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APPENDIX 1 ECOLOGICAL FEATURES PLAN

APPENDIX 2 POND LOCATION PLAN
1.0 EXECUTIVE SUMMARY

1.1 In September 2015 and September 2016 ACD Environmental carried out updated Phase 1 Habitat Surveys of a parcel of land at Greenfield Road, Dereham, hereinafter referred to as the 'site'. An original ecology survey was carried out by Aurum Ecology Ltd in 2011. The application site will be subject to a planning application for c.285 new residential properties.

1.2 The site comprises a greenfield site that, in 2011 was managed for wheat crop, in 2015 was unmanaged and dominated by ruderal vegetation, and in 2016 management had taken place and the field was ploughed ground with unmanaged ruderal vegetation and grassland along some boundaries. Current management should be maintained until development commences.

1.3 Mature vegetation boundaries are present along the southern and northern boundary. Boundary vegetation and mature trees are of similar structure and composition to the findings of the 2011 survey.

1.4 The site has the potential to support badgers, breeding birds, minor foraging, commuting and roosting bats (within trees), and small numbers of reptiles.

1.5 Recommendations for mitigation and enhancements include:

- Should arboricultural work be required on T5, an inspection will be required by a licenced bat ecologist;
- Pre-commencement check for badgers;
- Sensitive clearance of any areas of grassland;
- Retention of all boundary vegetation and incorporation of native planting and wildflower meadows; and
- Sensitive lighting around the boundaries and retained trees.

1.6 Implementing all of the above recommendations will ensure that there are no significant impacts upon protected species and that the proposals will be in conformity with relevant legislation and policy.

1.7 Measures to mitigate for impacts have been set out along with recommendations for enhancement of the site’s ecological value.
2.0 INTRODUCTION, CONTEXT AND PURPOSE

Introduction

2.1 In September 2015 ACD Ecology was commissioned by Orbit 2020 Limited to carry out an updated ecological appraisal of a parcel of land at Greenfield Road, Dereham (OS Grid Reference TG 00432 12820), hereinafter referred to as the ‘site’. The site was re-visited in September 2016 to assess the potential impacts of an acoustic bund along the southern boundary.

2.2 The application site comprises a greenfield site bordered by Dereham town to the west, allotments, residential properties to the north and the A47 and agricultural fields to the south. Historically, the site comprised of wheat crop associated with its function as a former arable field. However, wheat crop production has ceased and during the 2016 the site had been ploughed and was a bare field.


2.3 The original ecology report was carried out in August 2011 by Aurum Ecology. This report highlighted that the site was of limited ecological value as it was primarily a wheat field with field margins and a mature oak tree within the site. No protected species were noted within the site, apart from a small number of common breeding birds, plus a pair of skylarks.
Context

2.4 Outline planning permission was granted for this site in 2014 for the development of 220 residential units and associated landscaping and infrastructure. This report has been produced to provide an updated ecological assessment for the application of full permission for c.285 residential units and area of open space.

2.5 Plans have been drawn up to re-develop the site and a revised masterplan has been produced which will form the basis for a full planning application in the near future.

Purpose

2.6 The purpose of this assessment is to:
- Ascertain the general ecological value of the site;
- Identify and assess the main habitats and plant communities;
- Assess the wildlife use of the site;
- Feed into refinements of the masterplan; and
- To assess any ecological impacts of the proposed scheme.
3.0 METHODOLOGY

Names and qualifications of surveyors

3.1 The 2015 survey was carried out by Stephen Dale, the Chairman of ACD Environmental.

3.2 The 2016 survey and production of this report were carried out by Stephanie Walker of ACD Environmental. Stephanie is a Senior Ecologist and has been involved in a wide range of ecological projects including extended Phase 1 surveys, Phase 2 surveys for protected species, and EPS licence applications. She is a member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Stephanie holds a Natural England Class Level 2 Licence for bats and great crested newts.

3.3 This report was checked by Daniel Wood (MCIEEM) of ACD Environmental. Daniel is a Principal Ecologist for ACD Environmental and oversees all work carried out by the Ecology team. Daniel has over 8 years' experience working for commercial consultancies and specialises in European Protected Species legislation and mitigation. Daniel holds a Natural England Class Level 2 Licence for bats and great crested newts. He has held several EPS mitigation licences. Daniel has extensive development project experience, on sites of varying sizes from individual dwellings to strategic land allocations involving a wide range of issues. He has experience of projects from pre-acquisition, planning applications, Preliminary Ecological Appraisal (PEA), Ecological Impact Assessment (EcIA), Environmental Statements (ES) for EIA, and Appropriate Assessment (AA).

Background Data Search

3.4 Whilst field survey is invaluable and provides a "snap-shot" of the species and habitats present on a site, it is also important to research existing ecological knowledge of the site, such as biological records, and any relevant ecological information from the surrounding area.

3.5 The Multi-Agency Geographic Information for the Countryside website\(^1\) was accessed for information on the location of statutory designated nature

\(^1\) [http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx](http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx)
conservation sites within a 5km radius of the Site.

