Relocated Waterbeach Railway Station

Ecological Assessment
February 2018
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1.0 Summary

1.1. Report Purpose

BSG Ecology was commissioned to undertake an ecological assessment of land to the north-east of Waterbeach, approximately 4 km north of Cambridge. This report will be submitted as part of a planning application to South Cambridgeshire District Council for the relocation of the Railway Station at Waterbeach with new associated infrastructure, including the provision of car and cycle parking, platforms, ticket machine and a pedestrian bridge.

The purpose of this ecological assessment is to provide sufficient information on the likely ecological impacts of the proposals, including information on any measures required to avoid, reduce or mitigate negative impacts on ecological features during both construction and operational phases.

1.2. Date and methods of survey

A desk study, Phase 1 habitat survey and protected species surveys were conducted on Site and within the surrounding habitat between May and October 2017. These surveys included bat activity surveys, a badger survey, water vole and otter surveys and a reptile survey.

1.3. Key findings

The Site is 4.8 ha in area and is currently dominated by arable fields, with species-poor hedgerows and ditches. An active railway track, the ‘Fen line’ railway, is situated within the eastern section of the Site. Bannold Drove, an ancient earth track with ditches either side runs through the middle of the Site.

Habitats of ecological interest within the Survey Area include mature trees, wet ditches and areas of semi-improved grassland.

The habitat within the Site is suitable for a number of protected species: breeding birds (including species listed on Schedule 1 of the Wildlife and Countryside Act 1981), bats, reptiles, badger, water vole and otter.

At least eight species of bat were recorded during the surveys, including long-eared bats, soprano pipistrelle bat and noctule bat. These species are listed as priority species for conservation in the Cambridgeshire and Peterborough Local Biodiversity Action Plan and are identified as Species of Principal Importance (SPI). No bat roosts have been recorded on Site.

Water vole is present in the wet ditch adjacent to Bannold Drove however no signs of otter have been recorded.
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Badger have been recorded in the wider area.

A good population of common lizard is present within the arable field grassland margins.

Kingfisher is present on Site and possibly breeding.

1.4. **Potential impacts (in the absence of mitigation)**

Construction work may cause disturbance, kill and/or injure nesting birds including Schedule I (kingfisher) and Species of Principal Importance (SPI).

Construction and operational works may disturb commuting and foraging bats through light spill, particularly light sensitive species such as Myotis and long-eared bats.

Construction work may cause disturbance, kill and/or injure water vole and damage their habitat.

There is the potential for injury to badgers during the construction and operational phases.

The removal of areas of reptile habitat risks disturbing, killing and/or injuring reptiles.

1.5. **Mitigation measures to avoid potential impacts**

Recommendations include:

- Pre-development vegetation clearance checks for nesting birds, if clearance is required during the breeding bird season (1 March to 31 August, inclusive), including checks for kingfisher nests.

- An appropriate lighting strategy that is sensitive to bats. Retention of mature trees with suitable bat roosting features.

- Pre-construction badger survey, water vole and otter surveys and avoidance of killing/injury of these species through appropriate mitigation.

- Avoid killing/injury to reptiles through translocation/displacement into an on-Site receptor area within the southern section of the Site adjacent to attenuation features.

- Prepare and implement management plans for construction, operational and management phases.
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1.6. Opportunities for biodiversity net gain

A ‘Biodiversity Impact Calculation’ has been used to demonstrate net gain in biodiversity post development in line with National Planning Policy Framework (NPPF) and local planning policy.

Biodiversity enhancements will include new planting of native trees and new species-rich hedgerows and the creation of rough grassland habitat with vegetation differing in structural height within a dedicated receptor area within the Site. Connectivity for bats and birds will be improved by appropriately managing hedgerows and the Bannold Drove ditch bank.

Opportunities for additional biodiversity enhancement include installation of bat and bird boxes, a bee/butterfly bank and three hibernacula for reptiles within the receptor area.
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2.0 Introduction

2.1. Background to commission

BSG Ecology was commissioned to undertake an ecological appraisal of land situated to the north of the town of Waterbeach, approximately 4 km north of Cambridge, central Ordnance Survey Grid National Grid Reference (OSNGR) TL 5039 6626 (referred to as the Site). This report has been submitted as part of a planning application to South Cambridgeshire District Council (SCDC) for the new Railway Station at Waterbeach.

2.2. Site Description

The Site is located to the north-east of Waterbeach on land between the former Waterbeach Barracks and the 'Fen Line' railway that links Cambridge and King’s Lynn: it is 4.8ha in area.

The majority of the Site comprises arable fields and drainage ditches. The mid-west section of the Site incorporates Bannold Drove, which runs north-south, and the eastern section of the Site incorporates the 'Fen Line' railway. The wider area beyond the Site comprises urban development to the south, arable to the north and grassland, woodland and disturbed ground to the west (the former Waterbeach Barracks).

The Site is shown on Figure 1. Photographs of the Site are shown in Section 9.

2.3. Proposed Works

The proposed works will involve provision of a train station including car and cycle parking, platforms, ticket machine and two pedestrian bridges. Specifically the development will include the following elements:

- A two platform station consisting of approximately 170m long platforms with partial shelter on either side of the existing railway line;
- 200 space car park;
- 100 cycle parking spaces;
- Two pedestrian bridges spanning between the new platforms;
- A new access road from Cody Road.

2.4. Aim of Study

This report provides details of the ecological desk study, extended Phase 1 habitat survey and a suite of protected species surveys undertaken on Site and within the
surrounding habitat during the period May to October 2017, including bats, badger *Meles meles*, water vole *Arvicola amphibia* and otter *Lutra lutra* and reptiles.

The ecological appraisal of the Site aims to determine if there will be any ecological constraints to the new proposals. This report provides a description of recommended measures proposed to avoid, mitigate and compensate any adverse effects identified arising from the construction or operation of the new train station. It includes recommendations for ecological enhancements, and outlines measures to be implemented to avoid legal infringements.
3.0 Methodology

This section provides details of the methods that have been used for the desk study and ecological surveys on the Site.

