 612 fence and 853 mortared wall)

5.12. A mixture of fence and mortar walls enclose and intercept the site.

Target note	Comments
A	Stacked materials.

Table 1, target notes.

Figure 2
Habitats on site.
Image © QGIS, date accessed 10/01/24

Photo 1, road frontage and proposed northeastern access to the site, looking southwest.

Photo 2, looking south across the frequently mown grassland where an access track is proposed.

Photo 3, looking south across the site where the new dwelling and associated cart lodge and garden space is proposed.

Photo 4, looking east across the site from the western corner.

6. PROTECTED AND NOTABLE SPECIES

Desktop review

Data search

6.1. The biodiversity data search within 2km of the site indicated 2,630 records from 389 species.

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

36 swift Apus apus records, with the most recent from 2023.

Four GCN Triturus cristatus records, with the most recent from 2020. The closest record is located approximately 0.9km north.

17 reptile records, with the most recent from 2022. The closest record is located approximately 0.2km east. Species include: slow-worm Anguis fragilis, common lizard Zootoca vivipara, grass snake Natrix helvetica and adder Vipera berus.

[redacted]

47 hedgehog Erinaceus europaeus records, with the most recent from 2023.

100 bat records, with the most recent from 2023, including common pipistrelles Pipistrellus pipistrellus, soprano pipistrelles Pipistrellus pygmaeus, Nathusius' pipistrelle Pipistrellus nathusii, brown long-eared Plecotus auritus, serotines Eptesicus serotinus, noctules Nyctalus noctula, Leisler's Nyctalus leisleri, Daubenton's Myotis daubentonii, unidentified myotis Myotis sp., Natterer's Myotis nattereri, barbastelles Barbastella barbastellus and other unidentified bat species.

Protected species licences

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

Bats

6.4. There are four buildings located on site, as indicated in Figure 3 and photos 5-9.

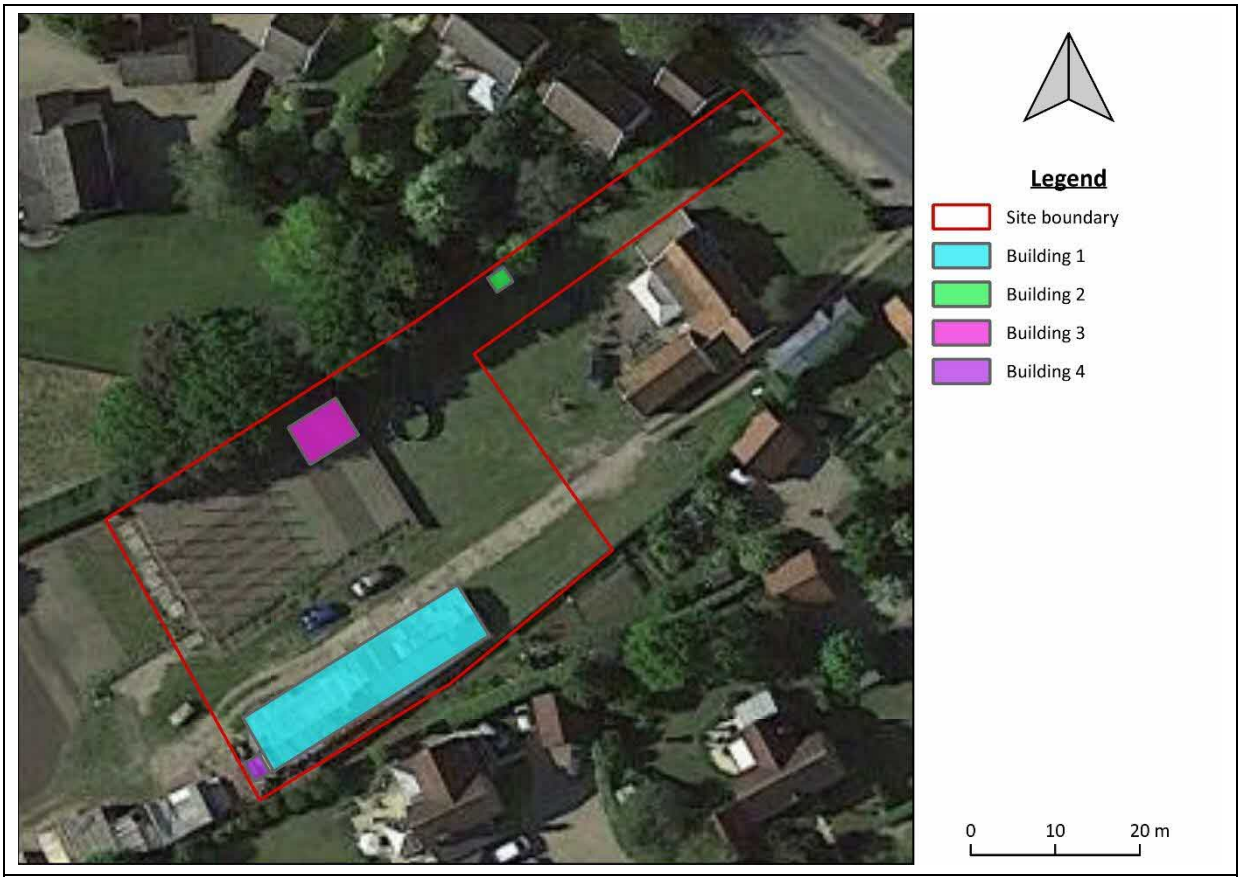


Figure 3
Location and numbering of buildings located on site.
Image © QGIS, date accessed 10/01/24

Buildings 1-4

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

Building one – outbuilding constructed from a mixture of breezeblock and timber walls, with a pitched corrugated metal roof and open access on the northwest aspect. Internally the roof space is open and features timber trusses, areas of plywood lining and moderate natural light. Crevices between breezeblocks and timbers were either exposed or heavily cobwebbed.

Building two – timber framed garden shed with tongue and groove cladding, a pitched chipboard roof and double doors/windows on the southeast aspect. Internally the roof space is open and features chipboard lining, a ridge beam and significant natural light.

Building three – a timber framed shed with tongue and groove cladding and a single-pitched polythene roof. Internally the roof space is open and features chipboard lining. There are no windows or natural light and therefore dark internally.

Building four – timbered framed shed, with tongue and groove cladding and a damaged bitumen felt lined pitched roof. The roof space is open with timber sarking and moderate natural light.

