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Client: Entran Ltd

Project: Carrow Works

Report: Preliminary Ecological Appraisal

QUALITY ASSURANCE

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1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd was commissioned to undertake a Preliminary Ecological Appraisal by Entran Ltd of a site known as Carrow Works in Norfolk.

This document is a report of this survey and has been produced to support a hybrid planning submission for a residential and mixed-use scheme which seeks to demolish warehouses and conversion of listed factory buildings and Carrow Abbey, to residential use. The application also includes construction of internal roads and open public spaces.

This survey aimed to establish the ecological value of this site and the presence/likely-absence of notable and/or legally protected species in order to inform appropriate mitigation, compensation and enhancement actions in light of proposed development works.

The survey area extends to 16.9 hectares and comprises developed/land sealed surface, modified grassland, introduced shrub, ruderal/ephemeral, other woodland; broadleaved, built linear features, hedgerows and scattered trees.

- The site lies within the Nutrient Neutrality Catchment Area for both the River Wensum Special Area of Conservation (SAC) and The Norfolk Broads SAC and Ramsar;
- River Wensum to the north of the site- the section adjacent to the site does not meet Biodiversity Action Plan (BAP) River Habitat and is not within the SSSI designation;
- BAP habitat Woodland on site;
- Bats
    - Confirmed bat roost in the Abbey and previously confirmed roost in the Stables;
    - High potential for roosting bats in two buildings;
    - Moderate potential for roosting bats in three buildings;
    - Low potential for roosting bats in four buildings and two structures;
    - Hibernation potential in the basements/ground floor of five buildings on site;
    - Potential for bat roosts within trees on site;
    - Moderate to high potential for commuting and foraging bats associated with the woodland on site and off site with the adjacent River Wensum to the north and railway line to the east;
- Moderate potential for Schedule 1 birds in particular peregrine falcon associated with the taller buildings on site;
- High potential for nesting birds in the trees and woodland on site;
- Moderate potential for reptiles on site;
- Moderate potential for polecat on site (with previous record); and
- High potential for hedgehog on site

As the site is within the River Wensum and Broads designated sites catchment areas, consideration will be required with regards to the potential for nutrient neutrality and potential recreational impacts - potential mitigation measures are discussed in Section 5 of this report.

Regardless of whether the adjacent section of the River Wensum meets BAP habitat criteria, it does connect the site to other statutory and non-statutory sites. Therefore, a Construction Environmental Management Plan (CEMP) should be implemented including information on pollution control measures following best practice guidance, should be produced to avoid, minimise or mitigate any construction effects on the environment. The CEMP should be secured through planning condition.

It is understood the BAP Woodland habitat is to be retained. As a precaution, measures detailed within the above-mentioned CEMP should also consider the retained woodland including the necessary buffer zones required for tree protection.

Further survey is required to characterise existing known bat roosts, establish presence/absence of additional bat roosts and the level of use for hibernating and commuting / foraging bats.

High level recommendations for minimising any impacts from the proposals on bat foraging and commuting include:

- The delivery of compensatory wildlife friendly planting as part of any landscaping;
- The incorporation of a bat sensitive lighting scheme to ensure light levels do not exceed current levels, particularly in areas with suitable bat foraging and commuting habitat such as the woodland, and off site River Wensum and railway.

A peregrine falcon survey is recommended to confirm the presence/likely absence of breeding peregrines on site.

The trees, woodland and shrubs across site have high value for nesting birds and the buildings have low to high value for nesting birds. Demolition and clearance of vegetation should take place outside of breeding bird season (taken to run from March-August inclusive) unless active nests are confirmed absent by a suitably qualified ecologist within 48 hours prior to removal. Loss of nesting opportunities in buildings should be compensated for through provision of integrated nesting opportunities within new buildings.

A reptile survey is recommended to confirm the presence/likely absence of reptiles in the area of improved grassland on site.

A single small mammal hole was identified on site which is located in the woodland due for retention. It is recommended that a trail camera is set up on site on mammal holes on site to confirm presence/likely absence of polecat on site.

The woodland and shrub undergrowth provides potential habitat for hedgehog. The majority of this habitat is to be retained. Should any areas of introduced shrub be scheduled for removal, hedgehogs should be watched for during site clearance and any hedgehog observed should be translocated to suitable habitat in the woodland.

Mitigation, compensation and enhancement concepts, which should be factored into design and approach at site, are recommended in section 5 of this report. These concepts should be described in detail along with specific management prescriptions in a separate Ecological Management Plan (EMP) document for the site. The EMP should be secured through planning condition.

Assuming key mitigation and actions are implemented alongside enhancements for the site including biodiverse roofs, wildlife friendly landscaping, enhancement of the woodland, bioswale margins of the river, bird and bat boxes and invertebrate features, then the proposals will have maximised biodiversity opportunities on site where possible.

Overall, in line with NPPF and Environment Act requirements, the proposed development should seek to deliver measurable improvement in biodiversity, measured using the Defra Metric 3.1.

2.0 INTRODUCTION

Greengage Environmental Ltd was commissioned to undertake a Preliminary Ecological Appraisal by Entran Ltd of a site known as Carrow Works in Norfolk.

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This survey aimed to establish the ecological value of this site and the presence/likely-absence of notable and/or legally protected species in order to inform appropriate mitigation, compensation and enhancement actions in light of proposed development works.

2.1 SITE DESCRIPTION

The survey area extends to approximately 16.9 hectares and is centred on National Grid Reference TG 24246 07434, OS Co-ordinates 624246, 307434.

The site comprises developed/land sealed surface, built linear features, modified grassland, introduced shrub, ruderal/ephemeral, other woodland; broadleaved, and scattered trees.

The site is located on the south-west peripheries of the city of Norwich. The northern boundary is bound by the River Wensum, on the eastern boundary lies a railway track and the southern and western boundaries lies the A147 road. The city extends to the north, south and west. To the east, on the opposite side of the railway line, lies Carrow Abbey Marsh County Wildlife Site (CWS) which adjoins Whitlingham Local Nature Reserve (LNR) and Trowse Meadows CWS, these sites comprise a mix of habitats including grassland, tall fen and tall herb vegetation, woodland, willow carr, broads and reedbeds.

3.0 METHODOLOGY

The PEA (which included an Extended Ecological Phase 1 Survey) was undertaken in accordance with guidance in the UK Habitat Classification System (UKHab)[1] and the Chartered Institute of Ecological and Environmental Management (CIEEM) (2017) Guidelines for Preliminary Ecological Appraisal[2], in accordance with BS42020:2013: Biodiversity[3]. The overall assessment consisted of:

- Site specific biological information gained from statutory and non-statutory consultation; and
- A site walkover, protected species scoping assessment and phase 1 habitat survey.

The site-specific consultation provided the ecological context for the site survey carried out on the 27th April 2022.

The survey boundary and existing site is shown at Figure A.1.

Greengage undertook the site walkover during dry and sunny weather conditions. Features within the site boundary and accessible features immediately bordering it were evaluated and the extent and distribution of habitats and plant communities were recorded, and supplemented with target notes on areas or species requiring further commentary. Fauna using the area were recorded and areas of habitat suitable for statutorily protected species were identified where present, with an active search carried out for evidence of such use.

3.1 DESKTOP REVIEW

A review of readily available ecological information and other relevant environmental databases (included Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website[4]) was undertaken for the site and its vicinity. In addition, a biological records search from Norfolk Biodiversity Information Service (NBIS) were reviewed to identify the location and citations of local non-statutory designated sites and presence of records for notable and protected species. This provided the overall ecological context for the site, to better inform the Phase 1 Survey.

A previous Preliminary Ecological Appraisal undertaken by the Ecology Consultancy in 2018 was also reviewed.

3.2 ON SITE SURVEYS

Flora

The extent and distribution of different habitats on site were identified and mapped according to the standard Phase 1 Survey methodologies, supplemented with target notes describing the dominant botanical species and any features of interest. Any present protected plant species and invasive/non-natives were also noted. A habitat map has been produced to illustrate the results, as shown at Figure A.1

Fauna

The Phase 1 Survey specifically included assessments to identify the potential value for notable, rare and protected species at site. This involved identifying potential habitats in terms of refugia, breeding sites and foraging areas in the context of species known to be present locally and regionally.

The likelihood of occurrence is ranked as follows:

- Negligible - While presence cannot be absolutely discounted, the site includes very limited or poor-quality habitat for a particular species. The site may also be outside the known national range for a species;
- Low - On-site habitat is poor to moderate quality for a given species, with few or no information about their presence from desk top study. However, presence cannot be discounted due to the national distribution of the species or the nature of on-site and surrounding habitats;
- Moderate - The on-site habitats are of moderate quality, providing most or all of the key requirements for a species. Several factors may limit the likelihood of occurrence, habitat severance, habitat disturbance and small habitat area;
- High - On-site habitat of high quality for given species. Site is within a regional or national stronghold for that particular species with good quality surroundings and good connectivity; and
- Present - Presence confirmed for the survey itself or recent, confirmed records from information gathered through desk top study.

The species surveyed for included:

Badger (*Meles meles*)

The potential for badger to inhabit or forage within the study area was assessed. Evidence of badger activity includes the identification of setts (a system of underground tunnels and nesting chambers), grubbed up grassland (caused by the animals digging for earthworms, slugs, beetles etc.), badger hairs, paths, latrines and paw prints.

Bat Species (*Chiroptera*)

The site visit was undertaken in daylight and the evaluation of bat potential comprised an assessment of natural features on site that aimed to identify characteristics suitable for bat roosts, foraging and commuting. In accordance with Bat Conservation Trust's Good Practice Guidelines[5] and methods given in English Nature's (now Natural England) Bat Mitigation Guidelines[6] consideration was given to:

- The availability of access to roosts for bats;
- The presence and suitability of crevices and other places as roosts; and
- Signs of bat activity or presence.