3.1. Aims of Study

A desk study was completed to gain information on designated sites of nature conservation interest within a 5 km radius from the centre OSNGR of the Site (TL 5039 6626) in line with the CIEEM ecological impact assessment guidance (CIEEM, 2016).

Records of protected species and species of conservation concern e.g. Species of Principal Importance (SPI’s) for the conservation of biodiversity in England listed in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, were collated within 2 km of the Site. This information was provided by Cambridgeshire and Peterborough Environmental Records Centre (CPERC) in June 2017.

The desk study made use of publically available internet mapping and aerial photography resources to assess the context of the Site including:

- The Multi-Agency Geographic Information for the Countryside (MAGIC) database (http://www.magic.gov.uk/) to identify ponds within 250 m of the Site (to assist in determining the possibility of the presence of great crested newt *Triturus cristatus* (GCN) and any granted European Protected Species Licence applications within 2 km of the Site (Dataset Reference Date 2015-09-15 last updated 2016-12-19);
- Bing maps (https://www.bing.com/maps/); and
- Google maps (https://www.google.co.uk/maps).

These sites were utilised throughout the course of the work.

3.2. Phase 1 Habitat Survey

A Phase 1 habitat survey of the Site was carried out by Dr Tom Flynn MCIEEM on 19 June 2017. The survey involved walking the Site (primarily along field margins), and identifying and mapping the habitats present using the habitat categories and guidance described in *Handbook for Phase 1 Habitat Survey* (JNCC, 2010).

The Phase 1 also encompassed land immediately adjacent the Site, referred to as the ‘Survey Area’ in order to ensure hedgerows and a groups of mature trees on Bannold Drive were included within the assessment, as these habitats are likely to be used by protected or notable species. The Survey Area is shown on Figure 1.
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The survey was carried out during a suitable time of year (JNCC, 2010). Weather conditions during the survey were: light breeze, hot and sunny, 33°C; these conditions did not constrain the survey.

The habitat descriptions of the Biodiversity Reporting and Information Group (BRIG, 2011) were used to identify any Habitats of Principal Importance (HPI) in England.

### 3.3. Protected Species Surveys

The Phase 1 habitat survey identified the potential of the habitats to support species subject to protection under European and UK wildlife law. The section below outlines methods that have been employed for protected species surveys undertaken.

#### 3.3.1. Bats

Two automated bat detectors were deployed adjacent the railway line; one north of the Survey Area and one within the south the Survey Area in the corner of an arable field (Locations A and B, Figure 2). The detectors were deployed every month for a period of five consecutive nights from June 2017 until October 2017. The automated detector surveys were conducted using two Wildlife Acoustics Song Meter 2 (SM2BAT+); which are full spectrum bat detectors that are triggered automatically to record bat echolocation calls.

The detectors were programmed to begin recording from half an hour before sunset until half an hour after sunrise, which allowed continuous monitoring to take place during the period when bats are active, i.e. sunset to sunrise.

**Bat Data Analysis**

The recorded raw data files (WAV files) were converted to zero-crossing ZC files (where necessary) using the Kaleidoscope software programme. The converted files were then analysed using Titley Scientific Analook software.

For the purpose of the analysis a bat pass was defined as a single, uninterrupted sequence of echolocation calls lasting a maximum of 15 seconds. The species analysis is based on the call parameters described in Russ (2012). Given that the Site is outside the current known range of grey long-eared bat *Plecotus austriacus*, each long-eared bat is assumed to be brown long-eared bat *Plecotus auritus* (Harris & Yalden, 2008).

The following criteria were used to classify pipistrelle bat calls based on measurements of peak frequency:

- **Common pipistrelle** *Pipistrellus pipistrellus* (?42 and <49 kHz);
- **Soprano pipistrelle** *Pipistrellus pygmaeus* >51 kHz;
- **Common or soprano pipistrelle** >49 kHz and < 51 kHz; and
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- Nathusius’ pipistrelle *Pipistrellus nathusii* < 39 kHz.

In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between these species or species groups:

- Myotis sp. (to include six possible species: Daubenton’s bat *M. daubentonii*, Natterer’s bat *M. nattereri*, whiskered *M. mystacinus*, Brandt’s bat *M. brandtii*, alcathoe bat *M. alcathoe*, and/or Bechstein’s bat *M. bechsteinii*);

- Myotis / *Plecotus* sp. (Myotis or long-eared bat);

- *Nyctalus* sp. (either Leisler’s bat *Nyctalus leisleri* or noctule *Nyctalus noctula*);

- Serotine *Eptesicus serotinus* / Leisler’s bat.

Bat calls which could not be ascribed to any of these categories were not used in the subsequent analysis.

**Ground Level Tree Assessment**

Trees within the Survey Area were assessed from the ground, using binoculars and a high power torch, in order to assess their suitability to support roosting bats, taking into account industry standard guidance (Collins, 2016). Features such as woodpecker holes, cavities and crevices that offer suitable shelter and the correct roosting conditions for bats were considered suitable for roosting bats.

**Aerial Tree Inspection**

In September 2017, trees with bat roosting suitability were subject to aerial tree inspections by Grant Barmall BSc MSc ACIEEM: an experienced and licenced bat ecologist (Natural England licence number: 2015-13901-CLS-CLS).

**Limitations**

There were no limitations to the bat surveys.

3.3.2. **Badger**

The Survey Area was surveyed for badger by Helen Simmons ACIEEM on 7 and 8 September 2017 in accordance with standard methodology (Harris et al., 1989). Helen has five years of experience surveying for badgers across the UK. Conditions during the survey were optimal, being mild (c. 13-17°C), dry and overcast with occasional sun.

During the survey, dedicated searches were made for signs of badger activity such as sett holes, footprints, latrines, dung pits, hairs and mammal paths with evidence of use by badgers.
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Suitable habitats within the Survey Area and up to a distance of 30 m beyond were assessed, where this was practical and possible.