6.6. 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 (summer and hibernation) roost suitability for bats.

Photo 5, southwest and northwest aspects of building one.

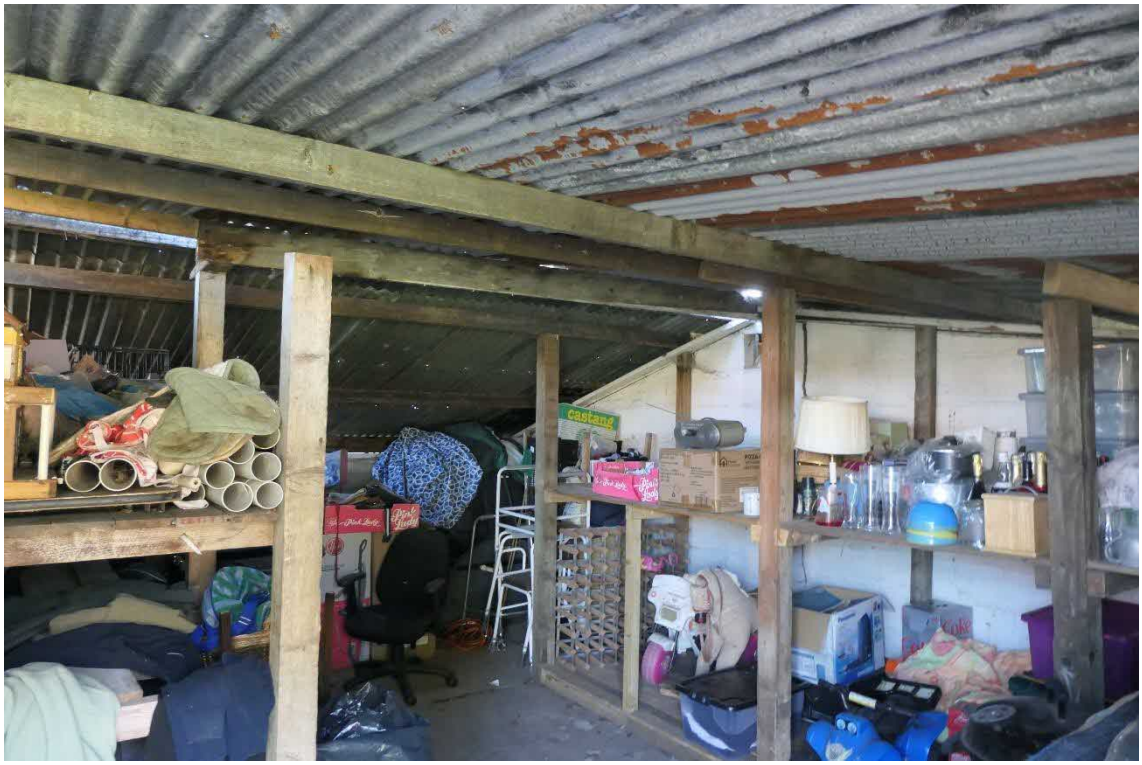


Photo 6, internal view of a compartment within building one, looking south.

Photo 7, northeast and southeast aspects of building two northwest.

Photo 8, northeast and southeast aspects of building three.

Photo 9, northwest and southwest aspects of building four.

Trees

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

Foraging and commuting links

6.8. The site itself provides low value foraging habitat for bats along the boundary hedgerows.

6.9. 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. Additionally, the Little Ouse River located 0.9km southwest provides links to the wider landscape. Residential dwellings adjacent the site and within Redgrave have the potential to provide roosting opportunities for bats.

Birds

6.10. Birds in the UK are classified into three categories of conservation importance - red, amber and green. Factors such as global threat level, population decline, breeding population decline and contraction of breeding range are taken into account to determine classification.

6.11. The following bird species were observed during the site visit:

Amber listed:

Woodpigeon	Columba palumbus

Green listed:

Blackbird	Turdus merula
Blue tit	Cyanistes caeruleus
Green woodpecker	Picur viridis
Magpie	Pica pica
Rook	Corvus frugilegus

6.12. The site provides suitable nesting habitats for hedgerow, tree and building nesting species.

6.13. The site has the potential to support nests for the following Red listed species: house sparrow Passer domesticus.

6.14. The site has the potential support nests for the following Amber listed species: woodpigeon Columba palumbus and wren Troglodytes troglodytes.

6.15. Please note, the species listed in the paragraphs above are not exhaustive, as birds can nest in unexpected locations. Additionally nesting parameters may change between years and following building/habitat management.

6.16. No signs of barn owl were found on the site and no foraging habitat is present.

Great crested newts

6.17. There are no ponds within the survey site and one further pond within 250m, which for the size of the development and nature of terrestrial habitat on the site, is a sufficient distance to consider for assessment (Figure 4). GCN are most likely to occupy good quality terrestrial habitat within 250m of a breeding pond (English Nature, 2001).

6.18. The terrestrial habitats on the site are considered predominantly unsuitable for GCN, consisting of other developed land and frequently mown modified grassland, with suboptimal hedgerows adjacent the site.

6.19. Terrestrial habitats adjacent the site include a mixture of unsuitable (arable fields and residential dwellings with associated gardens and hardstanding) and suitable (unmanaged grassland and hedgerows) GCN foraging and commuting habitats.

6.20. Pond one was assessed as average suitability for GCN (Table 2).

6.21. The site falls within the Amber risk zone for GCN district level licensing, which is classified as "containing main population centres for GCN and comprise important connecting habitat that aids natural dispersal" (Natural England, 2021).

Pond	1
Geographic location	Zone A
	1.00
Pond surface area (m^2)	350m^2
	0.70
Desiccation rate	Sometimes
	0.50
Water quality/ invert density	Moderate
	0.67
Shoreline shade (%)	30%
	1.00
Waterfowl impacts	Minor
	0.67
Fish impacts	Possible
	0.67
Ponds within 1km	13+
	1.00
Terrestrial habitat quality	Poor
	0.33
Macrophyte cover (%)	30%
	0.60
HSI Score	Average
	0.68

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

Photo 10, pond one, looking north.