**Habitat Survey**

3.6 The site was surveyed on 22\textsuperscript{nd} September 2015 and 12\textsuperscript{th} September 2016 using a technique based upon Phase I survey methodology. This 'extended' Phase I technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail. The vegetation present was clearly visible and allowed an accurate assessment to be made.

3.7 Although the survey falls outside the recommended seasonal period for botanical work and could, therefore, have some limitations, ACD believe that the evaluation and habitat descriptions, and hence the impacts and their significance are fully accurate for the following reasons:

- Given the type of vegetation and habitats present, the valuation of the intrinsic interest is very unlikely to change; and
- Previous surveys undertaken by others are both recent in origin and found little in terms of interest.

3.8 Using the above method, the site was classified into areas of similar botanical community types with a representative sample of those species present at the time of the survey being described.

**Fauna**

3.9 Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support legally protected species and other species of conservation concern, including UK Biodiversity Action Plan Priority species.

**Habitats and Species Evaluation and Impact Assessment**

3.10 The habitats and species evaluations are made with reference to the Chartered Institute of Ecology and Environmental Management's (CIEEM) guidelines for

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Ecological Impact Assessment.

3.11 These guidelines aim to give a degree of consistency in approach to evaluating the importance of the ecological features within the site and any effects or impacts a scheme will have upon them.

3.12 Firstly, the species or habitats must be valued and a commonly used framework involves assigning a level of geographical importance to ecological receptors. This framework incorporates a wide range of legislation and governmental guidance in assessing each feature’s value.

3.13 Next, the impacts of the proposed scheme have to be predicted, taking into account different stages and activities within the development process. These impacts then have to be assessed for their significance, based upon the value of the species or habitat in question. The assessment of impact significance is done before and after any proposed mitigation to give an overall indication of significance.

3.14 The value of specific ecological receptors (sites, habitats or species) is assigned according to their level of importance using the following terms:

- International value;
- UK value;
- National value (i.e. England/Northern Ireland/Scotland/Wales);
- Regional value;
- County value;
- District value (or Unitary Authority, City, or Borough);
- Local or Parish value; and
- Of value within the zone of influence or a larger defined area.
4.0 RESULTS AND EVALUATION

4.1 Set out below are the results of the background data searches and field surveys.

Context

4.2 The site is immediately bordered by the A47 along the southern boundary, residential properties and allotments to the north, east and west and the town of Dereham further west.

Data Search Results

Designated Sites

4.3 The nearest statutory designated nature conservation sites within 5km of the site are as follows:

- Norfolk Valley Fens Special Area of Conservation (SAC) which lies c.1km to the south east and c.1.9km to the west of the site and is primarily designated for its Annex I habitats 7230: Alkaline fens and Annex II species that include *Vertigo angustior* and *Vertigo mouliniana*.

- River Wensum SAC which lies approximately 4.7km to the north east of the site and is designated for its Annex I habitat 3260; Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-batrachion*, plus Annex II species *Vertigo mouliniana*, *Lametra planeri* and *Cottus gobio* interest;

- Badley Moor Site of Special Scientific Interest (SSSI) which lies approximately 1km to the south east of the site and is designated for its spring-fed valley fen and grassland and ornithological interest;

- Mattishall Moor SSSI which lies approximately 2.2km to the south east of the site and is designated for its species-rich calcareous valley fen and marshy grassland interest;

- Dereham Rush SSSI which lies approximately 2.5km to the north west of the site and is designated for its winter-flooded meadowland and alder carr, plus breeding bird interest;
- Rosie Curston’s Meadow, Mattishall SSSI which lies approximately 3.4km to the south east of the site and is designated for its unimproved calcareous clay pasture interest;

- Dillington Carr, Gressenhall SSSI which lies approximately 4km to the north west of the site and is designated for its extensive area of carr woodland and open water and breeding bird interest; and

- Beetley & Hoe Meadows SSSI which lies approximately 4.7km to the north of the site and is designated for its wet unimproved grassland and uncommon plant species interest.

4.4 LNRs are notified under Section 21 of the National Parks and Access to the Countryside Act 1949 by local authorities. They are not necessarily of great ecological value, and are intended for public appreciation and enjoyment of wildlife. The LNR designation does not afford special protection, although LNRs are protected under legislation and planning policy.

4.5 SACs are of International Value and SSSIs are of National value and LNRs are of Local Value

Survey Results

Habitats

4.6 The site supports the following habitats:

- Arable Land;

- Hedgerows and Mature Trees; and

- Ruderal and Grassland Vegetation.

4.7 For ease of reference, habitat types have been described alphabetically, below. All the features described are shown on the Ecological Features Plan at Appendix 1.
Arable Land

4.8 The majority of the development site is a former arable field that historically was used for wheat. There are two parcels within the site, with the north eastern parcel being much smaller (shown in Image 1), but comprising the same habitat structure. During 2015 it had been left un-managed and crops had not been grown in recent years and contained residual wheat crop and was dominated by ruderal vegetation.

![Photograph 1: View of arable fields looking south (2015).](image)

4.9 During the 2016 survey habitat management had taken place and the field had been cut and ploughed. A mown grassland strip had been left on the northern boundary of the main field only (Photograph 2).