The ditches were further inspected for evidence of badger during the water vole and otter surveys undertaken in June and September 2017. Incidental evidence of badger was noted during all other ongoing protected species surveys being undertaken within the Survey Area between May and October 2017.

**Limitations**

Access was restricted to along the railway line, within the eastern part of the Survey Area boundary (Network Rail land) due to health and safety reasons. These access restrictions are not considered to have significantly constrained the assessment as over 95% of the Survey Area was accessible.

### 3.3.3. Water Vole

The water vole survey of the wet ditch parallel to Bannold Drove was carried out over two visits, taking into account the industry standard guidance in Dean et al. (2016). The first survey was undertaken in June 2017 and the second survey in September 2017. All surveys were undertaken by Mathew Denny MCIEEM who has previous experience of surveying for water voles across the UK.

The water margins and banks were searched for signs of water vole, including, entrances to burrows, droppings, latrine sites, footprints, runs and feeding stations. The habitats present were also assessed for their suitability to support the species (being classed as suitable or not suitable based on characteristics of the banks, channel depth and vegetation cover).

Celotex rafts were deployed in June due to the presence of thick vegetation. During subsequent Site visits undertaken for other protected species on Site, the celotex rafts were checked for the presence of water vole latrines when possible. Five rafts were deployed along the wet ditch adjacent Bannold Drove and one deployed on the small section of ditch within the south eastern section of the Site.

### 3.3.4. Otter

The otter survey was conducted at the same time as the water vole survey, based on the methods of the Environment Agency (2010). This involved searching for evidence of otter such as spraints (droppings), footprints, runs (paths worn through vegetation adjacent to the water) slides (areas of steep bank showing signs of regular use by otters to access the water), and holts (places of shelter/breeding).

Particular attention was paid to prominent bankside or in-stream features such as tree trunks, branches, rocks, areas of bare ground, culverts and inflowing ditches or pipes,
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since these types of structures are often used as sprainting sites (otter spraints are used to indicate territories). Areas of mud were inspected for the presence of footprints. Evidence of riparian mammals was noted/photographed and the coordinates of important features were recorded using a handheld GPS receiver.

Limitations

In August and September 2017 the ditch parallel to Bannold Drove was dredged which resulted in the removal of vegetation considered suitable for water vole and the removal of the deployed celotex rafts from the ditch. Given water vole require vegetated banks as a food source and to provide cover from predation, the ditch is now likely to be of lower suitability until the vegetation has re-established. As water vole has been recorded in this ditch after dredging it is not considered to be a significant constraint to this ecological assessment.

3.3.5. Great Crested Newt (GCN)

Three ponds were identified approximately 320 m north of the Site. Given that no ground disturbance works are proposed within 250 m of the ponds and based on Natural England guidelines (2013), these waterbodies are not included within the assessment.

The wet ditch parallel to Bannold Drove is not considered suitable for GCN due to the presence of fast flowing water. Photograph 3 and 4 show the wet ditch.

Based on Natural England guidance and professional judgement GCN have been scoped out of this assessment and are not mentioned hereafter.

3.3.6. Reptiles

In order to determine whether reptiles are present on Site (and if so, which species), a presence/absence survey for reptiles was undertaken from June – September 2017 adopting principles of industry standard guidance (Froglife, 1999). A total of 48 artificial refuges (comprising a sheet of roofing felt, 100 x 50 cm, i.e. 0.5 m²) were placed within suitable habitat within or immediately adjacent to the Survey Area i.e. the arable field margins and Bannold Drove ditch margins (Figure 3): 0.6 ha of linear habitat was surveyed using refugia placed at a density of 5–10 refugia per hectare (as recommended by Froglife, 1999).

Table 1 lists the survey dates, key personnel and a summary of weather conditions during the reptile surveys. Surveys were undertaken in the morning and afternoon taking into account the current industry guidance. The first survey visit was split across two days to ensure weather conditions remained suitable for survey (finishing when the temperature began to increase).
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Table 1: Dates and weather conditions recorded during the reptile surveys.

<table>
<thead>
<tr>
<th>Visit Number</th>
<th>Surveyor</th>
<th>Date</th>
<th>Rain</th>
<th>Cloud</th>
<th>Temp °C</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MD</td>
<td>21/06/17</td>
<td>none</td>
<td>Light</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>MA, RC</td>
<td>26/07/17</td>
<td>none</td>
<td>Light</td>
<td>3.5</td>
<td>16-17</td>
</tr>
<tr>
<td>3</td>
<td>PN, JP</td>
<td>11/08/17</td>
<td>none</td>
<td>None</td>
<td>0-3</td>
<td>14-16</td>
</tr>
<tr>
<td>4</td>
<td>MD</td>
<td>25/09/17</td>
<td>none</td>
<td>None</td>
<td>0-3</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>MD</td>
<td>27/09/17</td>
<td>none</td>
<td>None</td>
<td>0-3</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>MA</td>
<td>28/09/17</td>
<td>none</td>
<td>None</td>
<td>0-3</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>MD</td>
<td>29/09/17</td>
<td>none</td>
<td>None</td>
<td>0-3</td>
<td>17</td>
</tr>
</tbody>
</table>

All reptile surveys were carried out by suitably qualified ecologists with experience of undertaking reptile surveys and/or translocations and ground clearance works involving common species of reptiles.