Definite signs of bat activity were taken to be:

- The bats themselves;

- Droppings;
- Grease marks;
- Scratch marks; and
- Urine spatter.

Signs of possible bat presence were taken to be:

- Stains; and
- Moth and butterfly wings.

Features with potential as roost sites include mature trees with holes, crevices or splits (the most utilised trees being oak, ash, beech, willow and Scots pine), caves, bridges, tunnels and buildings with cracks or gaps serving as possible access points to voids or crevices.

Additionally, linear natural features such as tree lines, hedgerows and river corridors are often considered valuable for commuting and semi-natural habitats such as woodland, meadows and waterbodies can provide important foraging resources. Consideration was given to the presence of these features both immediately within and adjacent to the assessment area.

Great Crested Newt (*Triturus cristatus*)

An assessment was carried out to identify any potential habitats that may support great crested newt (GCN) and other native amphibians. The aquatic and terrestrial habitats required generally include small, still ponds or water bodies suitable for breeding; and woodland or grassland areas where there is optimal invertebrate prey potential.

Reptiles

The potential for reptile species on site was assessed during the walkover survey. Possible species include grass snake (*Natrix helvetica*), smooth snake (*Coronella austriaca*), adder (*Vipera berus*), common and sand lizard (*Lacerta vivipara* and *L. agilis*) and slow worm (*Anguis fragilis*). These native reptile species generally require open areas with low, mixed-height vegetation, such as heathland, rough grassland, and open scrub or, in the case of grass snake, waterbody margins. Suitable well drained and frost-free areas are needed so they can survive the winter.

Dormouse (*Muscardinus avellanarius*)

During the walkover survey the potential for dormouse to be present on site was assessed. This included observations for suitable habitat such as well-layered woodland, scrub and linking hedgerows, particularly those comprised of species offering suitable food sources such as honeysuckle and hazel, in addition to direct evidence such as characteristically gnawed hazelnuts, chewed ash keys and honeysuckle flowers, or nests.

Water Vole (*Arvicola terrestris*)

Water vole potential was assessed during the walkover survey. The potential is identified by the presence of ditches, rivers, dykes and lakes with holes and runs along the banks. Latrines, footprints or piles of food can also be noted.

Otter (*Lutra lutra*)

Where desktop review or consultation indicates the presence of otter in a river catchment, the presence of water bodies with good cover and potential holt (den) sites would be noted. Spraint, footprints or food remains can also be noted.

Birds

During the walkover survey, the potential for breeding, wintering and migratory birds was assessed. In particular, this includes areas of trees, scrub, heathland and wetlands that could support nests for common or notable species.

Invertebrates

As part of the walkover survey the quality of invertebrate habitat and the potential for notable terrestrial and aquatic invertebrate species was considered. There is a wide variety of habitats suitable for invertebrates including wetland areas, heathland, areas of bare sandy soil, ephemeral brownfield vegetation and meadows.

Biodiversity Action Plan priority species/ Species of Principal Importance

Where consultation and desk-study indicates the presence of BAP priority species (Species of Principal Importance) not protected by statute, effort was made to establish the potential for the site to support these species.

3.3 SURVEYORS

Laura Thomas, who prepared this report, has an undergraduate degree in Biology (BSc Hons) and a Master's degree in Evolutionary and Behavioural Ecology, holds a Natural England Bat Survey Level 1 Class Licence (2021-10098-CL17-BAT) and is a Graduate member of CIEEM. Laura has over 5 years' experience in the commercial sector.

Paul White, who reviewed this report, has a Bachelor's degree in Marine Biology (BSc Hons), a Natural England Great Crested Newt Licence (2018-38559-CLS-CLS) and Dormouse Licence (2020-44691-CLS-CLS), and is an Associate member of CIEEM. Paul has over 15 years' experience in ecological surveying and has undertaken and managed numerous ecological surveys and assessments.

This report was written by Laura Thomas and reviewed and verified by Paul White who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;

- Is appropriate given the local site conditions and scope of works proposed; and
- Avoids invalid, biased and exaggerated statements.

3.4 CONSTRAINTS

The PEA was undertaken during an optimal time of year during ideal conditions by a suitably qualified ecologist. It was possible to access all areas of the site.

Due to the number of trees on site, a full bat scoping assessment was not undertaken. Additionally, not all of the buildings were accessible for internal inspection. These limitations have been considered when making recommendations for further survey and do not stand to impact conclusions.

No significant constraints that stand to impact conclusions drawn in this report therefore presented themselves.

4.0 RESULTS

4.1 DESKTOP REVIEW

Designations

Consultations with the local biological record centres (NBIS) and the MAGIC dataset have confirmed that there are no statutory designations of national or international importance within the boundary of the site.

There is however 1 Ramsar & Special Protection Area (SPA), and 2 Special Areas of Conservation (SAC) within a 6km radius of site. There are also 3 Local Nature Reserves (LNR) within a 2km radius.

Records from NBIS also identified 8 non-statutory County Wildlife Sites (CWS) within 2km of the site boundary. CWS are recognised by LPAs as important wildlife sites.

Table 4.1 below gives the locations and descriptions of a selection of the nearest/most relevant local designations.

Table 4.1 Statutory and Non-Statutory Designated Sites within Search Radius

Site Name	Approximate Location	Description
Statutory Designations		
Broadland (Ramsar & SPA)	5.8km east	Broadland is a low-lying wetland complex straddling the boundaries between east Norfolk and northern Suffolk. The area includes the river valley systems of the Bure, Yare and Waveney and their major tributaries. The open distinctive landscape comprises a complex and interlinked mosaic of wetland habitats including open water, reedbeds, carr woodland, grazing marsh and fen meadow. The region is important for recreation, tourism, agriculture and wildlife. The Ramsar's designated features include wintering Bewick's swan, floodplain alder woodland, floodplain fen, wintering gadwall, shoveler and wigeon, wetland invertebrate assemblage and wetland plant assemblage. SPA designated features include bewick's swan, bittern, gadwall, hen harrier, marsh harrier, ruff, shoveler, whooper swan and wigeon.
River Wensum (SAC)	4.9km north-west	The Wensum is a naturally enriched, calcareous lowland river. The upper reaches are fed by springs that rise from the chalk and by run-off from calcareous soils rich in plant nutrients. This gives rise to beds of submerged and emergent vegetation characteristic of a chalk stream. Lower down, the chalk is overlain with boulder clay and river gravels, resulting in

Site Name	Approximate Location	Description
		aquatic plant communities more typical of a slow-flowing river on mixed substrate. Much of the adjacent land is managed for hay crops and by grazing, and the resulting mosaic of meadow and marsh habitats, provides niches for a wide variety of specialised plants and animals. Buttercup vegetation occurs throughout much of the river's length. Stream water-crowfoot (*Ranunculus aquatilis*) is the dominant buttercup species but thread-leaved water-crowfoot (*R. trichophyllus*) and fan-leaved water-crowfoot (*R. circinatus*) also occur in association with the wide range of aquatic and emergent species that contribute to this vegetation type. The river supports an abundant and rich invertebrate fauna including the native freshwater white-clawed crayfish as well as a diverse fish community, including bullhead and brook lamprey. The site has an abundant and diverse mollusc fauna which includes Desmoulin's whorl-snail, which is associated with aquatic vegetation at the river edge and adjacent fens.
The Broads (SAC)	5.8km east	The Broads in East Anglia contain several examples of naturally nutrient-rich lakes. Although artificial, having been created by peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands support relict vegetation of the original Fenland flora, and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK. The stonewort (*Nitellopsis obtusa*) – pondweed (*Potamogeton sp.*)– water-milfoil (*Myriophyllum sp.*) – water-lily (*Nymphaeaceae*) associations are well-represented, as are club-rush (*Ficinia nodosa*) – common reed (*Phragmites australis*) associations. The dyke (ditch) systems support vegetation characterised by water-soldier (*Stratiotes sp.*), whorled water-milfoil (*Myriophyllum verticillatum*) and broad-leaved pondweed (*Potamogeton natans*) as well as being a stronghold of little whirlpool ram's-horn snail and Desmoulin's whorl snail in East Anglia. The range of wetlands and associated habitats also provides suitable conditions for otters. The Broads is the richest area for stoneworts in Britain. The core of this interest is the Thurne Broads and particularly Hickling Broad, a large

Site Name	Approximate Location	Description
		shallow brackish lake. Within the Broads examples of Chara vegetation are also found within fen pools (turf ponds) and fen and marsh ditch systems. The complex of sites contains the largest blocks of alder wood in England. Within the complex complete successional sequences occur from open water through reedswamp to alder woodland, which has developed on fen peat. There is a correspondingly wide range of flora, including uncommon species such as marsh fern. This site contains the largest example of calcareous fens in the UK. The great fen-sedge habitat occurs in a diverse set of conditions that maintain its species richness, including small sedge mires, and areas where great fen-sedge (*Cladium mariscus*) occurs at the limits of its ecological range. The habitat type forms large-scale mosaics with other fen types, fen meadows (with purple moor-grass), open water and woodland, and contains important associated plants such as fen orchid (*Liparis loeselii*), marsh helleborine (*Epipactis palustris*), lesser tussock-sedge (*Carex diandra*), slender sedge (*C. lasiocarpa*) and fibrous tussock-sedge (*C. appropinquata*). There are also areas of short sedge fen (both black bog-rush (*Schoenus nigricans*)– blunt-flowered rush (*Juncus subnodulosus*) mire and bottle sedge (*C. laevigata*) – moss mire), which in places form a mosaic with common reed – milk-parsley (*Peucedanum palustre*) fen. The Broads also contain examples of transition mire, that are relatively small, having developed in re-vegetated peat-cuttings as part of the complex habitat mosaic of fen, carr and open water.
Whitlingham (LNR)	0.4km east	Whitlingham covers an area of 15.48 hectares. The reed beds present on site form the bulk of the reserve. Chinese Water Deer are sometimes visible within the reed beds. Dragonflies are common.
Lion Wood (LNR)	1.0km north	Lion Wood covers an area of 8.87 hectares. It consists mainly of Oak-Sycamore woodland with some very large trees. About a third of the wood is thought to be ancient. Sweet chestnut, beech, hornbeam, wild cherry, silver birch and holly. Plant species present include bluebells (*Hyacinthoides non-scripta*). A range of woodland birds are present including jay, blackcap, greater-spotted and green woodpeckers and sparrowhawk.