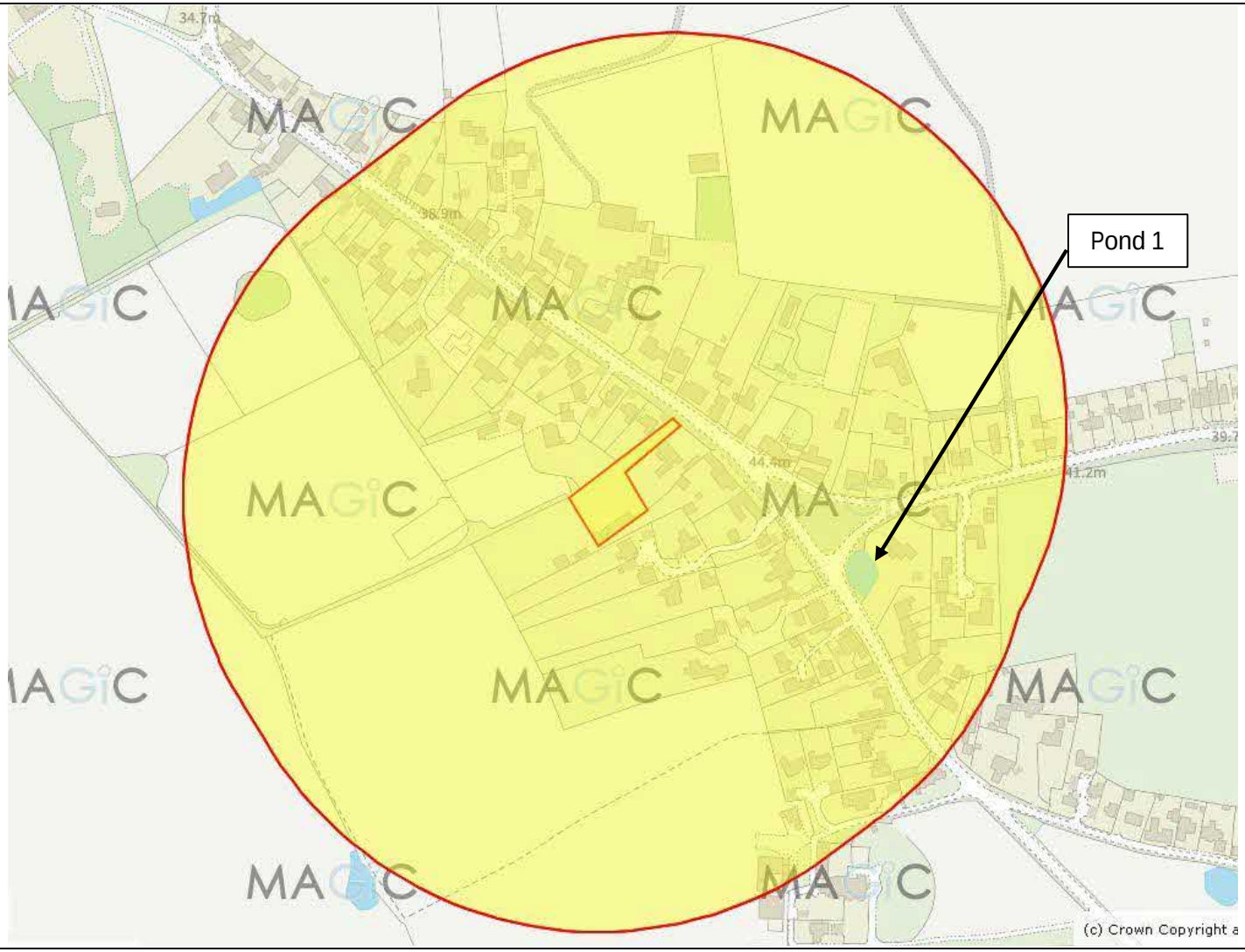


Figure 4
Ponds within 250m of the proposed site.
Image © MAGIC, date accessed 11/01/24

Reptiles

6.22. The habitats on the site are considered predominantly unsuitable for reptiles, consisting of other developed land and frequently mown modified grassland, with suboptimal hedgerows adjacent the site.

6.23. Habitats located on the site boundaries including the base of the hedgerows could be used as commuting habitats by reptiles if they were present in the area.

6.24. Terrestrial habitats adjacent the site include a mixture of unsuitable (arable fields and residential dwellings with associated gardens and hardstanding) and suitable (unmanaged grassland and hedgerows) reptile foraging and commuting habitats.

7. DISCUSSION AND CONCLUSIONS

Protected sites

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

The closest statutory protected sites, Redgrave & Lopham Fen NNR, Ramsar & SSSI, and Waveney & Little Ouse Fens SAC, are located approximately 0.9km north and designated for their fen habitats.

The closest non-statutory protected site (Hinderclay Fen CWS), is located approximately 1.5km northwest of the site and designated for its high conservation value fen.

7.2. The proposed development falls outside of any SSSI Impact Risk Zones relating to residential developments being a development of less than 100 units.

7.3. 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

7.4. The proposed works will require the demolition of existing buildings on site, removal of other developed land and clearance of vegetated habitats on site, including ≈0.14ha of frequently mown modified grassland. No priority habitats will be affected by the proposed development. This is expected to result in a low scale loss of nesting habitat for building nesting birds and foraging and commuting features for bats. Please refer to the bat section below for predicted impacts on buildings with potential bat roosts.

7.5. As a precautionary measure, the following mitigation will be implemented to avoid impacts on habitats from the proposed works:

i. A soft landscaping scheme to include:
   a. The planting of new native species-rich (≥5 species), hedgerows and trees on and around the site (see Appendix F for suggested species).
   b. The planting of native flowering lawn mixtures in garden space, which are rich in nectar and pollen (see Appendix F for suggested seed mix).

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.

Bats

7.6. The proposed works are expected to result in a low scale loss of potential 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.

7.7. As a precautionary measure, the following mitigation will be implemented to avoid impacts on bats from the proposed works:

i. Any lighting schemes will follow guidance from the Bat Conservation Trust (GN08/23) and CIE 150:2017. Warm-white (<3,000K) lights with UV filters (where necessary) will be installed away from roosting locations and linear features. Lighting units will feature a beam angle <70°, connected to movement sensors and feature baffles, hoods, louvres and horizontal cut off units at 90° where necessary.

7.8. 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 NBCRM that have passed the snagging propensity test (must be supplied/installed with the necessary certification) or traditional type 1F bitumen are used.