3.4. Biodiversity Impact Assessment Calculator

The Biodiversity Impact Assessment metric was used to calculate the biodiversity value of the Site before and after development. This then calculates if the development is likely to cause a loss or gain to biodiversity. It is a metric used to quantify the value

- MD – Mathew Denny MCIEEM, MA – Atherton GradCIEEM, RC – Rebecca Cattell GradGCIEEM, PN – Pete Newbold, JP – Jamie Peacock
- Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).
- The Beaufort scale is an empirical measure for describing wind intensity on a scale of 0 to 12. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze, 6- Strong breeze, 7- Moderate gale, 8- Fresh gale, 9- Strong gale, 10- Whole gale, 11- Storm, 12- Hurricane force.
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of biodiversity at any site and can form an evidence base on required mitigation for a development, the amount of residual biodiversity impact and if necessary the amount of required compensation. The metric is one tool to be used in assessing the biodiversity impact of development on sites.
4.0 Results and Interpretation

In this section the results of fieldwork, desk study are brought together. The importance of the different ecological features are considered with regard to guidance, planning policy and relevant legislation, which is outlined in Appendix 1.

4.1. Desk Study

There are three statutory designated sites within 5 km of the Site and one non-statutory designated site within 5 km of the Site, details of which are provided in Table 2 below.

4.1.1. Statutory Designated Wildlife Sites

Table 2. Designated Wildlife Sites.

<table>
<thead>
<tr>
<th>Sites</th>
<th>Details</th>
</tr>
</thead>
</table>
| Statutory Sites within 5 km | The closest statutory site is the Cam Washes Site of Special Scientific Interest (SSI). The Cam Washes is a series of low lying pastures which are subject to seasonal flooding. The site is important for the number and diversity of wintering and breeding waterfowl and waders it supports. The SSSI is located within 2.5 km of the Site to the north-east at its closest point. Wicken Fen SSSI and Ramsar Site is located 4.7 km to the north east of the Site. Units of the site are also designated as a National Nature Reserve (NNR) and Wicken Fen forms part of the ‘Fenland’ Special Area of Conservation (SAC). Wicken Fen is in part designated for its peatland habitat (including peat bog swamps and calcareous fen). The site supports several Nationally Important plant species, including fen violet Viola persicifolia which survives at only two other sites in Britain. It contains eight nationally scarce plants and 121 British Red Data Book invertebrates. The site is important for a range of European Protected Species and Species of Principal Importance (SPI’s) including otter, water vole, marsh harrier Circus aeruginosus, bearded tit Panurus biarmicus, saw sedge Cladium mariscus and rare insects. The SAC citation details the habitats and species for which the SAC (and the component SSSIs) is designated for. These include: Calcareous fens with Cladium mariscus and species of the Caricion davallianae, Molinia meadows on calcareous, peaty or
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clayey-silt-laden soils, Spined loach *Cobitis taenia* and GCN. The Site is located within the Natural England SSSI Impact Risk Zone for the two above mentioned SSSIs.  

**Stow-cum-Quy Fen** SSSI is located within 3 km to the south east of the Site and is notified for areas of floristically rich calcareous loam pasture. In addition, a number of pools formed on Chalk Marl are present and these support a range of aquatic plants including some uncommon species. Both habitats are rare in the UK.

| Non-statutory sites within 2 km | The River Cam, a County Wildlife Site (CWS) is located 500 m to the east of the Site at its closest point. The river has been designated as it is a major river which has not been grossly modified. |

4.1.2. **Protected Species**

CPERC returned 695 records of protected species and/or species of conservation concern within 2 km of the Site, details of which are provided in Table 3 below.

Table 3. Protected Species.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bats</td>
<td>CPERC provided two records of common pipistrelle bat and one record of a brown long-eared bat within 2 km of the Site. No European Protected Species (EPS) licences for destruction or disturbance of bat roosts have been granted within a 2 km radius of the Site boundary. There is a network of species-poor native hedgerows and a network of steep drainage ditches in the area around the Site and within the Site itself. These features, including the railway line on Site, offer good foraging and commuting habitat for bats throughout the Site. Mature trees are present along Bannold Drove, an ancient trackway which runs north-south through the Site (Figure 1). The arable field grassland margins also offer suitable foraging habitat for a variety of bats. The small network of ponds, which are present to the north of the Site adjacent to the railway line, are suitable for a range of...</td>
</tr>
</tbody>
</table>

The Impact Risk Zones are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks posed by development proposals to: SSSIs, SACs, Special Protection Areas (SPAs) and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.
invertebrate prey species and therefore a variety of bat species will be attracted to the general area.

<table>
<thead>
<tr>
<th>Section</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td>CPERC provided one record of badger approximately 400 m north-east of the Site. Badger is known to be present in the wider landscape and there are large areas of good foraging habitat and locations suitable for constructing setts.</td>
</tr>
<tr>
<td>Water vole</td>
<td>CPERC provided four records of water vole. Three of the water vole records originate from different ditches, but are likely to be from the same catchment, near or along the Long Drove, a long road that runs parallel and east of the Fen railway (the closest record from 420 m north-east of the Site). The fourth record originated from over 1 km south-west of the Site. The wet ditches on Site were considered likely to be suitable for water vole.</td>
</tr>
<tr>
<td>Otter</td>
<td>CPERC provided four records of otter. All four otter records are provided from the River Cam CWS located 370 m east of the Site. The wet ditch on Site is suitable for otter.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>CPERC provided one record of a common lizard from the Waterbeach Barracks, 1 km west of the Site boundary. The presence of semi-improved grass field margins (approximately 1-3 m wide) suggests that the Site is of high suitability for common species of reptile. Suitable grassland is also present along the railway line, which forms part of the eastern Site boundary and along the western and eastern side of Bannold Drove.</td>
</tr>
<tr>
<td>Breeding Birds</td>
<td>CPERC provided 579 records of birds within 2 km of the Site, many of which are typical fenland and farmland species some of which are listed on the Birds of Conservation Concern Red or Amber Lists (BoCC) (Eaton et al. 2015). 25 Schedule 1 (of the Wildlife and Countryside Act 1981) listed species records were provided. Of these records it is possible that barn owl <em>Tyto alba</em> and kingfisher <em>Alcedo atthis</em> may make use of the Site based on an evaluation of the habitats that are present. Opportunities for common and widespread nesting birds exist within the Site in the hedgerows and scrub, particularly along the railway line. The Site also provides habitats suitable for some tree and ground-nesting SPI birds, such as skylark <em>Alauda arvensis</em>, dunnock <em>Prunella modularis</em>, grey partridge <em>Perdix perdix</em>, yellowhammer <em>Emberiza citronella</em>, starling <em>Sturnus vulgaris</em> and song thrush <em>Turdus philomelos</em>.</td>
</tr>
</tbody>
</table>
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4.2. Field Survey

4.2.1. Habitats

Habitats present within the Survey Area are described in Table 4. A Phase 1 habitat map is provided in Figure 1.