Site Name	Approximate Location	Description
Mousehold Heath (LNR)	1.7km north	Mousehold Heath covers an area of 73.99 hectares. It is a remnant of a once more extensive heathland. The site has a mixture of oak/birch woodland, scrub, acid grassland, remnant heath and a large seasonal pond. Bell heather (*Erica cinerea*), ling (*Molva molva*), broom (*Cytisus scoparius*) and common gorse (*Ulex europaeus*), western gorse (*U. gallii*) and dwarf gorse (*U. minor*) are present within the heathland. The site has a good variety of insect life and common lizards. Wooded areas have a variety of birds including greater-spotted woodpecker, sparrowhawk and song thrush.
Non-Statutory		
Carrow Abbey Marsh (CWS)	0.2km east	This site comprises a mosaic of mainly tall fen and tall herb vegetation, with large areas of young woodland and willow carr. The site lies within a meander of the River Yare and there are a number of derelict drains crossing the marsh. The fen vegetation is largely composed of reed sweet-grass (*Glyceria maxima*) and meadowsweet (*Filipendula ulmaria*) with some reed canary-grass (*Phalaris arundinacea*), great willowherb (*Epilobium hirsutum*), angelica (*Angelica sp.*) and marsh woundwort (*Stachys palustris*). Water forget-me-not (*Myosotis scorpioides*) and water chickweed (*Montia fontana*) were also noted growing near the drainage ditches. The ditches themselves are choked with reed sweet-grass. Some contain bulrush (*Scirpoides holoschoenus*), greater pond-sedge (*Carex riparia*), bittersweet (*Celastrus scandens*), brooklime (*Veronica beccabunga*) and water-cress (*Nasturtium officinale*). Desmoulin's whorl snail is known to occur in some of these ditches. The areas of tall herb are mainly composed of nettles and great willow-herb (*Epilobium hirsutum*). To the north of the site is a block of scrub, composed mainly of crack willow (*Salix fragilis*), sallow (*S. cinerea*), occasional hawthorn (*Crataegus sp.*) and some alder. This area also includes a derelict brick furnace. Where the land is drier and had been more disturbed in the past, elder, silver birch and downy birch occur, with thickets of bramble. Open areas are dominated by reed sweet grass, hoary willow-herb (*Epilobium parviflorum*) and nettles. Green figwort (*Scrophularia umbrosa*) is also known to occur in this area. There are a few willow and hawthorn bushes scattered throughout the site.

Site Name	Approximate Location	Description
		An area of willow, sycamore and elder borders the river in places.
County Hall Woods (CWS)	0.3km southwest	A contiguous belt of woodland adjacent to Norfolk County Council offices and carpark. There has been some disturbance through development and storm damage, together with losses due to Dutch elm disease. There has been extensive underplanting of deciduous trees. The woodland is dominated by oak, sycamore and beech with some horse chestnut. The shrub layer is dense and dominated by holly, elm, elder and bramble. The ground flora is largely composed of nettle and cow parsley (*Anthriscus sylvestris*) but also has bluebell lords and ladies and abundant wood anemone (*Anemone nemorosa*). The latter species is commoner at this site than any other wood in the Norwich area. Also present is an extensive patch of spring crocus (*Crocus vernus*) and the native wild tulip (*Tulipa sylvestris*), both of which are found at only a few sites in Norfolk. Included within the site is a small pit surrounded by scrub which merges into the woodland. It is dominated by hawthorn as well as sycamore, bramble and elm, with small grassland patches dominated by cock's foot (*Dactylis glomerata*).
Trowse Meadows (CWS)	0.3km southeast	The site consists of two separate areas of grassland on the outskirts of Whitlingham County Park. The two blocks are separated by a road and church buildings but are connected by a channel which flows into the River Yare close to the north of the site. Both areas of grassland are cattle-grazed. The northernmost part of the site lies between the River Yare to the west and Whitlingham Lane to the east and contains some small blocks of woodland and swamp. At the northern tip is a small area of woodland dominated by sycamore, with a poor ground flora of bramble, stinging nettle (*Urtica dioica*) and ground ivy (*Hedera helix*). Another narrow strip of woodland lies along the east side. The canopy here is more diverse, with sycamore, alder, hawthorn, oak, blackthorn, elm and ash. The grassland in this area is damp to marshy, with a range of grasses and forbs including creeping buttercup (*Ranunculus repens*), meadow buttercup (*R. acris*), cowslip (*Primula veris*) and bulbous buttercup (*R. bulbosus*). In

Site Name	Approximate Location	Description
		marshier areas there is frequent soft rush (*Juncus effusus*), meadowsweet (*Filipendula ulmaria*), hard rush (J. inflexus), hairy sedge (*Carex hirta*), sharp-flowered rush (*J. acutus*), water-mint (*Mentha aquatica*), bird's-foot trefoil (*Lotus corniculatus*), square-stalked St John's-wort (*Hypericum tetrapterum*), purple loosestrife (*Lythrum salicaria*), marsh woundwort (*Stachys palustris*), marsh arrowgrass (*Triglochin palustris*) and common meadow-rue (*Thalictrum sp.*). A small patch of swamp near the north supports reed sweet-grass and greater pond sedge. Within these stands of vegetation are bird's-foot trefoil, meadow vetchling (*Lathyrus pratensis*), marsh bedstraw (*Galium palustre*), marsh woundwort and water-mint. The southernmost area consists of improved / semi-improved and marshy grassland to the south of St Andrew's Church and hall. This is a patchy mix of improved and semi-improved neutral grassland. Damper areas are the most diverse, with species including soft and hard rush, hairy sedge, greater pond sedge, meadowsweet, water-mint, nodding bur-marigold (*Bidens cernua*), marsh woundwort, purple loosestrife (*Lythrum salicaria*) and common fleabane (*Pulicaria dysenterica*). Other species include bird's-foot trefoil and meadow buttercup. The large drainage channel which connects the two parts of the site supports a marginal vegetation of water mint, meadowsweet, redshank (*Persicaria maculosa*), reed sweet-grass, nodding bur-marigold and water forget-me-not.

Biodiversity Action Plans

UK Biodiversity Action Plans (BAPs) have been developed which set priorities for nationally important habitats and species. To support the BAPs, Species/Habitat Statements (otherwise known as Species/Habitat Action Plans) were produced that provide an overview of the status of the species and set out the broad policies that can be developed to conserve them. A list of priority species of conservation importance was also developed.

The UK BAP was succeeded in 2012 by the UK-Post 2012 Biodiversity Framework which informed the creation of the Biodiversity 2020 strategy; England's contribution towards the UK's commitments under the United Nations Convention of Biological Diversity.

Despite this, the UK BAP priority species lists and conservation objectives still remain valid through integration with local BAPs (which remain valid), and in the form of the Habitats and Species of

Principal Importance list (as required under section 41 of the Natural Environment and Rural Communities (NERC) Act).

The following UK BAP priority habitats were present at site or in the immediate vicinity were broadleaved woodland on site and the chalk River Wensum which runs immediately along the northern boundary.

Local Biodiversity Action Plans (LBAPs) ensure that national action plans (the UK BAP/Biodiversity 2020) are translated into effective action at the local level and establish targets and actions for locally characteristic species and habitats.

Norfolk BAP

The Norfolk Biodiversity Partnership lists 22 Habitat Action Plans (HAP) and 15 Species Action Plans (SAP) to conserve, enhance and restore Norfolk's biological diversity. Those of relevance to this site include:

- Bat SAP's for the following species: barbastelle bat (*Barbastella barbastellus*), brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*) and soprano pipistrelle (*Pipistrellus pygmaeus*).
- Water vole (*Arvicola terrestris*);
- Otter (*Lutra lutra*);
- Birds including song thrush (*Turdus philomelos*) and swift (*Apus apus*); and
- White-clawed crayfish (*Austropotamobius pallipes*).

Species Record

The information provided in the biological data search from XX identified records of a number of protected and BAP priority species within 2km search radius of the site. Among others, these include the following species of relevance to the site:

- Section 41 NERC Lepidoptera (moths & butterflies) including cinnabar moth (*Tyria jacobaeae*);
- Amphibians including common frog (*Rana temporaria*);
- Reptiles including common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*);
- Birds including swift (*Apus apus*), grasshopper warbler (*Locustella naevia*), house martin (*Delichon urbicum*), black redstart (*Phoenicurus ochruros*), house sparrow (*Passer domesticus*), kingfisher (*Alcedo atthis*), song thrush (*Turdus philomelos*), and peregrine falcon (*Falco peregrinus);*
- Mammals including west European hedgehog (*Erinaceus europaeus*), polecat (*Mustela putorius*), Eurasian badger (*Meles meles*), European otter (*Lutra lutra*), European water vole (*Arvicola amphibius*); and
- Bats including western barbastelle (*Barbastella barbastellus*), serotine (*Eptesicus serotinus*), whiskered/brandt's (*Myotis mystacinus/brandtii*), daubenton's (*M. daubentonii*), natterer's (*M. nattereri*), lesser noctule (*Nyctalus leisleri*), noctule (*N. noctula*), common pipistrelle (*Pipistrellus*

pipistrellus), nathusius's pipistrelle (*P. nathusii*), soprano pipistrelle (*P. pygmaeus*), brown long-eared (*Plecotus auritus*)

The species listed above are primarily those known to be in the area that may be impacted by any proposals at the site, or that stand to benefit as a consequence of potential ecological enhancements at the site and inform site-specific mitigation and enhancement recommendations described in the following chapter.