![Photograph 2: View of arable field (2016), looking east.](image)
4.10 The former arable land is assessed as being of **negligible value**.

**Hedgerows and Mature Trees**

4.11 Within the centre of the site there is a mature isolated oak tree *Quercus robur* with elder *Sambucus nigra* around the base, Photograph 3, (T5, as referenced in the arboricultural report), as well as within the north eastern corner of the site (T4). T5 within the centre of the site has been pollarded and described as being in poor condition within the 2015 arboricultural survey and T4 has basal decay.

![Photograph 3: View of oak within the application site (2015).](image)

4.12 T5 was still present within the site during September 2016 and the tree protection fencing was still in place.
Photograph 4: Oak tree within north eastern corner of the application site (2015).

4.13 Offsite, along the boundary of the adjacent houses to the north east of the site (Photograph 5), an un-managed, mature native mixed species hedge is present that contains; field maple *Acer campestre*, blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna* and hazel *Corylus avellana*, oak and dogwood *Cornus sanguinea*.

Photograph 5: North eastern boundary (2016).

4.14 Woody vegetation along the southern boundary of the site (Photograph 6) comprises mature trees and forms the barrier from the site to the main dual
carriageway A47. Species include; oak, elm *Ulmus minor*, blackthorn, crab apple *Malus sylvestris*, ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*, dogwood, gorse *Ulex europaeus* and dog rose *Rosa canina*.

![Photograph 6: Southern boundary vegetation (2016).](image)

4.15 This area of vegetation not only acts as an acoustic and visual barrier to the A47, it also provides a green corridor and connectivity to the wider landscape.

4.16 The areas of mature trees have not changed much in the structure and composition since the Aurum survey in 2011 and ACD 2015 site visit.

4.17 The mature trees within the site are assessed as being of *value within the zone of influence*, whilst the southern boundary is assessed as being of *local value*.

*Ruderal and Grassland Vegetation*

4.18 The arable field had been left unmanaged in 2015 and so arable weeds and ruderal vegetation was dominant within and around the field margins. During the 2016 site visit this habitat had been managed and comprised of a ploughed field within no vegetation within the development area, as shown in Photograph 2 and 7.

4.19 Along the northern boundary of the main development area, bordering Greenfields Road and adjacent amenity grassland, a 2-5m strip of grassland and ruderal
vegetation was present within the site boundary (within the Tree protection Fencing). Within this area some woody plants area present such as self-seeded immature oak. Some mowing in this area had taken place.

4.20 No field margins were present within the north eastern development parcel of the site as shown in Photograph 7.

Photograph 7: North eastern development parcel, looking north, no field margins (2016).

4.21 Offsite strips of unmanaged grassland and ruderal vegetation was present that did not appear to be managed. These ranged in widths of 2-4m (Photograph 8).

Photograph 8: Ruderal vegetation along footpath between northern and southern development parcels.
4.22 The north eastern corner of the survey area, which does not fall within the development area and comprises un-managed grass, scrub and mature tree (photograph 9). Species noted include; cocks foot, broad leaf plantain *Plantago major*, horsetail *Equisetum arvense*, wormwood *Artemisia absinthium*, hogweed *Heracleum spondylium*, knapweed *Centaurea*, bramble *Rubus fruticosus*, rye grass *Lolium perenne*, clover, common bent *Agrostis capillaris*, annual meadow grass *Poa annua*, creeping thistle *Cirsium arvense*.

![Photograph 9: North eastern corner (2016).](image)

4.23 Along the southern boundary a footpath, connected to the site by Hall Lane, is present. The footpath comprises a well-worn track surrounded by un-managed grassland, shown in Photographs 6, 8 and 9 above.

4.24 Species present within the grassland are similar to those noted within the original ecology report with grasses and more ruderal species being dominant. Species noted include; ragwort *Jacobaea vulgaris*, cocks foot *Dactylis glomerata*, soft brome *Bromus hordeaceus*, Yorkshire fog *Holcus lanatus*, creeping buttercup *Ranunculus repens*, pineapple weed *Matricaria discoidea*, speedwell *Veronica sp.*, bindweed *Convolvulus arvensis*, bramble, nettle *Urtica dioica* and ground ivy *Glechoma hederacea*, hogweed, perennial rye grass *Lolium perenne*, cocks foot *Dactylis glomerata*, red fescue *Festuca rubra* with scattered hawkweed *Hieracium* and wild basil *Clinopodium vulgare*. 
4.25 These areas of ruderal vegetation and un-managed grassland developed due a lack of management at the site. These habitats are therefore assessed as being of value within the zone of influence only.

Fauna

4.26 For ease of reference, descriptions of the fauna have been described alphabetically, below.

Amphibians

4.27 There are five ponds within 500m of the site boundary with the closest pond (Pond 1) being c.180m to the north of the application site, within the allotments, shown in Appendix 2. This pond was not assessed at the time of the survey. The four other ponds noted within 500m are sufficiently removed from the site through main roads and residential developments which provide a significant barrier to dispersal.