7.9. As enhancements, the following will be implemented:

i. One integrated bat box installed on the new dwelling on site (Bat Block – Appendix G).

7.10. 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

7.11. 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.

7.12. As a precautionary measure, the following mitigation will be implemented to avoid impacts on birds from the proposed works:

i. Any works affecting bird nesting habitat such as management of hedgerows, trees or buildings would ideally need to be conducted outside the main nesting season. If work is

planned during the bird nesting season (between 1st March and 31st July), then a precautionary check of all habitats will be conducted by a qualified ecologist immediately prior to starting any work. If any nesting birds are found, an appropriate protection zone from the nest will be required and will be maintained until the young have fledged.

7.13. As enhancements, the following will be implemented:

i. One integrated swift box installed on the new dwelling on site (Swift Block – Appendix G).
ii. One sparrow terrace installed on the new dwelling on site (Schwegler 1SP Sparrow Terrace – Appendix G).

7.14. 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 National Planning Policy Framework (NPPF) 2023.

Great crested newts

7.15. The proposed works are expected to result in a low scale loss of terrestrial habitats (≈0.02ha of buildings, ≈0.02ha other developed land and ≈0.14ha of frequently mown modified grassland).

7.16. 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 due to predominantly unsuitable habitats on site.

7.17. Taking a worst-case scenario of 0.1-0.5ha of land being lost or damaged between 100-250m of a breeding pond (pond one), the risk assessment calculation (set out in the GCN method statement template provided by Natural England) indicates an "offence highly unlikely".

7.18. As a precautionary measure, the following mitigation will be implemented to avoid impacts on GCN from the proposed works:

i. Vegetation on site will be cut and maintained short (maximum height of 10cm) until the start of works, to discourage animals from using these areas.

7.19. 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

7.20. The proposed works are not expected to result in a loss of reptile habitat. Approximately 0.18ha of unsuitable terrestrial habitats (≈0.02ha of buildings, ≈0.02ha other developed land and ≈0.14ha of frequently mown modified grassland) will be removed as part of the proposed works.

7.21. Although suitable reptile habitats are present adjacent the site, they are not subject to removal. As a precautionary measure, the following mitigation will be implemented to avoid impacts on reptiles from the proposed works:

i. Vegetation on site will be cut and maintained short (maximum height of 10cm) until the start of works, to discourage animals from using these areas.

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

Other animals

7.26. The surrounding habitat of the site is considered suitable for hedgehogs. To maintain potential hedgehog routes within the site and between the site and further habitats, any fencing installed will be porous and provide access openings for hedgehogs (see Appendix H for examples).

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

i. Any excavations will have a rough sawn plank placed inside to act as a ramp to allow any animals that have fallen in to escape. The excavations will be checked each morning works are scheduled for, to remove any animals trapped.

ii. Construction materials will be stored off the ground on pallets and waste materials in skips, to prevent providing shelter for animals and subsequent harm when materials are moved.

7.28. As enhancements, the following will be implemented:

i. The installation of one bee brick on new dwelling on site (Bee brick – Appendix I).

8. BIBLIOGRAPHY

Baker, J., Beebee, T., Buckley, J. Gent, T., Orchard, D. (2011). Amphibian Habitat Management Handbook. Amphibian and Reptile Conservation: Bournemouth

Barn Owl Trust (2012). Barn Owl Conservation Handbook. Pelagic Publishing: Exeter.

Butcher, B., Carey, P., Edmonds, R., Norton, L., Treweek, J. (2023). UK Habitat Classification V2.0 – Advance publication of selected Habitat Definitions at http://www.ukhab.org/

Bright, P., Morris, P., Mitchell-Jones, T. (2006). The dormouse conservation handbook. English Nature

British Standard BS 42020:2013 Biodiversity - Code of Practice for planning and development.

British Standards Institution (2012). BS 5837:2012, Trees in relation to design, demolition and construction – Recommendations.

CIEEM (2017). Guidelines for Preliminary Ecological Appraisal.

Collins, J. (Ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn.). The Bat Conservation Trust, London.

Department for Levelling Up, Housing & Communities (2023). National Planning Policy Framework, London.

Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R., Lock, L. Musgrove, A., Noble, D., Stroud, D., Richard, G. (2015). Birds of conservation concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 108, 708-746.

Edgar, P., Foster, J., Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation: Bournemouth

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

Gent, A.H. and Gibson, S.D. eds. (1998). Herpetofauna Workers´ Manual. Peterborough, Joint Nature Conservation Committee.

Griffiths, R.A., Raper, S.J., Brady, L.D. (1996). Evaluation of a standard method for surveying common frogs (Rana temporaria) and newts (Triturus cristatus, T. helveticus, and T. vulgaris). Joint Nature Conservation Committee Report No. 259.

International Commission on Illumination (2017). CIE 150:2017, Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations.

Korsten, E., Jansen, E., Booman, M., Schillemans, M., Limpens, H. (2016). Swarm and Switch: on the trail of the hibernating common pipistrelle. Bat News Issue 110, BCT, London. Available from: https://researchgate.net/publication/306098306_Swarm_and_switch_on_the_trail_of_the_hibernating_common_pipistrelle.

Langton, T., Beckett, C., Foster, J. (2001). GCN Conservation handbook. Froglife.

McLean, I.F.G., JNCC (Drafted by) on behalf of the Inter-agency Translocations Working Group (2003). A Habitats Translocation Policy for Britain.

Natural England (2021). GCN Risk Zones. Available: https://naturalengland-defra.opendata.arcgis.com/search?q=GCN%20risk%20zone.

Oldham, R.S., Keeble, J., Swan, M.J.S., Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155.

Pearce, G.E. (2011). Badger behaviour, conservation and rehabilitation. Pelagic Publishing: Exeter.

Reason, P.F., Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

Sewell, D., Griffiths, R.A., Beebee, T.J.C., Foster, J., Wilkinson, J.W. (2013). Survey protocols for the British herpetofauna. ARC, DICE University of Kent and University of Sussex.

Stone, E.L. (2013). Bats and lighting: Overview of current evidence and mitigation. University of Bristol.

Strachan R., Moorhouse T.,Gelling, M. (2011). Water Vole Conservation Handbook Third Edition. University of Oxford: Abingdon

UKHab Ltd (2023). UK Habitat Classification Version 2.0 (at https://www.ukhab.org).