Detailed Description of Site: Habitats

The habitats presented across the assessment site consist of the following UKHab categories, as mapped at Figure A.1:

- Buildings (u1b5);
- Developed Land Sealed Surface in the form of Hardstanding (u1b);
- Unsealed surface (u1c);
- Introduced shrub (u1c 48);
- Sub-urban mosaic of developed/natural surface (u1d);
- Built linear features (u1e);
- Ruderal/ephemeral (g3c 17);
- Modified grassland in the form of amenity grassland and improved grassland (g4);
- Other woodland; broadleaved (w1g);
- Line of trees (w1g6);
- Other woodland; mixed (w1h);
- Other hedgerows (h2b); and
- Scattered trees (g4 11 and u1c 11).

Buildings

The site has had many of uses over the centuries, the latest main use was as a Coleman's mustard factory site which closed in 2020. There is a total of 53 buildings on site which include Grade I listed Carrow Abbey built in 1146, ruins of a Benedictine priory, Grade II listed brick factory buildings and former mustard seed drying shed to modern large warehouses. There is a total of 13 Listed buildings on site. Several of the buildings on site have basements and underground sites. Those buildings associated with the factory are predominantly located in the northern half of the site and to the east of the site.

The buildings are mapped in Figure 1.

Figure 4.1 Buildings on site

Developed Land Sealed Surface in the form of Hardstanding

Hardstanding include access roads throughout the site and associated carparking.

Figure 4.2 Access roads connecting the whole site

Unsealed surface

The main carpark south of the abbey and a small area surrounding the ruins is unsealed surface.

Introduced shrub

There are pockets of introduced shrubs across the site predominantly associated with the southern half of the site, located along the borders of the carparks, amenity grass and lining access roads. Species include cherry laurel (*Prunus laurocerasus*), yew (*Taxus baccata*), barberry (*Berberis* sp.), privet (*Ligustrum vulgare*), *Buddleja* sp., rose (*Rosa sp.*), Mexican orange blossom (*Choisya ternata*), *Geranium sp*, sage (*Salvia officinalis*), lavender (*Lavandula sp.*).

Figure 4.3 A pocket of introduced shrub

Sub-urban mosaic of developed/natural surface

There are two areas associated with ornamental landscaping in the form of a sunken geometric garden one of which is Grade II listed.

Figure 4.4 Grade II Ornamental garden with geometric design

Built linear features

There are several walls throughout the development, including the ruins of the old priory walls.

Figure 4.5 Priory ruins

Modified grassland

There are several pockets of modified grassland in the form of low-cut well-maintained amenity grassland to the front and rear of the abbey which comprise species such as perennial rye grass (*Lolium perenne*), daisy (*Bellis perennis*) and *Geranium* sp.

Figure 4.6 Modified grassland in the form of low cut well maintained amenity grassland

Modified grassland also exists in the form of improved grassland which is separated from the area of amenity grassland to the rear of the abbey by the priory ruins. These areas were cut less frequently and reached a higher sward height. Species in these areas include perennial rye grass, cocksfoot (*Dactylis glomerata*), daffodils (*Narcissus* sp.), snowdrops (*Galanthus* sp.), green alkanet (*Pentaglottis sempervirens*), bluebell (Hyacinthoides sp), Lords and ladies (*Arum* sp.), nettle (*Urtica dioica*), comfrey (*Symphytum* sp.), primrose (*Primula vulgaris*), cowslip (*Primula veris*), dandelion (*Taraxacum* sp.), buttercup (*Ranunculus* sp.), cow parsley (*Anthriscus sylvestris*), and red dead nettle (*Lamium purpureum*).

Figure 4.7 Modified grassland in the form of improved grassland

Ruderal/Ephemeral

Ruderal vegetation was associated with the undergrowth of the woodland and the margins of the woodland edge, species include lords and ladies, nettles, green alkanet, bluebells, greater periwinkle (*Vinca major*) and garlic mustard (*Alliaria petiolata*).

There is ephemeral vegetation growing within the courtyard of the 'F' shaped listed factory building and includes *Buddleja* sp. and shade tolerant species such as male fern (*Dryopteris filix-mas*), lords and ladies and mosses.

Figure 4.8 tall ruderal ground flora

Other broadleaved woodland

There are two pockets of broadleaved woodland to the rear of the abbey and another pocket of woodland runs along the southern boundary. Species within the woodland include mature trees such as silver birch (*Betula pendula*), beech (*Fagus sp.*), English oak (*Quercus robur*), horse chestnut (*Aesculus hippocastanum*), weeping lime (*Tilia petiolaris*), field maple (*Acer campestre*), sycamore (*Acer pseudoplatanus*) with ruderal vegetated understory.

Within the woodland lays the remains of glass houses, old boiler house and former allotment/flowerbeds.

Figure 4.9 Woodland on site

Line of trees

There are some treelines acting as boundary features on site and include a row of Leyland cypress trees along the site entrance and southern boundary and a row of beech trees along the eastern boundary.

Mixed woodland

The woodland to the rear of the abbey has an area of mixed woodland as it includes Leyland cypress species as well as broadleaved trees mentioned above.

Hedgerow

There are several small instances of species poor hedgerow dominated by one species lining access roads and bordering areas of the carpark. The dominating species varied between hedgerows and include beech, privet, laurel (*Laurus* sp.) , and *Cypress sp.*

Scattered trees

Scattered trees on site that could not be grouped within woodland or tree lined habitat include species such as cedar (*Cedrus* sp.), yew, beech, oak and lime (*Tilia* sp).

Figure 4.10 Scattered trees

Detailed description of Site: Species

Badger

The site and its surrounds possess potential foraging habitat for badgers associated with the amenity grassland and parkland. However, no evidence of foraging was observed, and no potential setts were identified on site. Furthermore, the nearest record of a badger was recorded almost 1km from the site.

There was one mammal hole identified during the survey however the small size and shape indicated that it was likely attributed to a rabbit or other smaller mammal.

Overall, the site is considered to have **moderate** potential to support foraging badgers however no setts were identified on site.

Bats

Foraging

The majority of site comprises building/hardstanding which has negligible potential to support foraging bats. The woodland, improved grassland, tall ruderal habitat, scattered trees and introduced shrub is likely to provides habitat for invertebrates which in turn provides a food source for foraging bats.

The site is connected to other areas of greenspace through off-site linear features such as the River Wensum which abuts the northern boundary and the railway along the eastern boundary.

Overall, the site is therefore considered to have **high** potential to support foraging and commuting bats.

Roosting

All buildings on site were assessed to assess the presence of any features suitable to support roosting bats. The locations of the building in the following table 4.2 are mapped in Figure A in the Appendix.

Table 4.2 Summary table of buildings with bat potential on site

Building number	Photo	Comments and Level of potential
B1 (The Stables)		The stables had several missing roof and hanging tiles throughout. An internal inspection was not possible during the survey which has been considered when recommending further survey. The 2018 ecology survey noted droppings on a hanging tile. As such, the building was still considered to have **confirmed presence** of a bat roost.
B2 The Lodge		The lodge had several missing and lifted ridge and roof tiles throughout the roof. The loft space had been converted into rooms and had lots of natural light and no evidence of roosting bats. Therefore, the numerous features are small in size and likely to provide opportunities for several individual crevice dwelling bats rather than high conservation status maternity or hibernation roost. Overall, the building was considered to have **moderate potential** for roosting bats.

Building number	Photo	Comments and Level of potential
B3 The Abbey		An internal inspection of the two loft spaces identified two droppings in the smaller roof void. The number of droppings indicate roosting by low number of individual bats. The second is suitable for roosting however no obvious access points were observed. Both loft spaces would be suitable for higher conservation status roosts. The exterior of the building was in good condition. There were limited opportunities for roosting in the presence of displaced hanging tiles and missing, broken and lifted roof and ridge tiles. In addition, there were two basement areas associated with the Abbey, one of which had access points from the outside through a grate and could provide suitable hibernating habitat. Overall, the Abbey had a **confirmed presence** of a bat roost and **moderate** hibernation potential.

Building number	Photo	Comments and Level of potential
B4 The Priory ruins and garden		There were several structures associated with the garden such as an old tea house, green houses which were in a dilapidated state. However, many of these structures were in such disrepair that they would not provide much shelter for roosting bats and therefore, these were considered negligible. The Priory wall had two deep crevices that could be utilised by roosting bats. Additionally, an ivy clad chimney may have opportunities underneath the ivy and therefore this was considered further. As such, these two structures were considered to have **low** potential for roosting bats.

Building number	Photo	Comments and Level of potential
B6		This old factory building had limited opportunities for bats in the form of cracked brickwork for crevice dwelling bats and rotten boarding that appears to allow access into the internal areas. The large windows into the building allow a lot of natural light in which would reduce suitability for roosting bats. An internal inspection could not be undertaken, and this has been considered when factoring in further surveys. Overall, B6 is considered to have **low potential** for roosting bats.
B7		This building had some features such as cracks in the brickwork that present opportunities for a crevice dwelling bats. Overall, this building is considered to have **low potential** for roosting bats.
B8		The loft space of this building was converted and had a lot of natural light and no obvious access points to the external areas. However, there was some structural damage associated with the soffits/fascia that may provide some potential for crevice dwelling bats. Overall, the

Building number	Photo	Comments and Level of potential
		building was considered to have **low** potential.
B9		There were several broken windows that provided access into the interior areas. It was not safe to internally inspect this building. This was considered when recommending further surveys. Overall, this building was considered to have **high potential** for roosting bats. The basement and an adjoining underground tunnel were also assessed, and both were deemed to have **high potential** for hibernating bats.