4.28 Pond 1 is isolated from the surrounding ponds within the wider landscape as it is separated by main roads and residential properties and does not form part of a network of ponds. The 2011 survey highlighted that this pond was of poor quality with a low water level and no great crested newts *Triturus cristatus* (GCN) were noted. In addition common duck species were recorded which reduces the suitability of the pond for GCN.

4.29 The desk based study using the Government website magic.defra.gov.uk, has highlighted that and EPS application for GCN was granted c.500m to the north east of the site, however this site is separated from the application site through a relatively new residential development and the B1174, which act as a sufficient barrier to dispersal.

4.30 There are no ponds within the application site, and given the historical use of the site for wheat crop the site would have been sub-optimal to support GCN and other amphibians. At present, with recent management the development area is assessed as being of negligible value for amphibians.

4.31 Offsite boundary habitats could provide some minor terrestrial habitat for amphibians.
4.32 Habitats within the wider landscape provide greater opportunities for amphibians, including GCN, to be present. Habitats within the application are assessed as being of **value within the zone of influence for amphibians**.

**Badgers**

4.33 Given the wider landscape comprises mixed farming and scattered woodland, it is anticipated that badgers *Meles meles* would be present within the surrounding landscape and the previous land use – wheat crop could have been used by badgers as a food source. The application site, in its current state, provides sub-limited foraging habitats for badgers.

4.34 No obvious evidence of badgers such as mammal tracks were noted within the development area and no breaches of the fencing were noted. An area of the bank along the southern boundary (south west corner) was searched and no mammal holes were noted, however, dense areas of vegetation were not searched so their presence cannot be ruled out.

4.35 Two mammal holes were noted off site along the embankment of the A47. A spoil heap was noted outside of one hole, and another could be blocked by a fallen branch. Due to the location of these holes, they were not investigated for health and safety reasons but were observed from the bridge. These holes are c.10m from the footpath and c.20m from the site boundary.

4.36 Given the topography of this area (a bund) any badger tunnels will be retained within the bund.

4.37 Habitats to the south of the site are anticipated to provide greater foraging opportunities for badgers.

4.38 If badgers do forage and commute within areas to the north of the site, their commuting route is restricted to the current footpath around the site as fencing prevents movement through the site.

4.39 Habitats within the application site are therefore assessed as being of **value within the zone of influence for badgers only**.

**Bats**
4.40 According to magic.defra.gov.uk there have been no granted EPS applications for bats within the surrounding habitats.

4.41 The former use of the site for wheat production would have vastly reduced the sites suitability for foraging bats. During 2015 the botanical diversity had increased with more ruderal vegetation and grass species being present. This would increase invertebrate diversity and thus marginally increasing the foraging opportunities for bats within the application site. However, this habitat has since been removed and does not provide any foraging opportunities for bats.

4.42 The southern boundary vegetation and northern boundary hedgerows will provide commuting and foraging habitat for bats. However, previous bat surveys carried to address the usage of the oak tree within the site, by Aurum in 2011, only identified low numbers of common pipistrelle *Pipistrellus pipistrellus* and a brown long eared bats *Plecotus auritus* to be present within the application site. No bats were noted emerging or entering the oak tree (T5) within the centre of the site.

4.43 The mature oak tree (T5) within the site and the T4 along the boundary of the site could provide suitable roosting features for bats as they are of suitable age and height that cracks and crevices could be present. According to the arboricultural report, T5 does contain dead limbs and cavities where it has been pollarded, thus creating opportunities for bats. T4 also contains basal decay that could provide roosting opportunities. These trees have therefore been assessed as medium potential in accordance within current guideline⁴.

4.44 Habitats within the wider landscape provide greater opportunities for roosting and foraging bats and so it is expected that the site would only support small numbers of common bat species, as previously recorded.

4.45 The habitats within the site are therefore assessed as being of **value within the zone of influence.**

*Birds*

4.46 Due to the recent site clearance, only the boundary vegetation provides

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opportunities for birds. The Aurum Ecology report from 2011 identified that site and boundary vegetation would support a small number of common garden bird species,

4.47 The 2011 report also noted the presence of skylark *Alauda arvensis* within the wheat field. With the wheat crop no longer present and no vegetation being present at all the field has vastly reduced in its quality to support skylarks due to no ground cover.

4.48 Song thrush *Turdus philomelos* were also recorded within the 2011 report. Habitats suitable for song thrush are still present within the boundary vegetation.

4.49 Although barn owls *Tyto alba* are likely to be present within the wider landscape, there are no roosting opportunities within the application site. The site, in its current state, does not support habitats for foraging habitat for barn owls.

4.50 The boundary habitats are assessed as being of **value within the zone of influence for birds.**

**Dormouse**

4.51 The site does provide some minor habitat and food sources that are used by dormice *Muscardinus avellanarius* (hazel, bramble, oak) present along the northern and southern boundaries, the site is relatively isolated and is not directly connected to any larger areas of deciduous woodland that would provide optimal habitat for dormice.