Table 4. Details of Phase 1 habitats within or adjacent to the Site.

<table>
<thead>
<tr>
<th>Habitats</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arable land</td>
<td>The Survey Area is dominated by two large arable fields (Photograph 1). Both fields were in productive use at the time of the survey, supporting wheat <em>Triticum aestivum</em> and field beans <em>Vicia faba</em>.</td>
</tr>
<tr>
<td>Hedgerow</td>
<td>There are three intact hedgerows within the western section of the Survey Area. One defunct hedge is situated south of the arable field within the eastern section of the Site. The hedgerows are generally dominated by hawthorn <em>Crataegus monogyna</em> and are relatively species-poor, however they contribute to the local ecological network that link to wider landscape, including sites designated for their biodiversity importance. Ecological networks are referred to under the National Planning Policy Framework (NPPF) in terms of enhancing and conserving the natural environment.</td>
</tr>
<tr>
<td>Ditches</td>
<td>A single dry ditch is present along the west side of Bannold Drove. A wet ditch is present within the Site along the east side of Bannold Drove (Photograph 3 and 4). A small section of a wet ditch located in the south-east corner of the Survey Area is present and falls within the Site boundary. The wet ditches had running water and supported fool’s watercress <em>Apium nodiflorum</em>, branched bur-reed <em>Sparganium erectum</em> and reed-mace <em>Typha latifolia</em> in some areas. The ditches do not conform to any of the habitat descriptions in BRIG (2011) and are therefore not HPIs. The wet ditch along Bannold Drive extends more than 1 km north outside of the Survey Area and contributes to a local ecological network.</td>
</tr>
<tr>
<td>Mature trees</td>
<td>Mature trees (oak <em>Quercus robur</em> with some ash <em>Fraxinus excelsior</em> and crack willow <em>Salix fragilis</em>) are present along Bannold Drove. The mature trees at the Site do not conform to any of the habitat descriptions in BRIG (2011) and are therefore not HPIs.</td>
</tr>
<tr>
<td>Semi-improved neutral</td>
<td>1.3 m wide strips of semi-improved neutral grassland dominated by false oat-grass <em>Arrhenatherum elatius</em> are present around the field margins in the eastern section of the Survey Area. This grassland also</td>
</tr>
</tbody>
</table>
forms narrow strips along the margins of much of Bannold Drove (Figure 1). A mosaic of semi-improved grassland and tall ruderal plants (typically common nettle *Urtica dioica* and lesser burdock *Arctium minus*), some arable weeds and some bramble *Rubus fruticosus* agg. scrub are present along either side of the railway line, which forms part of the eastern boundary of the Site.

The narrow strips of semi-improved grassland do not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. Specifically, it is not referable to the Lowland Meadow HPI since, being dominated by false oat-grass and cock's-foot *Dactylis glomerata*, it has similarities with the MG1 *Arrhenatherum elatius* grassland under the National Vegetation Classification system (Rodwell *et al.*, 1992), whereas the Lowland Meadow HPI includes MG4, MG5 and MG8 grasslands (BRIG, 2011).

The strips of good semi-improved neutral grassland contribute to local ecological networks, which are referred to under the NPPF.

| Scattered Scrub | Scattered scrub is present along both sides of the railway line (photograph 2). This habitat does not conform to any of the habitat descriptions in BRIG (2011) and is therefore not a HPI. |

**4.2.2. Protected Species**

Protected species and species of conservation concern identified in relation to the Site are summarised in Table 5. The results of the species-specific surveys are described in more detail in subsequent sections.

Table 5: Summary of Notable Species on Site.

<table>
<thead>
<tr>
<th>Species</th>
<th>Location</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bats</td>
<td>At least eight species of bat have been recorded within the Survey Area including three SPI. No bat roosts have been identified; however roosting opportunities are present within mature trees along Bannold Drove</td>
<td>Linear features within the Survey Area, which include the railway line, hedgerows, scrub habitat, wet ditches and trees, are suitable for foraging, roosting and commuting bats including light sensitive species such as long-eared and <em>Myotis</em> bats (as the Survey Area is currently unlit). Aerial tree inspections did not record any bat roosts present within the trees on Site or within the Survey Area. It is understood that the mature trees on Bannold Drove will be retained. In the absence of mitigation, development within the Site has the potential for significant direct effects on bats.</td>
</tr>
</tbody>
</table>
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**Relocated Waterbeach Railway Station**

<table>
<thead>
<tr>
<th>(Figure 2).</th>
<th>All UK bats are European Protected Species (see Appendix 1).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Badger</strong></td>
<td>No badger setts have been recorded. However badgers use the habitats within the Survey Area to commute and forage.</td>
</tr>
<tr>
<td><strong>Water vole</strong></td>
<td>Water vole is present along the ditch east of Bannold Drove.</td>
</tr>
<tr>
<td><strong>Otter</strong></td>
<td>No evidence of otter was recorded.</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td>A good population of common lizard is present within the Site. No grass snakes were recorded within the Site or Survey Area but exist in the wider landscape.</td>
</tr>
<tr>
<td><strong>Breeding birds</strong></td>
<td>The Site is suitable for ground, tree and scrub nesting birds including SPI. Kingfisher is present within the Site (a pair was</td>
</tr>
</tbody>
</table>
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| Recorded on the Bannold Drove ditch; suitable nesting habitat is present along the banks of the wet ditch east of Bannold Drove. | Against disturbance when breeding (see Appendix 1). All nesting birds in the UK are protected under the Wildlife and Countryside Act 1981 (as amended) (see Appendix 1). |

4.3. **Bats**

**Automated Surveys**

A combined total of 1666 bat passes were recorded from Location A and Location B (Figure 2), over a recording period of 267.7 hrs (monthly monitoring during the period June to October 2017); equating to a mean activity rate of 6.2 bat passes per hour (B/h).