Building number	Photo	Comments and Level of potential
B10		This building had several cracks in brickwork, broken windows for crevice dwelling bats. There was also a loft space which, whilst no evidence was observed, could be accessed and suitable for maternity roosting bats. Overall, this building was considered to have **high** potential for roosting bats. Furthermore, the basement provided suitable conditions for hibernating with multiple access points to these areas and was considered to have **moderate** potential for hibernating bats.
B11		This building exterior was in good condition with no cracks or crevices or access points for crevice dwelling bats. There was a basement area that could provide suitable conditions for hibernating bats. However the only access point was through a window that was open during the time of survey. Overall, this was considered to **have low potential** for hibernating bats.

Building number	Photo	Comments and Level of potential
B12		An internal assessment of this building was not undertaken. Features include a wooden structure on the roof that would provide a some, albeit limited, space for roof void dwelling bats and had access points. Overall, this structure was considered to have **low potential** for roosting bats.
B13		An internal inspection of these structures found no evidence of roosting bats. The tiled roof appeared in good condition however there were several features in the form of holes in the brickwork and access points into internal areas. Overall, this building was considered to have **moderate potential** for roosting bats. Additionally, a basement with access points to internal areas had suitable conditions for hibernating bats. Overall, this building was considered to have **moderate potential** for hibernating bats.

Building number	Photo	Comments and Level of potential
B14		This building had features such a missing brick providing **low potential** for roosting bats.

The remaining buildings on site were surveyed externally and internally where possible and considered to have negligible potential.

Off-site, one of two air raid shelters was also internally inspected. Whilst these would be suitable bat hibernation habitats access into these areas was limited and therefore it was considered unlikely. Furthermore, these will not be impacted by the development and so not considered further.

Great Crested Newt

There is suitable terrestrial habitat on site in the form of woodland, tall ruderal and improved grassland.

However, there are no records of great crested newts within 2km the site and there are no waterbodies on site or within 500m suitable to support breeding populations of great crested newts (GCN).

Overall, the site is considered negligible to support GCN.

Reptiles

Suitable reptile habitat exists in the areas of modified grassland with anecdotal evidence of historical records of reptiles within the improved grassland on site. This area is however isolated from other areas of suitable habitat.

Overall, the site is considered to have **moderate** potential to support reptiles.

Dormouse

The woodland on site is lacking in the habitat structure, particularly undergrowth, required by dormice, is not connected to sufficient habitat beyond the boundaries of the site. Additionally, the dormice range does not extend to this area of the country and there are no records for dormouse within 2km of the site.

Overall, the site is considered to have potential **negligible** potential for dormice.

Water Vole and Otter

There are several records of otter and water vole within 2km of the site. The closest record of otter lies approximately 170m west of site from 2012. The section of the River Wensum on-site has steep, concrete banks unsuitable for water vole burrows or otter holts. Additionally, there is no vegetation for foraging associated with the banks that could support water vole.

As such, the site is considered to have **negligible** potential to support otter and water vole. However, the river Wensum itself will likely be used occasionally by commuting otter.

Birds

There is suitable nesting habitat for passerine bird species associated with the trees and dilapidated buildings on site. Evidence of hirundine nesting was observed on B8 and pigeon nesting in several of the buildings including B9, B10 and B14 and gull nesting on B13.

There was anecdotal evidence of peregrines foraging on site with some tall structures that would be suitable heights for nesting. Additionally, black redstart were considered during the survey however there was no suitable foraging habitat such as piles of rubble. Neither species were observed during the survey.

Therefore, the potential for the site to support nesting birds is considered **high**, with confirmed presence of notable species such as hirundine species.

Invertebrates

The buildings and hardstanding on site provide no value for notable invertebrate species. Additionally, the amenity grassland comprises common species and unlikely to support notable pollinators.

The site is likely to support a range of common invertebrate species with habitats of value including woodland. The woodland on site has some deadwood however the site is outside the range of the notable invertebrate stag beetle.

Overall, the site has **low** potential to support notable invertebrates.

The adjacent river off-site could support aquatic macroinvertebrates such as white clawed crayfish however there are no records of these within 2km and they are very rare in this area of the country. Therefore, this section of the river Wensum is considered to have **negligible** potential for white clawed crayfish.

Other BAP Species

The improved grassland, leaf detritus and ruderal habitat associated with the Abbey gardens provides foraging, shelter and hibernation habitat for the s41 Species of Principal Importance, hedgehog.

The site is considered to have **high** potential to support hedgehogs.

Environmental records identified a record of UK BAP species polecat on site in 2015. There was one small mammal hole identified during the survey that had potential to be utilised by polecat. Overall, the site was considered to have **moderate** potential for polecat.

Off-site the River Wensum could support European eel populations however no records were identified within 2km. However, an eel escalator has been installed approximately 3km upstream at New Mills Yard pumping station which strongly indicates that they would be using the Wensum adjacent to site for migration. Overall, the River Wensum off-site has **high** potential for European eel.

Incidental findings

A roe deer (*Capreolus capreolus*) was observed during the survey.

5.0 EVALUATION AND DISCUSSION

5.1 BASELINE SUMMARY

The assessment site and its surroundings have potential to support the following ecological receptors of note, which could therefore be impacted upon by any future prospective development proposals, as indicated in Table 5.1 below. Comment on further recommendations for each receptor is provided; further detail and discussion can be found at paragraph 5.2 onward:

Table 5.1 Baseline Summary

Receptor	Presence/Potential Presence	Comments
Designated Sites: Statutory	Present within 6km	The proposed development is within the catchments for the River Wensum and Broads designated sites. Nutrient neutrality and mitigation for potential recreational impacts will be required, which are discussed further below. The River Wensum along the northern boundary connects the site to national statutory sites, the closest being a local nature reserve only 0.4km away. Potential impacts could result from construction, therefore construction control measures such as pollution, dust, run-off, etc. control, materials storage, light and noise mitigation, will be required. Measures to address these impacts will need to be detailed in CEMP and EMP documents.
Designated Sites: Non-Statutory	Present within 2km	The closest non-statutory site is Carrow Abbey Marsh which lies approximately 0.2km of the site with no significant geographical barrier and the River Wensum connecting the sites. Proposals should accordingly embed measures which address potential impacts of pollution events during construction and operation. Mitigation and compensation measures to minimise any impact upon the non-statutory sites is provided below.

Receptor	Presence/Potential Presence	Comments
Notable/Rare Habitats	Present	The area of woodland meets the definition of BAP priority woodland habitat. It is understood this area is to be retained. Given its close proximity to the development, measures to minimise impact during construction should be detailed within a CEMP, further details are provided in the section below. There are opportunities for the woodland to be enhanced through an established management regime. Recommendations for enhancement are made below. The site is immediately adjacent the River Wensum. Rivers and Streams is a UK BAP priority habitat. The construction impacts associated with the development can be mitigated for by implementing a CEMP and the proposals should be designed to ensure that there is no increase in the current run off rate from the site.
Foraging bats	High potential	The main value for foraging and commuting bats is associated with the woodland, introduced shrub, ruderal and modified grassland, and off-site, the river and railway line. The proposed development will result in a small loss of habitat suitable for foraging and commuting bats. In addition, new external lighting may impact bat behaviour and act as a deterrent to some species. Bat activity surveys are therefore recommended to confirm the levels of bat activity, species present and ways in which the site is used, both spatially and temporally, in order to identify an approach to mitigation.
Roosting bats	Buildings ranging from confirmed presence to low potential.	The Abbey and stables have confirmed presence of a bat roost through the presence of droppings. The remaining buildings on site have low-high potential for roosting bats and hibernating bats. Without consideration,

Receptor	Presence/Potential Presence	Comments
		demolition/redevelopment of the buildings therefore has the potential to kill bats or destroy roosts. As such, further hibernation and bat emergence/re-entry surveys are recommended to confirm the presence/likely absence of roosting bats and characterise roosts known to be present. Data from this survey will be used to identify a detailed approach to mitigation. Some trees have been previously noted as having roosting potential. However as the extent of trees to be affected is yet to be finalised, preliminary roost assessments of trees to be affected (once finalised) is recommended to determine any further survey or mitigation required for those trees.
Reptiles	Moderate potential	It is understood that improved grassland will be retained on site. However site preparation and construction have potential to injure/kill reptiles should they be present within the habitats. A reptile survey is recommended to confirm the presence/likely absence of reptiles and identify a suitable approach to mitigation. This is expanded further below.
Water Vole and Otter	Negligible on site Potential for occasional commuting immediately off-site	Habitats on the site itself have negligible potential for water vole and otter, with occasional commuting immediately off-site Works could stand to cause indirect disturbance and further surveys are therefore recommended. Indirect impacts could result in changes to nutrient loading and reduction of water quality through pollution events during construction and operation of the development. Mitigation and compensation measures to minimise any indirect impacts are outlined below.

Receptor	Presence/Potential Presence	Comments
Birds	High	The scattered trees across the built areas on site and woodland have high potential for nesting birds. It is understood that the woodland is to be retained and therefore no further recommendations are required for this area. The site has the potential to support bird species listed as Schedule 1 on the Wildlife and Countryside Act such as peregrine falcon, are protected from disturbance as well as destruction. Further surveys are recommended to confirm presence/likely absence. General mitigation, compensation and enhancement recommendations for all nesting bird species are provided below.
Invertebrates	Low	No further surveys are recommended. Proposals seek to retain the most valuable habitats such as the woodland and improved grassland habitat. Enhancement recommendations have been made below to increase the value of site for invertebrates.
Other BAP species	High	Hedgehog, polecat and eels have limited protection under the Wildlife and Countryside Act, (1981) and Hedgehogs have protection under the Wild Mammals (Protection) Act (1996) respectively (Appendix B) which protects them from intentional injury or death. Hedgehog, polecat and eel are also afforded protection under the NERC act as a S41 species. These Acts require the species to be protected during site works. Furthermore, given their status as a s41 species, their conservation is a material consideration in the planning process. Measures to protect eel and hedgehog are described below.