4.52 In addition, Norfolk is not within the known range of the current dormouse distribution⁴ and so it is highly unlikely that dormice will be present within the hedgerows and southern boundary habitats of the application.

4.53 This conclusion was also drawn in the 2011 survey and it was stated that dormice are not present within Norfolk. The application site is therefore assessed as being of **negligible value for dormice** and dormice and dormice will not be discussed any further within the report.

**Reptiles**

⁴ [https://ptes.org/nbn-hedgehog-distribution-map/](https://ptes.org/nbn-hedgehog-distribution-map/)
4.54 The Aurum 2011 survey did not note the presence of reptiles within the site during their survey. The site provides some opportunities for reptiles to be present along the un-managed boundaries and within offsite vegetation (southern boundary and north eastern corner). However, given the history of the site, if reptiles are present it is anticipated that only a small number of common species, such as slow worm *Anguis fragilis*, could be present.

4.55 There are greater opportunities within the wider landscape for reptiles to be present, especially within the allotments to the north of the site.

4.56 The habitats within the application are assessed as being of **value within the zone of influence only**.

*Water Voles*

4.57 There are no habitats on site to support water voles and so water voles will not be discussed any further within this report.
5.0 LEGISLATION AND PLANNING POLICY

5.1 This section summarises the legislation and national, regional and local planning policies, as well as other reference documents, relevant to the baseline ecology results.

Legislation

5.2 Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Wildlife and Countryside Act 1981 (as amended)
- The Conservation of Habitats and Species Regulations 2010
- The Countryside and Rights of Way Act 2000
- The Hedgerows Regulations 1997
- The Protection of Badgers Act 1992
- The Natural Environment and Rural Communities Act 2006

5.3 Where relevant, the assessment takes account of the legislative protection afforded to specific habitats and species.

Wildlife Legislation

Non-European Protected Species

5.4 Widespread amphibians (including smooth newts, palmate newts, common toad and common frogs) are all protected under the Wildlife and Countryside (WCA) Act 1981 (as amended). It is therefore an offence to trade or sell specimens.

5.5 Badgers and their setts are protected under the Protection of the Badgers Act 1992\(^5\). Activities that can harm badgers include destroying a sett, causing noise, additional lighting or vibration and pile driving, quarry blasting, lighting fires or using chemicals. It is an offence to;

• Wilfully capture, kill or injure badgers;
• Damage, destroy or block access to setts (even accidentally);
• Disturb badgers in their setts;
• Cruelly ill-treat a badger;
• Deliberately introduce a dog into a sett;
• Bait badgers;
• Dig for badgers;
• Possess, sell to offer for sale a live badger;
• Possess or control a dead badger or parts of the a badger (if unlawfully obtained); and
• Mark or attach a device to a badger.

5.6 All wild birds and their nests are protected under the WCA as amended. It is an offence to;

• intentionally kill, injure or take any wild bird
• intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built
• intentionally take or destroy the egg of any wild bird
• have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act or the Protection of Birds Act 1954
• have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act or the Protection of Birds Act 1954

6 https://www.gov.uk/wild-birds-protection-surveys-and-licences
5.7 Widespread reptiles\(^7\) (including; adder, common lizards, grass snakes and slow worms) are protected under the WCA as amended and it is therefore an offence to deliberately kill, injure, sell or trade widespread reptiles.

**European Protected Species**

5.8 European Protected Species are protected The Conservation (Natural Habitats, &c.) Regulations 1994, under regulation 39\(^8\), as well as the WCA. These species include great crested newts, all bat species, dormice and otter.

5.9 This level of protection for these species (at all stages of their life cycle) makes it an offence to do the following;

- deliberately to capture or kill a wild animal of a European protected species;
- deliberately to disturb any such animal;
- deliberately to take or destroy the eggs of such an animal; or
- to damage or destroy a breeding site or resting place of such an animal.
- It is an offence to keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a European protected species, or any part of, or anything derived from, such an animal.

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\(^7\) [http://naturenet.net/law/herps.html](http://naturenet.net/law/herps.html)
Planning Policy

National Planning Policy Framework

5.10 The National Planning Policy Framework\(^9\) sets out planning policies on protection of biodiversity and geological conservation through the planning system for local authorities in England. The Framework outlines the role of the decision maker in considering the requirements of wildlife legislation to protect wildlife.

5.11 The Framework states that the planning system should contribute to and enhance the natural and local environment, by measures including the following:

- Minimising impacts on biodiversity and providing net gains in biodiversity where possible
- Contributing to the Government's commitment to halt the overall decline in biodiversity
- Establishing coherent ecological networks that are more resilient to current and future pressures
- Recognising the wider benefits of ecosystem services

5.12 The Framework states that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying principles including the following:

- If significant harm from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated for, or, as a last resort, compensated for, then planning permission should be refused.
- Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on that designated site (either individually or in combination with other developments) should not normally be permitted. Where adverse effects on the site's notified special interest

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features is likely, an exception should only be made where the benefits of the development clearly outweigh both the impacts that it is likely to have on the features of the site that make of special scientific interest and any broader impacts on the national networks of Sites of Special Scientific Interest.