Bat activity was almost three times greater at Location B with 9 B/h, compared to 3.4 B/h at Location A. The majority of calls consisted of common pipistrelle bats and soprano pipistrelle bats. Eight noctule bat passes were recorded 8 minutes after sunset. Typical emergence time for this species is 5 minutes after sunset (Russ, 2012) and they are powerful and fast flying bats which suggests that this species is roosting in proximity to the Site.

**Ground Level Tree Assessment and Aerial Tree Inspection**

Three trees within the Survey Area were categorised as having moderate suitability for roosting bats, and two as having low suitability. Three of these trees (two with moderate and one with low suitability for roosting bats) fall within the Site boundary. No bat roosts were located during aerial tree inspections in September 2017 (Figure 2).

4.4. **Badger**

Arable fields, scrub and hedgerow within the Survey Area offer suitable foraging and commuting habitat. Badger latrines were recorded in the southern corner of the arable fields therefore badger is likely to occur within the Site. No setts were recorded within the Site or Survey Area boundaries.

4.5. **Water vole**

Water vole is present on the main ditch adjacent to the eastern side of Bannold Drove. The small ditch in the eastern section of the Survey Area did not have any signs of water vole. The ditch on the western section of Bannold Drove is unsuitable for water vole habituation due to the lack of water that is present (Figure 4).

**Otter**
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No evidence of otter has been recorded. Otters are highly territorial animals with large home ranges. Depending on the quality of the habitat and availability of food, males can range along rivers for distances up to 35 km (Gov.uk, 2014). Otter is present on the River Cam, 370 m east of the Site. The presence of a network of wet ditches between the Site and the River Cam potentially provides suitable wildlife corridors for this species to access the Site. Given the high mobility of this species and the fact that there are suitable food sources close to the Site (a pond north of the Site with fish) it is possible that this species may occasionally pass through the Site for dispersal or migratory purposes.

4.6. **Reptiles**

The peak adult count from seven survey visits undertaken on Site was 11 common lizards. No adult grass snake was recorded, however grass snake has been observed off-Site and to the north of the Survey Area along the banks of Bannold Drove.

4.7. **Birds**

Arable species (attracted to the cereal and rape crops) were recorded within the Survey Area during other surveys being undertaken as part of the wider site development (e.g. linnet Linaria *cannabina*, yellowhammer, grey partridge *Perdix perdix* and reed bunting *Emberiza schoeniclus*).

During other protected species surveys, incidental records of kingfisher were recorded in July and August 2017 and Bannold Drove provides suitable breeding habitat. A single pair was observed perching and foraging within the southern part of the wet ditch directly adjacent to the eastern section of Bannold Drove however breeding was not confirmed. Suitable habitat for breeding kingfisher is present within the Site.
5.0 Further Survey

All surveys necessary for the completion of this ecology assessment are complete. These surveys are valid for 2 years.

Pre-construction surveys are recommended for some species and these are outlined in Section 6.
6.0 Potential Impacts and Recommendations

6.1. Designated Sites

Wicken Fen SAC and Ramsar sites are sites of international importance. The Wicken Fen SSSI and Cam Washes SSSI are of national importance. These sites are located outside the Site boundary (over 2 km to the north-east of the Site).

The Cam CWS is located 500 m to the east of the Site.

No direct impacts on Wicken Fen or the Cam Washes are considered likely. The new train station proposals do not include new links to Wicken Fen and so it is not considered that the train station will result in additional visitors to the fen. There is already an existing train line running parallel to the River Cam and therefore the operation of the station is not considered likely to impact the Cam Washes. The construction of the station will be carefully controlled to ensure no pollution events which may arise from the construction of the station cause pollutants to enter the River Cam.

No construction or operational impacts on statutory or non-statutory designated sites are predicted, therefore no additional mitigation, compensation or enhancement measures are considered in relation to these sites.

6.2. Habitats

The majority of habitats that will be impacted by the development will be arable land, semi-improved grassland and scrub along the railway and field margins. These habitats are not identified as HPI (BRIG, 2011) or priority habitats in the South Cambridgeshire and Peterborough Local Biodiversity Action Plan (LBAP). These habitats are considered to be common and widespread in the wider landscape and are not considered to be of high ecological value.

Table 6 summarises the potential impacts during the construction and operational phases which may arise when considered in the absence of mitigation. Mitigation measures are then recommended.
Table 6: Potential impacts during the construction and operational phases