5.2 DISCUSSION AND RECOMMENDATIONS

Discussion is provided below on the key ecological receptors that stand to be impacted/benefit from proposed works; high level commentary on appropriate mitigation, compensation and enhancement actions is also provided.

An Ecological Management Plan (EMP)and Construction Environmental Management Plan (CEMP) should be produced and implemented for the site providing greater detail on the below, which should be secured through planning condition in accordance with BS 42020: 2013 Biodiversity.

Designated sites

Statutory

International/European Designated sites

As the site is within the River Wensum and Broads designated sites catchment areas, consideration will be required with regards to the potential to affect water quality by treated foul effluent resulting in adverse nutrient impacts on these sites. The proposed development will result in a net increase in population served by the Anglian Water wastewater system. At this stage it is known that there are various options available for the mitigation of this impact, however, currently no specific mitigation measure has been opted for.

The detailed aspect of this application does not include any new buildings, therefore it is proposed that nutrient neutrality is considered and conditioned at the reserved matters application stage, where the new housing developments will be brought forward for assessment.

To mitigate for potential recreational impacts, financial contributions are likely to be required in line with the Norfolk Green Infrastructure and Recreational Impact Avoidance and Mitigation (GIRAM) Strategy[7]. Pursuant to the GIRAM Strategy, the Norfolk LPAs have identified the nature of visitor pressures and put together an interim action plan of mitigation measures, to be funded by a county-wide tariff, calculated on the number of new dwellings (yet to be finalised).

National Designated sites

The nearest national designated site is Whitlingham LNR located 0.4km east after the confluence of the River Wensum and River Yare. Therefore, both sites are connected via the river and the LNR is at risk of increased levels of pollution such as dust deposition and noise pollution/vibration and sediment run off during construction. A Construction Environment Management Plan (CEMP) document should accordingly be produced, to be secured through planning condition. This document should detail the control measures that will be implemented to avoid and mitigate potential impacts during site construction.

The development will increase residents to the area however the development retains the woodland, creates greenspace and a riverside path and therefore provides alternative recreational space for residents to use. Additionally, both Local Nature Reserves are managed appropriately and have

designated footpaths to ensure each site's integrity and value for local biodiversity and important habitats are not threatened.

Non-Statutory

The nearest non-statutory site is connected to site via the River Wensum and therefore, the aforementioned CEMP would also protect this site from potential impacts during construction.

The development will result in a significant increase in local residents. Two CWS sites closest comprise marshland with no trails or paths according to a desktop study using Norfolk County Council interactive trail map. Those sites that are open to the public are managed and have designated footpaths to manage footfall and protect local biodiversity or important habitats .

Notable/Rare habitats

Increased levels of pollution such as dust deposition and sediment run off during the construction stage may stand to impact the woodland and River Wensum. It is understood that the development elements of the proposals will take place within 8m of the river and therefore, it is recommended that the Environment Agency are consulted as the appropriate authority. However, the measures detailed within the above-mentioned CEMP in terms of measures to prevent and reduce emissions, dust deposition, noise and pollution etc, will also provide the same protection for the woodland and river Wensum, such measures would also stand to protect species such as water voles, otter and European eel through maintaining water quality and managing indirect impacts.

Bats

Foraging and Commuting

The key habitats on site with the most value for foraging and commuting bats, namely the woodland , woodland, tall ruderal and improved grassland, are being retained and enhanced as part of the development proposals. Furthermore, although some scattered trees and introduced shrub will be removed to facilitate the development, proposed landscaping should adequately replace these losses so as to maintain a suitable resource for foraging and commuting bats.

The development proposals will include lighting on site and in the absence of mitigation, could lead to an increased level of external lighting. As the habitats on site and within the sites zone of influence are considered to provide high potential for commuting and foraging bats, activity surveys, consisting of a walked transect, accompanied by the deployment of static bat detectors, are recommended.

Any required mitigation measures will be confirmed following further bat activity surveys. High level recommendations at this stage include the provision of compensatory wildlife friendly landscaping utilising native plant species to attract invertebrate prey and the design of lighting in line with guidance provided by the Institute of Lighting Professionals (ILP) and BCT[8] Specifically:

- Consider avoidance of metal halide and fluorescent light sources;

- Warmth' of luminaires. Any external areas should incorporate light at a <2700K where possible, with peak wavelengths higher than 550nm;
- Use of screens/hoods to make any external lighting as directional as possible, avoiding light spill on any natural features;
- Height of lighting column. Where possible, external lights should be as low to the ground as possible; and
- Lighting controls. Appropriate controls to minimise the duration lights are illuminated should be instated.
- Light levels over the woodland, river Wensum and railway line should remain the same as current light levels or be reduced where possible.

By providing compensatory foraging habitat through landscaping proposals, and minimising the impacts of external lighting, impacts upon foraging and commuting bats should be sufficiently minimised.

Roosting

Further hibernation and emergence/re-entry surveys are recommended in accordance with the BCT guidance to confirm the presence/likely-absence of roosting bats.

Further mitigation, compensation and enhancement actions would be informed by the results of further survey.

Some trees have been previously noted as having roosting potential. However as the extent of trees to be affected is yet to be finalised, preliminary roost assessments of trees to be affected (once finalised) is recommended to determine any further survey or mitigation required for those trees.

Reptiles

A reptile survey is recommended to confirm the presence/likely absence of reptiles. This should consist of laying reptile mats and refugia around the site and leaving them to 'bed-in' for a minimum of five days. Seven reptile checks on non-consecutive days should then be undertaken during suitable weather conditions, with the mats and refugia inspected for basking reptiles.

Results from this survey should identify a suitable approach to mitigation of impacts upon reptiles during site preparation

Water Vole and Otter

The concrete banks of the river Wensum on site have negligible potential to support otter and water vole however indirect impacts from pollution events into the river Wensum. A CEMP should be secured through planning condition to ensure impacts to river associated with construction noise, vibration and pollution are avoided and/or minimised.

The recommendation for no further survey necessary is on basis that no discharge and impact occur on river, should this change then riparian mammal surveys may be required to identify a suitable approach to mitigation.

Birds

Impacts upon common nesting birds can be fully avoided through clearance of vegetation outside of the nesting bird season (taken to run from March to August inclusive). If this is not possible, an inspection of the structures and vegetation within 48 hours prior to clearance should be undertaken by a suitably qualified ecologist to confirm the absence of any nesting birds.

To determine whether breeding peregrines use the site, further surveys are recommended. During these surveys evidence for black redstart and any other schedule 1 species of bird will be noted.

BAP Species

It is understood that the woodland on site is to be retained. However, there will be clearance of areas around trees and of improved grassland. Site clearance of any suitable habitat should be undertaken carefully and the presence of hedgehog should be considered during such clearance under an ecologists watching brief. Any potential hibernacula/refugia features suitable for hedgehogs encountered should be dismantled by hand to ensure no hedgehogs are present. Any hedgehogs encountered should be translocated safely away from site activities to suitable habitat.

It is recommended that a survey is carried out to establish presence/likely absence of polecats on site.

The measures detailed within the above-mentioned CEMP in terms of measures to prevent and reduce emissions, dust deposition, noise and pollution etc should also protect European eels.

Biodiversity Enhancements

In accordance with the National Planning Policy Framework, local policy drivers and recent changes to the legislative context, (Appendix C), proposals should seek to provide measurable net gains in biodiversity. These should aspire to a minimum of 10% net gain in biodiversity, which should be evidenced through a Biodiversity Impact Assessment (BIA) using the Natural England Biodiversity 3.1 metric[9] or similar.

To enable proposals to deliver the desired net gains, the following measures should be considered for incorporation into the landscaping plans:

- Provision of extensive, substrate based biodiverse roofs on all available flat roof spaces. This consist of a low-nutrient substrate with an average depth of between 100-200mm and should be seeded and plug planted with at least 30 wildflower species of known value to wildlife. These should be further enhanced through provision of log piles, stony piles, sand mounds and water trays. Extensive biodiverse roofs are compatible with PV arrays;
- Wildlife friendly landscaping across the site. It is understood that the some of the modified grassland is being retained as a green space. Areas of communal grassland should incorporate

wildflower turf, or sown with a wildflower mix which provide higher provision of wildflowers and nectar sources for pollinators. Introduced shrub should include native shrubs or perennials or those with known value to wildlife such as those listed on the Royal Horticulture Society (RHS) Plants for pollinators[1011];

- The development seeks to retain the woodland on site. Understorey planting should comprise grasses, ferns and shrubs which will provide more structural diversity. This mix should include a native mix of shade tolerate woodland wildflower species such as the Emorsgate EW1 species mix or similar;
- Any scattered trees and hedges planted throughout the development proposals should include a diverse mix of native species such as hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*), plum cherry (*Prunus cerasifera*), hazel (*Coryllus avellana*), blackthorn (*Prunus spinosa*), crab apple (*Malus sylvestris*), privet (*Ligustum ovalifolium*), dogwood (*Cornus sanguinea*), rowan (*Sorbus aucuparia*) and spindle (*Euonymous europaeus*);
- Raised planters of sufficient size should be planted with a mix of species including ivy (*Hedera helix*), clematis species (*Clematis* sp.), honeysuckle (*Lonicera periclymenum*), star jasmine (*Trachelospermum jasminoides*), hops (*Humulus lupulus*) and grapevines (*Vitis vinifera*). Supporting trellis systems should be in place to support and direct the growth of climbers to cover designated wall areas;
- SUDS features such as rain gardens and attenuation basins can be incorporated to provide ephemeral wetland habitats at ground level;
- Marginal planting along the edge of the river should be planted such as within a pre-established coir pallet with a diverse mix of marginal and wetland planting which will provide additional habitat structure that will benefit a range of taxa through an ecosystem cascade effect, including invertebrates, birds and bats;
- Nesting opportunities for birds, particularly targeting BAP species such as swift should be provided. Swift boxes should also be installed along with a swift call system to encourage uptake. Provision of integrated boxes targeting other birds known to thrive in the built environment such as house sparrow, black redstart and peregrine falcon. A suitable location for the peregrine falcon box would be on the top of the old factory chimney. Garden bird boxes should be mounted on trees within the woodland, including an open fronted box targeting Norwich BAP species song thrush and a box along the river edge specifically designed for kingfisher.
- Specialised house sparrow terraces can be included that are externally attached to the buildings. These boxes should be positioned near to any area of vegetation and should be placed at least 2m above ground level.; Bird boxes including peregrine falcon.
- Bat boxes should be located integrated within the fabric of new buildings and mounted onto trees on the eastern and southern elevations;
- Connectivity for species such as hedgehog should be provided through provision of 13cmx13cm gaps in fencing and walls throughout the site. Suitable ground floor landscaping should provide

corridors for movement and locations for foraging for species such as hedgehog. Hedgehog houses could also be provided in the retained woodlands on site.