- Opportunities to incorporate biodiversity in and around developments should be encouraged.

5.13 The Government Circular 06/2005\(^\text{10}\) accompanies the National Planning Policy Framework and sets out the application of the law in relation to planning and nature conservation in England.

**Local Planning Policy**

*Breckland Adopted Core Strategy*

5.14 The Breckland Adopted Core Strategy\(^\text{11}\) contains policies that relate to ecology and nature conservation. These are summarised as follows:

- Policy CP10 Natural Environment; this relates to the protection and enhancement of biodiversity including designated nature conservation sites.

- Policy DC12 Trees and Landscape; this relates to the preservation of District trees.

- Policy SS 1 Spatial Strategy; The countryside and internationally designated sites of conservation.


\(^{11}\) www.breckland.gov.uk/sites/default/files/Uploads/planning_building_control/Core%20Strat%20Final%202003%202012.pdf
6.0 DISCUSSION AND RECOMMENDATIONS

6.1 A masterplan for the site has been produced and should any changes be made, mitigation and avoidance measures prescribed below may need to be altered.

6.2 Plans for the site include the development of c.285 residential units within the footprint of the former arable wheat field. Boundary vegetation will be retained and protected and additional landscape planting will be incorporated to enhance the site and the boundaries. Areas of public open space will incorporate SUDs and wildflower meadows within the site.

Designated Sites

6.3 The site falls within 5km of River Wensum SAC and Norfolk Valley Fens SAC. According to Breckland Core Strategy\(^\text{1}\) no road infrastructure will take place within 200m of the SAC. In addition it was highlighted that these SACs are at risk from pollution and flooding. It is not anticipated that this development would have a direct impact upon the SACs, but it is imperative that pollution prevention guidelines are followed and the development adopts appropriate SUDs to reduce any flooding risk, if required.

6.4 Natural England’s Sites of Special Scientific Interest Impact Risk Zones (SSSI IRZ) have identified specific criteria that indicate the potential to impact SSSIs within the wider area. The site falls within the Site of Special Scientific Interest Impact Risk Zones (IRZ) for a number of SSSIs. The IRZ for the site is indicating that ‘any residential development with 100 units of more will need to consult with the Local Authority and Natural England’ as impacts through recreational activities are predicted to be likely and thus mitigation measures could be required.

Habitats

*Arable Land*

6.5 The former arable land will form the footprint of the development, however this field no longer constitutes an arable field. The loss and mitigation required will be discussed within the ruderal section below.
**Hedgerows and Mature Trees**

6.6 The mature tree within the site will be retained and protected within the site and will be located within a large area so of green space.

6.7 Boundary vegetation, outside of the development area, will be retained and protected, which includes the key areas of vegetation likely to be used by wildlife (southern boundary).

6.8 Any tree planting along the retained boundary should include native species such as yew *Taxus baccata*, juniper *Juniperus communis*, oak, beech *Fagus sylvatica*, hazel, hawthorn, blackthorn, hornbeam *Carpinus Betula*.

6.9 The boundary hedgerows will be retained in their entirety and access into the northern parcel of the site will be through the current gap. Additional hedgerow and tree planting will be incorporated along this boundary and must be of a similar species composition. Current relaxed management of this hedgerow should be maintained.

6.10 New hedgerow planting throughout the scheme will be of a native variety and include privet *Ligustrum vulgare*, hazel, hawthorn, and beech. Non-native species such as laurel must be avoided.

6.11 All oak trees noted within the arboricultural report will be retained within the development. Currently T5 will be retained within an area of open space that will include wild flower meadows and SUDs which forms a green corridor throughout the site. This will retain its ecological function within the site.

6.12 The overall residual impacts on hedgerows and trees will be non-significant positive.

**Ruderal and Grassland Vegetation**

6.13 The entire footprint of the former arable field will be developed upon. Due to the recent management there will only be a small loss of ruderal vegetation and grassland to allow for the development. Current management within the development area must be maintained until the development commences.
6.14 Areas of offsite boundary vegetation will be retained, but it is anticipated that there will be a minor loss of some ruderal vegetation through ‘tidying’ up of boundary vegetation and to create access into the north eastern development parcel. This loss will be mitigated for through the provision of wildflower meadows within the site. In addition, the creation of the acoustic bund will create a grassland habitat that will incorporate native tree and shrub planting.

6.15 The vegetation within the north eastern corner of the site will be retained and managed for wildlife. This should include the maintenance of scrubby habitat and grassland should only be cut bi-annually and grass species allowed to flower and seed.

6.16 Wildflower meadows will be created along the central green corridors and within other areas of open space, where possible. These areas should be managed sympathetically to encourage botanical and invertebrate diversity. Mown footpaths could be created to reduce the public from trampling on the wildflowers. The wildflower mix used should be suitable for the soil conditions (acid loamy and clayey soils). Recommendations could be RE1 Traditional Hay Meadows (MG5 grassland) from Germinal.com.

6.17 All additional incorporated landscape planting should be of benefit to wildlife and aim to increase the value of the site for pollinating invertebrates.