<table>
<thead>
<tr>
<th>Feature</th>
<th>Potential Impacts</th>
<th>Mitigation/Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedgerow</td>
<td>The development will result in the loss of c. 70 m of hedgerow within the south western section of the Site to facilitate access and a new road to the railway station. Without adequate fencing protecting the retained hedgerows adjacent and within the Survey Area, there is some risk of permanent physical damage to retained hedgerows and any surrounding vegetation during construction.</td>
<td>Use of fenced and/or planted buffers at the base of retained hedgerows during construction in accordance with British Standards; BS 5837:2012 <em>Trees in relation to design, demolition and construction</em>. Details of which will be included within a Construction and Ecology Management Plan (CEMP). New native species-rich hedgerows will be planted either side of the access road. A new tree belt will be established north of the existing hedge within the south-eastern section of the Site, merging into lower level native scrub/shrub planting towards the rail line. New species-rich hedgerow, native shrub planting and trees will be planted around the station car park and receptor area. Details of appropriate habitat management of new hedgerows should be included within a Landscape and Ecology Management Plan (LEMP).</td>
</tr>
<tr>
<td>Mature Trees</td>
<td>Mature trees along Bannold Drove will be retained. Without adequate fencing protecting retained trees there is a risk of accidental loss/damage by machinery during construction.</td>
<td>Retention of mature trees along Bannold Drove and the requirement to adopt appropriate buffer zones (if deemed necessary) in accordance with British Standards; BS 5837:2012 <em>Trees in relation to design, demolition and construction</em>. Details of which will be included within the CEMP.</td>
</tr>
<tr>
<td>Wet ditch</td>
<td>The ditch east of Bannold Drove will be retained, but may be</td>
<td>Protective fencing during construction (to prevent accidental incursion).</td>
</tr>
<tr>
<td>Feature</td>
<td>Potential Impacts</td>
<td>Mitigation/Compensation</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td></td>
<td>subject to temporary changes caused by dredging or modification as part of the proposed development i.e. installation of the bridge. Without adequate pollution prevention measures, there is some risk of pollution, for example from concrete, silt or oil discharges via surface water. Without adequate fencing protection during construction, there is a risk of physical damage to ditches and any surrounding vegetation through accidental incursion.</td>
<td>Pollution prevention measures in line with Environment Agency (2007) details of which will be outlined in the CEMP. Details of appropriate habitat management of ditches and adjacent vegetation to be included within a LEMP, with input from a professional ecologist.</td>
</tr>
<tr>
<td>Semi-improved grassland</td>
<td>The removal of vegetation during the construction phase will be minimised wherever possible. The proposed development will involve the loss of a small area (approximately 0.01 ha) of semi-improved grassland habitat to facilitate the new access road i.e. the arable field margins and grassland margins of Bannold Drove. The development will also result in the loss of 0.03 ha m strip adjacent the western side of the</td>
<td>Excessive mowing of vegetation in and within 2 m of the ditch will result in the development of amenity lawns of low ecological value and not of suitability for reptiles. The loss of grassland will be compensated for by the creation of a grassland receptor area (0.23 ha) for protected species displacement/ translocation (described below). This area is greater than the area of grassland habitat lost as a result of the development. Details of the appropriate habitat management of this grassland area will be included within a LEMP.</td>
</tr>
<tr>
<td>Feature</td>
<td>Potential Impacts</td>
<td>Mitigation/Compensation</td>
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<tr>
<td></td>
<td>Construction</td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td>railway line. This grassland is not considered a HPI, but likely contributes to the ecological networks referred to in the NPPF particularly for species such as reptiles.</td>
<td>During the operational phase, increased lighting within the Site may have a negative effect on activity patterns, affecting foraging behaviour and fragmenting commuting routes.</td>
</tr>
<tr>
<td>Bats</td>
<td>Several bats listed as SPI use the Site to forage. No roosts have been located within the Site or Survey Area, but the automated detector survey results suggest that roosts are present in close proximity to the Site. In the absence of mitigation an increase in the level of artificial lighting associated with the proposals has the potential to negatively affect various species of bats. Floodlighting during construction may have a negative effect on activity patterns, affect foraging behaviour and fragment commuting routes. Details of lighting during the construction phase will be outlined in CEMP and will be designed with reference the Bat Conservation Trust’s guidance for</td>
<td>Details of lighting controls will be outlined in a LEMP. New lighting should be directed away from mature trees and hedgerows as much as is reasonably possible (Stone, 2013). Retained trees and hedgerows along Bannold Drove will not receive more than 1 lux light spillage to avoid impacts to foraging and commuting bats. The lighting scheme will minimise light spillage by using appropriate lighting specifications, such as stud lighting. This type of lighting is appropriate where walkways are required, rather than using traditional pole-mounted lighting (which can cause excessive light spill). Where lighting is unavoidable, other options should be considered to reduce light spill, such as increased spacing between light units and use of cowls can reduce the intensity and spread of light, thereby minimising the area illuminated.</td>
</tr>
<tr>
<td>Feature</td>
<td>Potential Impacts</td>
<td>Mitigation/Compensation</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>mitigating the effects of artificial lighting on bats (Grant et al., 2012 and Stone, 2013).</td>
<td></td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td>The station will not operate throughout the night. The speed limit on the Site will be 30 mph or less, therefore no impacts to badger during the operational phase are anticipated.</td>
<td>Measures to protect badgers from accidental injury will be adopted as follows (further details of which will be provided in the CEMP and LEMP).</td>
</tr>
<tr>
<td><strong>Badger</strong></td>
<td>There is potential for badgers to be killed or injured, such as during digging work and landscaping, and there is the possibility that badgers may become trapped in open trenches, pits or pipework. There is evidence that badgers are using the Site to mark their territory. The proposals will result in a reduction of available foraging habitat however other foraging options are present in the wider landscape.</td>
<td>A pre-construction check for badger presence will be undertaken no more than 6 months in advance of construction. All ground excavations will be covered up at night to prevent the risk of trapping badgers or other wildlife. If this is not possible then consolidated earth slopes will be put into the excavation to enable badgers (and other mammals) to escape. Alternatively wooden ramps may be used.</td>
</tr>
<tr>
<td><strong>Water Vole</strong></td>
<td>Water Vole is present within the wet ditch adjacent to Bannold Drove: this ditch will be retained as part of the proposal. However, there is a risk of damage to water vole habitat and potential killing or injury of individuals during localised vegetation removal and the installation of a bridge for the new access road. Without adequate fencing and a Unsympathetic management of the ditch may reduce the habitat.</td>
<td>A pre-construction water vole survey should be undertaken no more than six months prior to ground works and, if necessary, a Protected Species Mitigation licence from Natural England will be required to ensure legal compliance when undertaking mitigation for water voles in the proposed bridge area (i.e. vegetation removal and destructive search of burrows). Habitat management of the stream will be required as a condition.</td>
</tr>
<tr>
<td>Feature</td>
<td>Potential Impacts</td>
<td>Mitigation/Compensation</td>
</tr>
<tr>
<td>---------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>suitable buffer around the retained ditch, there is potential for killing or injury of water vole and damage or destruction of their burrows due to accidental incursion and also during the construction of bridges or culverts. This will lead to a breach of wildlife legislation outlined in Appendix 1. Without adequate pollution prevention measures, there is some risk of pollution of ditches used by water vole from concrete, silt, or oil discharges via surface water.</td>
<td>quality for water voles.</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Otter</strong></td>
<td>No evidence of otter has been recorded on Site. It is possible that this species may occasionally pass through the Site using the wet ditches/railway line as dispersal routes or to migrate. There is a low risk that otter could be killed or injured during digging work and landscaping, and the possibility they may become trapped in open trenches, pits or pipework.</td>
<td>Given their mobility, otters are unlikely to be negatively affected during the operational phase of the development.</td>
</tr>
<tr>
<td></td>
<td>A pre-construction check of the wet ditches should be undertaken no more than 6 months prior to ground works to look for signs of otter. The badger mitigation detailed above will be sufficient for this species.</td>
<td></td>
</tr>
</tbody>
</table>
### Feature | Potential Impacts | Mitigation/Compensation
--- | --- | ---
**Reptiles** | The proposed development will result in the loss of 0.08 ha of suitable reptile habitat within the Site. Reptiles are also present in the immediate landscape outside the Site boundary and therefore have the potential to move into and off the Site. In the absence of mitigation for reptiles (trapping and translocation or displacement into a suitable receptor area), development has the potential to injure and/or kill reptiles during the site clearance phase, which would constitute an offence under the legislation outlined in Appendix 1. | Measures to protect reptiles will be outlined within a CEMP. A receptor area of greater size and quality to the area of suitable habitat being lost will be provided within the southern section of the Site adjacent to the new attenuation features. The receptor area will contain rough grassland and at least three hibernacula suitable for reptiles. A management plan for the receptor area will be outlined within the LEMP. | No further impacts are expected as all reptile habitat loss will take place during the construction phase. | 
**Breeding Birds** | In the absence of mitigation the proposed work has the potential to have a negative impact on nesting birds, including SPI. Any vegetation clearance has the potential to contravene legislation which protects breeding birds (refer to Appendix 1). The permanent loss of a small area of nesting bird habitat (scrub and hedgerows) at an appropriate During the operation phase of the development direct impacts on breeding birds (including the Schedule 1 species kingfisher, if nesting on Site) may arise from an increased level of human disturbance arising from increased public access. This may displace or disturb nesting birds. Additionally insensitive hedgerow management during | A pre-construction check no more than six months prior to construction (in the breeding season) of the wet ditches should be undertaken to look for kingfisher nest sites. Vegetation removal should be avoided during the breeding bird season (March to August inclusive). Ideally vegetation will be trimmed down in advance of the breeding bird season to discourage birds from nesting. If works within the nesting season are unavoidable the vegetation will be inspected by an ecologist to identify the presence of any active nests. If active nests are identified then a suitable buffer (the size of | 