Appendix A
Methods

Desktop Review

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

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

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

Habitats

The habitats on site have been defined using the UK Habitat Classification Version 2.0 (UKHab Ltd, 2023). 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, 2023).

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:

Suitability – none. No habitat features on site likely to be used by any roosting bats at any time of year i.e. a complete absence of crevices/suitable shelter at all ground/underground levels.

Negligible roost suitability for bats. These buildings have no obvious potential roosting features for bats, or minor features in an isolated or unsuitable location such that the presence of a bat roost is considered highly unlikely. However, a small element of uncertainty remains as bats can use small and

apparently unsuitable features on occasions. 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 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, two dusk emergence surveys 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 three dusk emergence surveys 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, dense thick-stemmed ivy, etc.

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

Suitability - none. Either no potential roosting features in the tree or highly unlikely to be any. Trees highly unlikely to be used by roosting bats.

Further Assessment Required. Further assessment required to establish if potential roosting features are present in the tree.

Potential Roosting Feature – Individual (**"**PRF-I**"**). Potential roosting features only suitable for individual bats or very small numbers of bats, either due to the size of lack of suitable surrounding habitats i.e. trees with limited roosting potential.

Potential Roosting Feature – Multiple (“PRF-M”). Potential roosting features suitable for multiple bats and may therefore be used by a maternity colony.

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.

Suitability – none. No habitat features on site likely to be used by any commuting or foraging bats at any time of year i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats.

Negligible commuting and foraging potential for bats. Habitat features unlikely to be used by commuting or foraging bats i.e. no obvious flight-paths or foraging opportunities. However, a small element of uncertainty remains in order to account for non-standard bat behaviour.

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 50m²
SI3	Permanence	Number of years' pond dry out of ten
SI4	Water quality	Measured by invertebrate diversity
SI5	Shade	Percentage shading of pond edge at least 1m from shore
SI6	Fowl	Level of waterfowl use
SI7	Fish	Level of fish population
SI8	Pond count	Number of ponds within 1km divided by 3.14
SI9	Terrestrial habitat	Quality of surrounding terrestrial habitat
SI10	Macrophytes	Percentage extent of macrophyte cover on pond surface

Table 3, HSI indices.

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

HSI = (SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x 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.

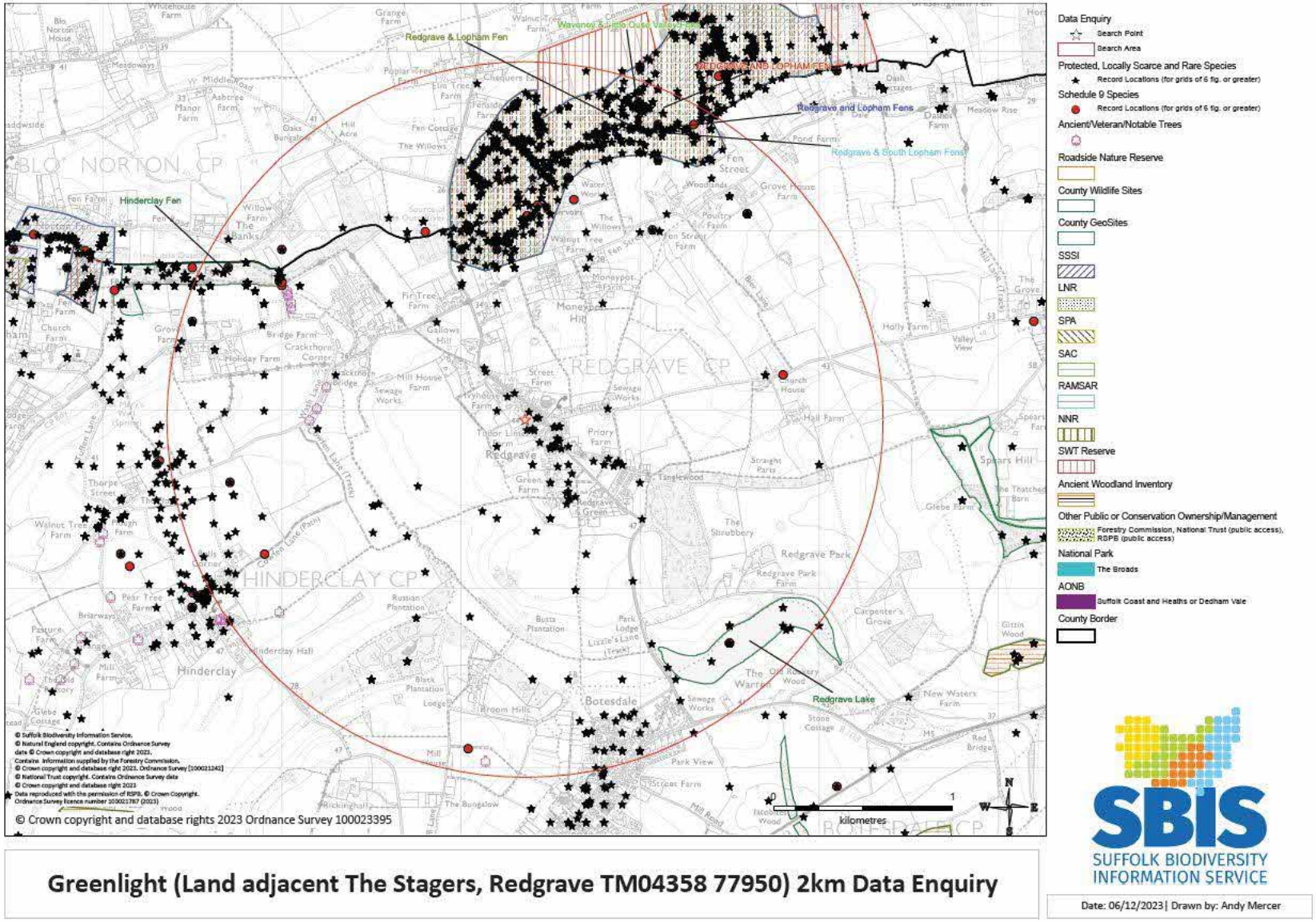
Other protected species

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



Greenlight (Land adjacent The Stagers, Redgrave TM04358 77950) 2km Data Enquiry

SUFFOLK BIODIVERSITY INFORMATION SERVICE

Date: 06/12/2023| Drawn by: Andy Mercer

Appendix C
Protected sites citations

SSSI citations

COUNTY: NORFOLK/SUFFOLK SITE NAME: REDGRAVE AND LOPHAM FENS

DISTRICT: MID-SUFFOLK AND BRECKLAND, NORFOLK

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, Breckland District Council

National Grid Reference: TM 050797 Area: 124.92 (ha.) 308.68 (ac.)