6.18 Overall residual impacts will be non-significant positive.

Fauna

Amphibians

6.19 The former use of the application site would have been assessed as being of sub-optimal quality for GCN and, in its current state the development area is not suitable to support GCN and other amphibians. Boundary vegetation and the allotments to the north, as well as habitats within the wider landscape provide greater opportunities for amphibians to be present.

6.20 The pond to the north of the site and the adjacent allotment area will not be impacted by the proposed development. In addition, given the isolation of the pond
and the previous intense land management for wheat, ACD are of the opinion that GCN are highly unlikely to be present within the application site. However, should any GCN be discovered during works, works should stop and the advice of an ecologist sought.

6.21 Large SUDs will be created along the green corridor. The creation of the SUDs should aim to be of benefit to wildlife by holding some permanent water with marginal vegetation (native rushes and sedges) planted with water meadow grassland around the perimeter. If this is not possible, as a minimum a suitable wetland wildflower seed mixes should be incorporated.

6.22 With the creation of the SUDs and retention of boundary habitats the overall residual impacts will be positive.

Badgers

6.23 No obvious signs of badger were noted within the development area, but dense areas of boundary vegetation were not searched. Two holes were noted offsite, on the embankment of the A47, with a spoil heap outside of one and so it can be reasonably expected that badgers are present and may use the site for foraging and commuting.

6.24 The holes are c.20m from the development site boundary and any tunnels or chambers will be retained within the current bund that forms the access ramp to the bridge. Furthermore the area of the development opposite the location of the entrance hole is proposed open space. It is therefore not anticipated that the development will not have a direct impact upon badgers within the area. Levels of disturbance to the badger sett are already present, with the regular use of the footpath by dog walkers and the busy A47. It is therefore not anticipated that the development would significantly impact upon the badgers, indirectly.

6.25 With the retention of the boundary habitats and footpath, commuting corridors will be retained and protected. the creation of the acoustic bund will provide additional habitat for badgers in the future and the presence of the acoustic fence will prevent regular disturbance from the development at night.

6.26 The creation of green corridors, open space and native planting will ensure that
any badgers can continue to use the site and will create additional foraging and commuting habitat.

6.27 Badgers continually dig new sets and so it is recommended that a pre-commencement badger check is carried out to ensure there is no badger activity within the development area.

6.28 As badgers are likely to be present within the wider landscape, good practice methods should be used during construction. This should include;

- Trenches should be covered at the end of a working day; and
- Any temporary exposed pipes should be capped to prevent badgers gaining access during the night.
- Should any large D shaped holes be noted on site during works, work must stop and the advice of an ecologist sought.

6.29 The overall residual impacts will be non-significant positive.

Bats

6.30 Key foraging and commuting routes for bats are restricted to the boundary vegetation, which is being retained and protected. It is therefore recommended that artificial lighting along these corridors is avoided and these areas are retained as dark corridors. Should lighting be required, it must be low bollard lighting of low lux level and should not create any back spill onto the boundary vegetation.

6.31 Additional foraging habitats will be created within the scheme through the provision of a large green corridor with wildflower meadows and SUDs. Lighting along this corridor should be sensitive towards bats.

6.32 Landscape planting must also include night scented flowers that will be of benefit for bats. Recommendations include: lavender Lavandula sp., rosemary Rosmarinus officinalis, English marigolds Calendula officinalis, cornflower Centaurea cyanus, evening primrose Oenothera biennis, and night-scented jasmine Cestrum nocturnum.

6.33 Two trees (T4 and T5) have the potential to support bats through cracks and
crevices and should any arboricultural works be required (such as the removal of dead wood) or the trees become scheduled for removal, an inspection should be carried out by a licenced bat ecologist. Should potential roosting features be present, or evidence of bats found, further bat surveys and an EPS licence may be required.

6.34 In order to further enhance the site for bats it is recommended that integrated bat boxes are installed on buildings and additional boxes on trees, recommendations include;

- Minimum of 13 Bat tubes / Habitat 001 or 003 installed on all houses with a gable end facing a south or south westerly that border green corridors;

- Install 4 Schwegler 1FF bat boxes on retained mature trees on the boundary of the site.

6.35 Lighting within the entire development should be sensitive towards bats and other wildlife and should aim to retain dark corridors along boundary vegetation and green corridors within the site. Lighting should be of low lux level, directional in order to reduce back spill (or install cowls / hoods) used and short columns used. If additional artificial lighting is not required, it should not be installed.

6.36 Overall residual impacts will be positive.

*Birds*

6.37 Key boundary habitat suitable for breeding birds is primarily located off site within the boundary vegetation (trees and hedgerow). These features will be retained and protected throughout the development.

6.38 The site has reduced in value for skylarks since 2011 due to current management leaving no ground cover and the year before the tall dense structure of vegetation significantly reduced the potential for skylarks to be present. Given the recent management, and the fact that only one pair was previously recorded nesting it is not anticipated that the development will cause any significant impacts upon the County’s population of skylarks.
6.39 It is recommended that current management is maintained until the development commences. If vegetation is allowed to re-establish the site may become suitable for skylarks. Should this happen, an updated site visit must be carried out and precautionary works adopted. Recommendations include;

- Mowing the grassland prior to the start of the nesting season (Before March 1st or after August 31st) to avoid damage or disturbance to breeding birds that may nest within the field.