- Within soft landscaping areas, additional habitat features should be incorporated, such as bee blocks/posts and habitat panels. Provision of nesting habitat in close proximity to nectar/pollen sources can greatly improve likelihood of occupancy. Certain features can be incorporated within the built form, such as bee bricks.

The development presents the opportunity to benefit a range of taxa through incorporation of ecological features and provision of new habitats that would encourage species to the site. Assuming appropriate mitigation and compensation actions are followed, alongside enhancements described above it should be possible to deliver an increase in value for biodiversity.

SUMMARY & CONCLUSION

Greengage was commissioned by Entran Ltd to undertake a PEA a site known as Carrow Works in Norfolk in order to establish the ecological value of this site and its potential to support notable and/or legally protected species.

The PEA identified value for a number of notable and protected species and habitats on site and several statutory and non-statutory designated sites within 6km.

Key mitigation, compensation and enhancement actions, including further surveys where appropriate, are described to enable legislative and policy compliance (see context at Appendix C), aiming to achieve net gains in biodiversity for the site.

Key actions should be included within EMP and CEMP documents for the site which could be secured through planning condition.

APPENDIX A SITE PLAN AND HABITAT MAP

Figure A.1 Site plan and habitat map

CARROW WORKS

- Approximate Site Boundary
- g3c 17-ruderal/ephemeral
- g4 - modified grassland
- w1g - other woodland-broadleaved
- w1g6 - line of trees
- w1h - other woodland mixed
- h2b - other hedgerows
- u1c 48- introduced shrub
- u1b - developed land. sealed surface
- u1b5 - buildings
- u1c - artificial unvegetated unsealed surface
- u1d - suburban mosaic of developed/natural surface
- u1e - built linear features
- g4 11 and u1c 11- scattered trees

Building numbers as per Table 4.2 in the PEA

N

0 0.25 0.5 km

Greengage

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Figure A.1 Site Plan and Habitat Map

Project Number 552015
June 2022
1 to 3,500 at A3
[Map data: Google satellite]

APPENDIX B SITE PHOTOGRAPHS

Figure B.1 The locally listed Stables (Building 1 on Figure A)

Figure B.2 Grade II listed lodge (Building 2 on Figure A)

Figure B.3 The Abbey front elevation (Building 3 on Figure A)

Figure B.4 The Abbey rear

Figure B.5 The Abbey loft space

Figure B.6 The Abbey basement

Figure B.7 Bat dropping in Abbey loft space

Figure B.8 Grade II listed building which was former administrative offices of the Coleman Factory (Building 8 on Figure A)

Figure B.9 Factory block (Building 9 on Figure A)

Figure B.10 Basement of building 9

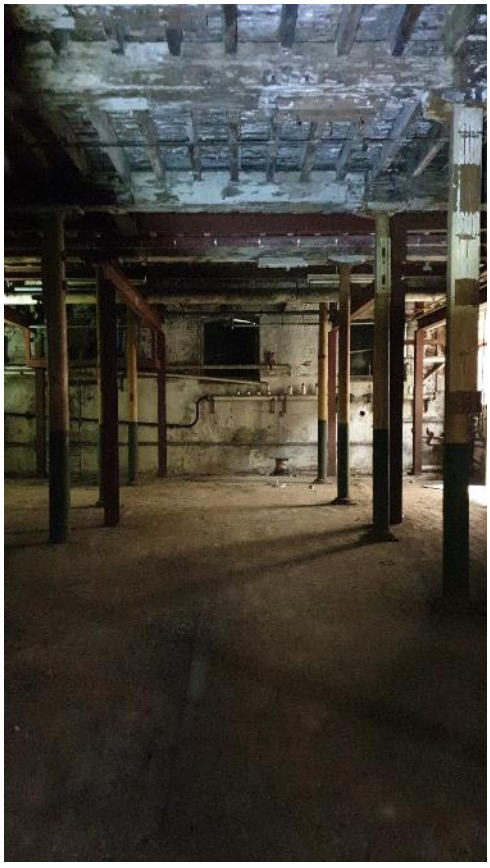

Figure B.11 Underground tunnel adjacent to Building 9

Figure B.12 Grade II listed former factory building or 'F' block (Building 10 on Figure A)

Figure B.13 Courtyard of F block

Figure B.14 F Block loft space

Figure B.15 F Block basement

Figure B.16 Former factory buildings on site

Figure B.17 Warehouse on site

Figure B.18 Factory buildings on site

Figure B.19 Warehouse building on site

Figure B.20 Factory buildings on site

Figure B.21 Dilapidated structures associated with the garden

Figure B.22 Dilapidated structures associated with the garden

Figure B.23 Dilapidated structures associated with the garden

Figure B.24 River Wensum off-site

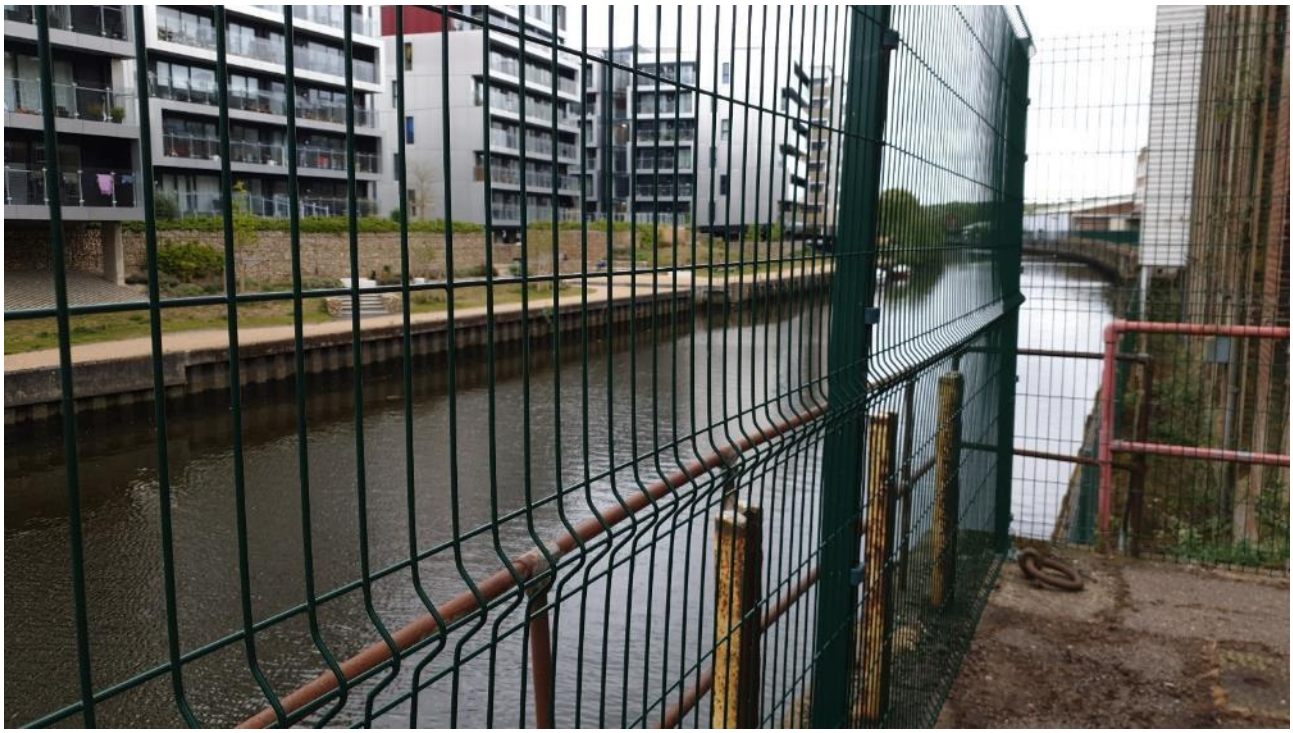

Figure B.25 Air raid shelters outside redline boundary

Figure B.26 Internal area of air raid shelters outside redline boundary

APPENDIX C RELEVANT LEGISLATION AND POLICY

C.1 LEGISLATION

Current key legislation relating to ecology includes The Environment Act[12] Wildlife and Countryside Act 1981 (as amended)[13]; The Conservation of Habitats and Species Regulations 2019 ('Habitats & Species Regulations')[14], The Countryside and Rights of Way Act 2000 (CRoW Act)[15], and The Natural Environment and Rural Communities Act, 2006[16].