Ordnance Survey Sheet 1:50,000: 144 1:10,000: TM 07 NW, NE

Date Notified (Under 1949 Act): 1954 Date of Last Revision: N/A

Date Notified (Under 1981 Act): 1985 Date of Last Revision: –

Other Information:
This site is of international importance and has been recommended for inclusion in the list of wetlands of international importance under the Ramsar Convention. This site is a Suffolk Trust for Nature Conservation reserve and is listed in the Nature Conservation Review.

Reasons for Notification:
This site consists of an extensive area of spring-fed valley fen at the headwaters of the River Waveney. It supports several distinct fen vegetation types, ranging from *Molinia*-based grasslands, mixed Sedge fen to Reed-dominated fen. There are small areas of wet heath, Sallow carr and Birch woodland. The invertebrate fauna is extensive and well studied and the site is the only British locality for the Fen Raft Spider *Dolomedes plantarius*.

Part of the site exhibits a classic zonation of vegetation types. Dry marginal birch woodland gives way to a band of fen grassland dominated by Purple Moor grass *Molinia caerulea*. This can be species-rich with Meadow Thistle *Cirsium dissectum*, Grass of Parnassus *Parnassia palustris*, Butterwort *Pinguicula vulgaris*, Black Bog-rush *Schoenus nigricans* and Marsh Helleborine *Epipactis palustris*. This grades into a mixed fen community dominated by the Fen Rush *Juncus subnodulosus* with Southern Marsh Orchid *Dactylorhiza praetermissa*, Saw Sedge *Cladium mariscus* and Marsh Valerian *Valeriana dioica* as frequent associates. Sand ridges protrude into these two zones and they support a damp heathy vegetation with Cross-leaved Heath *Erica tetralix* and Ling *Calluna vulgaris* which adds considerably to the diversity of the site.

Towards the centre of the valley the Fen Rush and Saw Sedge communities give way to more eutrophic tall fen. This is dominated by Reed with herbs such as Yellow and Purple Loosestrifes *Lysimachia vulgaris* and *Lythrum salicaria*, Meadowsweet and Hemp Agrimony *Eupatorium cannabinum*. Most of the fen communities are prone to

invasion by Sallow *Salix cinerea* and locally this has developed into dense scrub and carr.

The River Waveney and its feeder drains are sluggish eutrophic waters supporting a rather narrow range of aquatic plants. Starwort *Callitriche sp.*, Floating Pondweed *Potamogeton natans*, Curled Pondweed *P. crispus* and Fennel-like Pondweed *P. pectinatus* are the dominant species. In addition there are a number of small pools in the fen areas, some of which are the flooded relics of former peat cuts. They form the habitat for the nationally rare Fen Raft Spider *Dolomedes plantarius* which is listed in Schedule 5 of the Wildlife and Countryside Act 1981. Aquatic plants include Bladderwort *Utricularia vulgaris*, Fen Pondweed *P. coloratus* and Charophytes, all indicators of unpolluted, low fertility spring water.

Ramsar citations

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.
DD MM YY
Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
Designated: 15 February 1991

3. Country:
UK (England)

4. Name of the Ramsar site:
Redgrave and South Lopham Fens

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✔ -or- *no* ☐;
ii) **an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✔ -or- *no* ☐;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

52 22 34 N 01 00 42 E

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Bury St Edmunds

The site straddles the Norfolk /Suffolk border, west of Diss.

Administrative region: Norfolk; Suffolk

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 127.09

Min. 0
Max. 0
Mean 0

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The site is an extensive example of lowland base-rich valley, remarkable for its lack of fragmentation. The diversity of the site is due to the lateral and longitudinal zonation of the vegetation types characteristic of valley mires, such as dry birch woodland, scrub and carr, floristically-rich fen grassland, mixed fen, wet heath and areas of reed and saw sedge. The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius*.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2, 3

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site is an extensive example of spring-fed lowland base-rich valley, remarkable for its lack of fragmentation.

Ramsar criterion 2

The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius*.

Ramsar criterion 3

The site supports many rare and scarce invertebrates, including a population of the fen raft spider *Dolomedes plantarius*. The diversity of the site is due to the lateral and longitudinal zonation of the vegetation types characteristic of valley mires.

See Sections 21/22 for details of noteworthy species

---

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

---

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, basic, sand, clay, alluvium, nutrient-rich, nutrient-poor, sedimentary, limestone/chalk, maerl, peat
Geomorphology and landscape	lowland, valley, floodplain
Nutrient status	eutrophic, mesotrophic, oligotrophic
pH	acidic, alkaline
Salinity	fresh
Soil	mainly mineral, mainly organic
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Wattisham, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/wattisham.html) Max. daily temperature: 13.4° C Min. daily temperature: 5.8° C Days of air frost: 48.3 Rainfall: 573.8 mm Hrs. of sunshine: 1635.2

General description of the Physical Features:

Redgrave and Lopham Fen is an extensive area of spring-fed valley fen in the headwaters of the River Waveney. It is the largest fen in lowland England. The reserve has a range of distinct habitats including the internationally important saw sedge beds and purple-moor grasslands.

---

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Redgrave and Lopham Fen is an extensive area of spring-fed valley fen in the headwaters of the River Waveney. It is the largest fen in lowland England.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Sediment trapping, Recharge and discharge of groundwater, Flood water storage / desynchronisation of flood peaks, Maintenance of water quality (removal of nutrients)

19. Wetland types:

Inland wetland

Code	Name	% Area
U	Peatlands (including peat bogs swamps, fens)	37.6
Tp	Freshwater marshes / pools: permanent	35.2
Xp	Forested peatland	12.6
W	Shrub-dominated wetlands	12.6
9	Canals and drainage channels	1.2
M	Rivers / streams / creeks: permanent	0.8

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Part of the site exhibits a classic zonation of vegetation types, characteristic of valley mires. Dry marginal woodland is replaced by floristically-rich fen grassland, dominated by purple moor-grass *Molinia caerulea*. This grades into a mixed fen vegetation community and areas dominated by reed and sedge, notably saw sedge *Cladium mariscus* in the valley bottom. Sandy ridges protrude into these zones and support damp, heathy vegetation. Most of the fen communities are prone to invasion by sallow and locally this has developed into dense scrub and carr.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Assemblage.