6.40 Should any other areas of vegetation management be required it should be carried out outside of the breeding bird season which is 1st March 31st August inclusive. Should vegetation removal be required during this time, it must be carried out under the supervision of an ecologist. The area must be checked in advance for the presence of bird nests. Once checked, if there is no evidence of breeding birds, clearance work should be completed within 48 hours of inspection. If any active nests are found in this area then vegetation clearance must cease and an appropriate buffer zone should be established. This buffer must be left intact until it has been confirmed that the young have fledged and the nest is no longer in use.

6.41 Planting that is of benefit to birds will be incorporated within the scheme to provide food and sheltering habitat. Recommendations include; Hawthorn *Crataegus monogyna*, crab apple, holly *Ilex aquifolium*, rowan, ivy *Hedera helix*, honeysuckle *Lonicera* sp., teasel *Dipsacus fullonum*, sunflower *Helianthus* sp., guelder rose *Viburnum opulus*, shrub rose *Rosa rugosa*, barberry *Berberis*, dogwood.

6.42 A large green corridor will be provided with wildflower meadows and SUDs features. These habitats, plus the provision of rear gardens will provide additional feeding opportunities for birds.

6.43 Further enhancements would be the incorporation of green walls through the provision of climbing plants such as; honeysuckle, dog rose, clamatis and ivy on walls and bike storage facilities, if present.

6.44 To further enhance the nesting opportunities for birds, bird boxes should be incorporated within the scheme. Recommendations include;

- Install 20 integrated lbstock swift bricks to be located on a north or
easterly elevation, under eaves, facing green corridors, with a clear flight path, away from windows.

- Install 10 x Schwegler 1B bird boxes (26mm and 32mm) in retained trees around the boundary of the site. This must be located c.2.5-3m above ground level facing north or east, with a clear flight path.
- Install 5 x Schwegler 1ZA wren round houses within the areas of retained hedgerows and within newly planted hedgerow.

6.45 Overall residual impacts will be positive.

**Reptiles**

6.46 Given the historical land use it not anticipated that large populations of reptiles would be present within the application site. With recent clearance the majority of the development was unsuitable for reptiles. If reptiles are present they will only be located within the periphery of the site or offsite along the southern boundary and within the north eastern corner only. The offsite habitats will be retained and protected.

6.47 Along the northern boundary between the two development parcels buffer corridors will be retained. However, it is anticipated that some areas of the un-managed grassland / ruderal vegetation present during 2016, will be removed to allow for an access road. Some habitat management is likely to be carried out along the footpath edge between the two parcels of development.

6.48 Reasonable avoidance measures must be adopted within these areas during site clearance. This will entail;

- Clearance must be carried out between April and October on warm sunny days, when any reptiles are likely to be active.
- Vegetation must be cut sensitively. This includes cutting in a single direction to manipulate reptiles into the retained habitats.
- Cutting must be and in two cuts, the first cut will be to a height of c.20cm. Arisings will be removed.
• The second cut will then be to ground level on following days, ensuring the buffer corridor is retained and arising removed.

6.49 During the development it is recommended that the storage of materials should be done on pallets in order to reduce creating habitats for reptiles. The creation of spoil heaps in close proximity to the boundary should be avoided.

6.50 The creation of the acoustic bund along the southern boundary will not impact upon any areas of suitable habitat along the southern boundary. Furthermore the bund will create additional habitat for reptiles, once the grassland becomes established. This area must be managed to create a tussocky grassland and must not be managed with a short sward height.

6.51 To further enhance the site for reptiles, log piles and hibernacula could be created in quiet areas along the southern boundary or within the north east corner of the site.

6.52 The overall residual impacts will be non-significant positive.

**Enhancements**

6.53 The National Planning Policy Framework encourages development to provide net gains in biodiversity where possible.

6.54 It is recommended that the following enhancements are provided within the site:

- Incorporate wildflower meadows throughout the scheme;
- Sensitive lighting scheme with retention of dark corridors;
- Installation of bird and boxes as stated;
- Provide SUDs that contain some permanent water or install a wildlife pond;
- Incorporation of wildlife beneficial planting throughout; and
- Creation of log piles within the site.
7.0 CONCLUSIONS

7.1 The site was formally an intensively managed wheat field with low ecological value. Wheat production ceased and ruderal vegetation and arable weeds were dominant in 2015. The site has undergone management and the majority of the development area was of negligible value. Key habitats within the site include the boundary vegetation, and these habitats will be retained.

7.2 The site does provide some marginal habitats for breeding birds, badgers, bats, and small number of reptiles to be present, and reasonable avoidance measures have been stated.

7.3 Measures to mitigate for impacts have been set out along with recommendations for enhancement of the site’s ecological value.

7.4 Implementing the recommendations will ensure that there are no significant impacts upon protected species and that the proposals will be in conformity with relevant legislation and policy.
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