The Environment Act, 2021

The Environment Act, 2021 will mandate the requirement for new development in England to deliver a minimum 10% biodiversity net gain (BNG), as measured by the agreed metric (the current relevant version being the Natural England metric 3.0), secured through planning condition as standard (as per schedule 14 of the Act). Approach to the delivery of BNG must follow the mitigation hierarchy, with avoidance of impact and on-site compensation/gains prioritised, ahead of the use of offsite biodiversity unit offsets, or the purchase of biodiversity credits.

The Act introduces the condition that no development may begin unless a biodiversity net gain plan has been submitted and approved by the local planning authority (LPA).

The Act also amends requirements of the NERC Act, 2006, adding the need to not just conserve, but enhance biodiversity through planning projects. Furthermore, it introduces the need for the LPA to have regard to relevant local nature recovery strategies and relevant species/protected site conservation strategies, when making their decision.

Under the Act, the enhancements must be maintained for at least 30 years.

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

The Conservation of Habitats & Species Regulations replace The Conservation (Natural Habitats, etc.) Regulations 1994 (as amended)[17], and transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive')[18], and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive')[19] into UK law (in conjunction with the Wildlife and Countryside Act).

Regulation 43 and 47 respectively of the Conservation of Habitats & Species Regulations makes it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5 (European protected species of plant). Development that would contravene the protection afforded to European protected species requires a derogation (in the form of a licence) from the provisions of the Habitats Directive.

Regulation 63 (1) states: 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which —

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and

(b) is not directly connected with or necessary to the management of that site;

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats[20] (the 'Bern Convention') and the Birds Directive and EU Habitats Directive are implemented in Great Britain.

The Countryside and Rights of Way Act 2000

The Wildlife and Countryside Act has been updated by the CRoW Act. The CRoW Act amends the law relating to nature conservation and protection of wildlife. In relation to threatened species it strengthens the legal protection and adds the word 'reckless' to the offences of damaging, disturbing, or obstructing access to any structure or place a protected species uses for shelter or protection, and disturbing any protected species whilst it is occupying a structure or place it uses for shelter or protection.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 states that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Biodiversity Action Plans provide a framework for prioritising conservation actions for biodiversity.

Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. The list, a result of the most comprehensive analysis ever undertaken in the UK, currently contains 1,149 species, including for example, hedgehog (Erinaceus europaeus), and 65 habitats that were listed as priorities for conservation action under the now defunct UK Biodiversity Action Plan[21] (UK BAP). Despite the devolution of the UK BAP and succession of the UK Post-2010 Biodiversity Framework[22] (and Biodiversity 2020 strategy[23] in England), as a response to the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020[24] and EU Biodiversity Strategy (EUBS)[25], this list (now referred to as the list of Species and Habitats of Principal Importance in England) will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 41 of the Natural Environment and Rural Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

Biodiversity Action Plans

Non-statutory Biodiversity Action Plans (BAPs) have been prepared on a local and regional scale throughout the UK over the past 15 years. Such plans provide a mechanism for implementing the government's broad strategy for conserving and enhancing the most endangered ('priority') habitats and species in the UK for the next 20 years. As described above the UK BAP was succeeded in England by Biodiversity 2020 although the list of priority habitats and species remains valid as the list of Species of Principal Importance for Nature Conservation.

Regional and local BAPs are still valid however and continue to be updated and produced.

Detail on the relevant BAPs for this site are provided in the main text of this report.

Legislation Relating to Nesting Birds

Nesting birds, with certain exceptions, are protected from intentional killing, destruction of nests and destruction/taking of eggs under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act. Any clearance of dense vegetation should therefore be undertaken outside of the nesting bird season, taken to run conservatively from March to August (inclusive), unless an ecologist confirms the absence of active nests prior to clearance.

Legislation Relating to Bats

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

Although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

The Wildlife & Countryside Act 1981 (WCA) was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annexe IV of the Habitats Directive, 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species Regulations 2017, which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;

- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England.

Legislation Relating to Reptiles

All species of reptile native to the UK are protected to some degree under national and/or international legislation, which provides mechanisms to protect the species, their habitats and sites occupied by the species.

Sand lizards and smooth snakes are European protected species and are afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 and Regulation 43 of the Conservation of Habitats and Species Regulations 2017. However, these species are rare and highly localised. Their occurrence is not considered as relevant in this instance, as the ranges and specialist habitats of these species do not occur at this site.

The remaining widespread species of native reptiles (adder, grass snake, slow worm and viviparous lizard) are protected under part of Section 9(1) and all of Section 9(5) of the Wildlife and Countryside Act 1981. They are protected against intentional killing and injury and against sale, transporting for sale etc. The habitat of these species is not protected. However, in terms of development, disturbing or destroying reptile habitat during the course of development activities while reptiles are present is likely to lead to an offence under the Wildlife and Countryside Act 1981. It is therefore important to identify the presence of these species within a potential development site. If any of these species are confirmed, all reasonable measures must then be taken to ensure the species are removed to avoid the threat of injury or death associated with development activities.

Each species of native reptile has specific habitat requirements but general shared features include a structurally diverse habitat that provides for shelter, basking, foraging and hibernating.

All reptiles are BAP species and as such are also of material consideration in the planning process due to the NPPF.

Legislation Relating to Dormice

Dormice are given full protection under Schedule 5 of the Wildlife and Countryside Act 1981, as amended. Protection to the species is also afforded by Regulation 43 of the Conservation of Habitats and Species Regulations 2017, making the hazel dormouse a European Protected Species. These two pieces of legislation operate in parallel, although there are some small differences in scope and wording. Under the provisions of Section 9 of the Wildlife & Countryside Act, it is an offence to:

- Intentionally kill, injure or take a dormouse;
- Possess or control and live or dead specimen or anything derived from a dormouse (unless it can be shown to have been legally acquired);
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a dormouse; and
- Intentionally or recklessly disturb a dormouse while it is occupying a structure or place which it uses for that purpose.

Regulation 43 of the Conservation of Habitats and Species Regulations 2017 makes it an offence to:

- Deliberately capture or kill a dormouse;
- Deliberately disturb a dormouse;
- Damage or destroy a breeding site or resting place of a dormouse; and
- Keep transport, sell or exchange, or offer for sale or exchange a live or dead dormouse or any part of a dormouse.

Legislation Relating to Great Crested Newts

Legislation Relating to Natura 2000 Sites and Habitats Directive Annex I/II Species

European Commission Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive'), and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive') form the cornerstones of nature conservation legislation across EU member states. Priority species requiring protection across Europe are listed in the Annexes of these Directives. Regulation 63(1) of the Conservation of Habitats and Species Regulations 2017 and Offshore Marine Conservation Regulations, 2007 (as amended) transpose these directives into UK law and set the basis for the designations of protected sites (known as Natura 2000 sites; Special Areas of Conservation under the Habitat Directive and Special Areas of Protection under the Birds Directive) that are of importance for habitats, species or assemblages listed on the directive Annexes. In the UK Ramsar sites are also offered the same level of protection as SPAs and SACs however the qualifying species for the designation may differ; Ramsar sites being designated specifically as important wetland habitats.

Under article 6(3) of the Habitats Directive, where projects stand to have likely significant effect (in accordance with the European Court of Justice ruling of C-127/02 Waddenzee cockle fishing) upon the integrity of conservation objectives (i.e. conservation status of the qualifying species or habitats) within the designated sites then the Competent Authority must undertake an Appropriate Assessment.

C.2 PLANNING POLICY

National

National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2021[26] sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the natural environment, stating plans should 'identify and pursue opportunities for securing measurable net gains for biodiversity'.

It goes on to state: 'if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused'. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

Regional

Norwich development management policies local plan 2014

Protecting and enhancing the natural environment Policy DM6

Natural environmental assets

Development will be expected to take all reasonable opportunities to avoid harm to and protect and enhance the natural environment of Norwich and its setting, including both sites and species, taking particular account of the need to avoid harm to the adjoining Broads Authority area and other identified areas of natural environmental value immediately adjoining the City. Appropriate proposals which deliver significant benefits or enhancements to local biodiversity or geodiversity will be strongly supported and encouraged. Opportunities should be taken to incorporate and integrate biodiversity, green infrastructure and wildlife friendly features in the design of individual schemes.

Where, in exceptional circumstances, development is accepted which is likely to result in substantial and unavoidable harm to or loss of priority habitats and species populations identified through local biodiversity action plans, developers will be required to provide for the re-creation and recovery of such populations through biodiversity offsetting.

Nationally protected sites of special scientific interest (SSSI)

Development having a significant adverse impact on SSSIs not subject to an international designation will only be permitted in exceptional circumstances where the benefits of the development clearly and substantially outweigh the impacts that it is likely to have. Such proposals must be accompanied by an environmental statement, showing clearly how the development would mitigate any effects on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs.

Regional and local sites

Development affecting sites of regional and local importance for nature conservation, biodiversity, geodiversity or geological interest will only be permitted where it would not result in significant and demonstrable harm to the particular interest and value of the site, taking account of:

- The effectiveness of any proposals to mitigate the environmental impact of the development,
- any overriding benefits arising from that development in achieving the wider objectives of the JCS and
- any opportunities for local enhancements to biodiversity, geodiversity or green infrastructure associated with the proposal.

The sites to which this part of the policy applies include local nature reserves, County Wildlife Sites, County Geodiversity Sites, Roadside Nature Reserves (RNRs), and significant areas of woodland identified on the Policies map which are not covered by the above designations. Where development results in some impact the proposal must be accompanied an assessment of that impact and specify the appropriate mitigating measures that will be undertaken.

Yare Valley character area

Within the Yare Valley character area, as defined on the Policies map, development will only be permitted where it would not damage the environmental quality, biodiversity or character of the area and where it is for:

a) agriculture or forestry purposes; or

b) facilities ancillary to outdoor sport and recreation or other uses appropriate to the purpose of this policy; or

c) the limited extension of or alteration to existing buildings.

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