The site supports a diverse assemblage of plant species and is internationally important because it supports *Molinia caerulea* meadows and *Cladium mariscus*-dominated chalk fen.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species Information

Nationally important species occurring on the site.

Invertebrates.

Dolomedes plantarius (Endangered (RDB 1); Schedule 5 of the Wildlife and Countryside Act 1981 as amended)

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Environmental education/ interpretation
Livestock grazing
Non-consumptive recreation
Scientific research
Tourism

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Private	+	+
Public/communal	+	

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	
Collection of non-timber natural products: (unspecified)	+	

Produced by JNCC: Version 3.0, 13/06/2008

Cutting of vegetation (small-scale/subsistence)	+	
Permanent arable agriculture		+
Grazing (unspecified)	+	
Sewage treatment/disposal		+
Flood control	+	
Transport route	+	+
Domestic water supply		+
Non-urbanised settlements		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Dredging	1		+		+
Eutrophication	1		+		
Pollution – agricultural fertilisers	1			+	
Pollution – pesticides/agricultural runoff	1			+	

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Eutrophication - Catchment nutrient-loading hoped to be investigated to address eutrophication.

Pollution – agricultural fertilisers - Catchment nutrient-loading hoped to be investigated to address fertiliser pollution.

Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Management agreement	+	+
Site management statement/plan implemented	+	
Environmentally Sensitive Area (ESA)	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:
The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:
e.g. management plan in preparation; official proposal as a legally protected area, etc.
No information available

29. Current scientific research and facilities:
e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Flora and Fauna.
Vegetation, bird and invertebrate surveys/monitoring carried out by SWT.
English Nature has been funding research into the ecology and monitoring of *Dolomedes plantarius* through its Species Recovery Programme.
Work carried out to improve understanding of the fen and its hydrology.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:
e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.
Currently used by schools but mostly by naturalists and local inhabitants. A vistor centre has been constructed and is in regular use for educational activities and displays for groups and visitors. The restoration programme for the site has been designated as an EC demonstration project.

31. Current recreation and tourism:
State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Low level of usage by tourists, more in the summer months. The visitor centre is available and is holding regular events to encourage visitors to the site. The site is grazed by Konik ponies that have proved popular with visitors.

32. Jurisdiction:
Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.
Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:
Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.
Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

SAC citations

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

Citation for Special Area of Conservation (SAC)

Name:	Waveney and Little Ouse Valley Fens
Unitary Authority/County:	Norfolk, Suffolk
SAC status:	Designated on 1 April 2005
Grid reference:	TM054799
SAC EU code:	UK0012882
Area (ha):	193.18
Component SSSI:	Blo' Norton and Thelnetham Fen SSSI, Redgrave and Lopham Fens SSSI, Weston Fen SSSI

Site description:
This site occurs in the East Anglian centre of distribution of calcareous fens and contains very extensive great fen-sedge *Cladium mariscus* beds, including managed examples, as well as stands in contact zones between small sedge mire and species-poor *Cladium* beds. The habitat type here occurs in a spring-fed valley fen.

Purple moor-grass – meadow thistle (*Molinia caerulea – Cirsium dissectum*) fen-meadows are associated with the spring-fed valley fen systems. The *Molinia* meadows occur in conjunction with black bog-rush – blunt-flowered rush (*Schoenus nigricans – Juncus subnodulosus*) mire and calcareous fens with great fen-sedge. Where the fen-meadow is grazed it is more species-rich, with frequent southern marsh-orchid *Dactylorhiza praetermissa*.

A population of Desmoulin's whorl snail *Vertigo moulinsiana* occurs in a valley fen at Weston Fen.

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:

- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*. (Calcium-rich fen dominated by great fen sedge (saw sedge))*
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). (Purple moor-grass meadows)

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:

- Desmoulin's whorl snail *Vertigo moulinsiana*

Annex I priority habitats are denoted by an asterisk (*).

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0012882
Date of registration: 14 June 2005
Signed:
On behalf of the Secretary of State for Environment, Food and Rural Affairs

ENGLISH NATURE

Waveney and Little Ouse Valley Fens SAC UK0012882
Compilation date: May 2005 Version: 1
Designation citation Page 1 of 1

County Wildlife Sites citations

CWS Number	Mid Suffolk 24
Site Name	Redgrave Lake
Parish	BOTESDALE
District	Mid Suffolk
NGR	TM055767
Description	Redgrave Lake lies within the grounds of Redgrave Park, a 45 acre, privately owned estate between the villages of Redgrave and Wortham, to the north of the A143. This site represents valuable habitat for wildfowl and waders throughout the year. The lake and surrounding habitats offer over-wintering and breeding opportunities. It is also an important site for birds on passage. This site has excellent connectivity along streams, hedgerows and blocks of woodland in the surrounding landscape. The lake contains a good mix of aquatic vegetation around the edges with patches of scattered scrub and mature trees along the banks. Along the southern bank there is a wide swathe of species-rich grassland. There are also a number of veteran trees throughout the parkland and wood pasture and two areas of woodland to the west and east where there is a transition to wet woodland. Grass snake have been recorded. The site provides diverse habitat for a range of species.
Area	17.38

CWS Number	Mid Suffolk 85
Site Name	HINDERCLAY FEN
Parish	HINDERCLAY
District	Mid Suffolk
NGR	TM038787
Description	This County Wildlife Site is located to the west of Redgrave and Lopham Fens, a Site of Special Scientific Interest (SSSI) and to the east of Thelnetham Fen which is also a valley fen of high conservation value, designated as a SSSI. Hinderclay Fen is a long and narrow site bordered in the north by the Little Ouse River. The peatland areas of the fen once supported a diverse wet fen community, containing many rare species. However in 1968, dredging operations lowered the river level by about two feet. This in turn led to a lowering of the fen water table and subsequent shrinkage of the peat. A large proportion of the site is now occupied by birch, sallow, oak and alder woodland. These woodland areas although of little botanical interest, provide an important habitat for breeding invertebrates and birds. To the south of the woodland, the site supports a mosaic of dry heath and acid grassland communities. Although rabbit-grazed, some scrub is encroaching in this section. Open fen vegetation is restricted to peat areas closer to the river. However these are rapidly reverting to sallow carr. In order to maintain the botanical diversity of this site, it will be necessary to carry out management work in the form of hay cutting or grazing to reduce the encroachment of the scrub into open areas.
Area	12.02

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 2023 (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 damage or destroyed.

Natural England Licensing - EPS Mitigation Licensing

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

Appendix E
Plant species recorded on site

English name	Scientific name
Annual meadow	Poa annua
Buddleja	Buddleja sp.
Cock's-foot	Dactylis glomerata
Common chickweed	Stellaria media
Common speedwell	Veronica officinalis
Cranesbill	Geranium sp.
Daisy	Bellis perennis
Dandelion	Taraxacum officinale
Dogwood	Cornus sanguinea
English oak	Quercus robur
Fescue	Festuca sp.
Ground ivy	Glechoma hederacea
Hazel	Corylus avellana
Holly	Ilex aquifolium
Ivy	Hedera helix
Leyland cypress	Cupressus x leylandii
Mallow	Malva sp.
Nettle	Urtica dioica
Ragwort	Jacobaea vulgaris
Ribwort plantain	Plantago lanceolata
Thistle	Cirsium sp.
Yarrow	Achillea millefolium

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

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

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

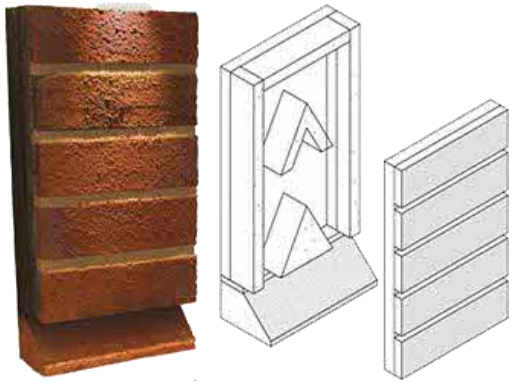
Grasses	
Common bent	Agrostis capillaris
Crested dog's-tail	Cynosurus cristatus
Meadow fescue	Festuca pratensis
Red fescue	Festuca rubra
Rough meadow-grass	Poa trivialis
Small timothy	Phleum bertolonii
Smooth meadow-grass	Poa pratensis
Sweet vernal-grass	Anthoxanthum odoratum
Yellow oat-grass	Trisetum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

Flowering Lawn Mixture – EL1 Emorsgate Seeds
https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/flowering-lawn-mixture/

Appendix G
Examples of bat and bird boxes

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

Integrated bat box
Habibat Bat Box



Integrated bat box
Bat Block

Standalone bat box
2F Schwegler Bat Box (General purpose)

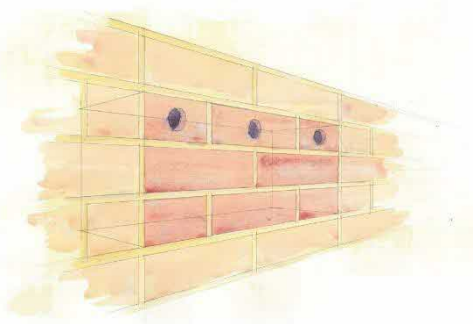
Standalone bat box
Greenwood's Ecohabitats three crevice bat box

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.

Integrated swift box Swift Block 	Integrated swift box Manthorpe Swift Brick 
Integrated sparrow terrace 1SP Schwegler Sparrow Terrace 	Integrated sparrow terrace Terraced Sparrow Box 

Recommendations for installing bird boxes:
(Sourced from British Trust for Ornithology www.bto.org, Manthorpe www.manthorpe.co.uk and Barn Owl Trust www.barnowltrust.org.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:

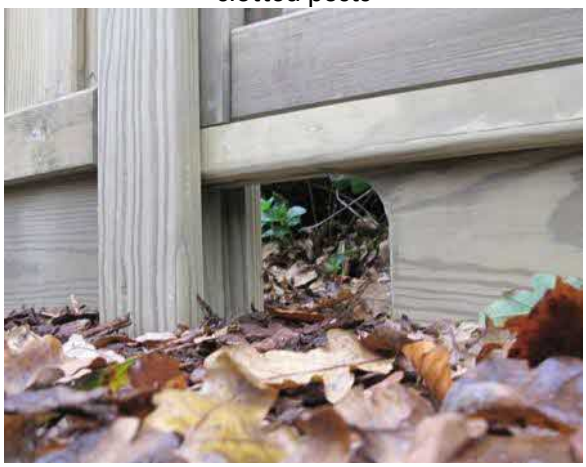
- Boxes should be sited 1-3m from the ground, ideally on tree trunks but can be placed on the side of a shed or wall. Avoid areas where foliage obscures the entrance hole.
- Don't place boxes too close to another nest box of the same type, as this may promote aggressive behaviour between neighbours.
- 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 ≥5m 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 H
Examples of hedgehog friendly fencing

(images sourced from www.quercusfencing.com and www.jackson-fencing.co.uk)

Quercus Fencing Hedgehog friendly oak woven fencing panels	Jacksons-Fencing Hedgehog friendly gravel board for use with slotted posts
	

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 I
Bee Bricks

(images sourced from www.nhbs.com and www.greenandblue.co.uk)

Bee post	Bee bricks
	

Recommended bee brick installation
(Sourced from NHBS www.nhbs.com)

Bee bricks will be installed on a south facing sunny spot of an external wall of the residential dwelling, at a minimum height of 1m. No vegetation should be obstructing the holes.

Bee posts will be positions south facing in a sun exposed spot, with no vegetation covering the fascia. The posts must be set in a concrete base at a minimum of 30mm, similar to installing a fencepost.

Appendix J
Proposed plans


Client:
Mr & Mrs Nevitt
Job Title:
land behind The Stagers, Redgrave
Drawing Title:
Proposed Site Layout
Scale:
1:200
Drawn By:
Date:
July 2022
Job Number:
Drawing Number:
Status:
Preliminary
whitworth


Client:
Mr & Mrs Nevitt
Job Title:
land behind The Stagers, Redgrave
Drawing Title:
Proposed Site Layout
Scale:
1:50
A2
Drawn By:
BT
Date:
July 2023
Job Number:
Drawing Number:
Status:
Preliminary
whitworth