<table>
<thead>
<tr>
<th>Feature</th>
<th>Potential Impacts</th>
<th>Mitigation/Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Construction</strong></td>
<td><strong>Operational</strong></td>
</tr>
<tr>
<td></td>
<td>time of year is not considered to be a significant impact.</td>
<td>the nesting season could cause the loss of bird nests.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>which is species dependent) will be retained around the nest until the young have fledged and/or the nest is no longer in use. A further check by an ecologist will be required to confirm this prior to clearance of the vegetation. This will be outlined in the CEMP.</td>
</tr>
</tbody>
</table>
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A Construction and Ecology Management Plan and a Landscape and Ecology Management Plan are likely to be conditioned as part of any approval of this application.

### 6.3. Biodiversity Accounting Calculation

A 'Biodiversity Accounting Calculator' was used to calculate a score in terms of biodiversity loss/gain for the proposals. Biodiversity Impact Calculation resulted in a net gain score of 0.42.
7.0 Enhancement

In accordance with British Standard BS 42020:2013 (Biodiversity: Code of practice for planning and development), and in line with the NPPF (Appendix 1), the development proposals will seek to deliver ecological enhancements (Table 7). The habitat enhancements that are recommended are detailed below and will be described more comprehensively in the LEMP.

Table 7: Recommendations for enhancement.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Recommendations for Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>New native trees will be planted in the eastern section of the Site around the station car park and receptor area.</td>
</tr>
<tr>
<td>Scrub</td>
<td>Adjacent to the hedgerows, which are located around the receptor area, scrub will be planted to provide additional cover for reptiles and nesting and foraging habitat for birds. Native fruit bearing species will be used which have a known wildlife benefit i.e. blackthorn Prunus spinosa. The management of the scrub will be detailed within the LEMP.</td>
</tr>
<tr>
<td>Bats</td>
<td>4 x 1 FF Schweglar bat boxes will be erected on the mature trees on Bannold Drove. Retained hedgerows should be managed sensitively with a more relaxed cutting regime i.e. cut every two or three years, except where necessary for health and safety or access and if possible only trim one side of the hedge in any year. If allowed to grow taller, this will provide additional shelter for bats, and help to maintain dark corridors. The grassland receptor site within the southern section of the Site will also benefit foraging bats as this area will attract a variety of insect prey.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>The vegetation and grassland within the receptor site will be of differing heights to provide a structure that would be beneficial to reptiles to seek cover. Three hibernacula will be provided within the receptor area.</td>
</tr>
<tr>
<td>Breeding Birds</td>
<td>The receptor area will also benefit birds including SPI. The erection of a variety of bird boxes on suitable retained mature trees or structures would provide enhancement for nesting birds. These will include: 4 x open-fronted nest boxes should be erected on mature trees that are retained on Bannold Drove at a height of approximately 4m. These should be put in areas that provide some cover for nesting</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th><strong>Invertebrates</strong></th>
<th>The installation of two bee/butterfly banks within the receptor area will provide habitat for a range of invertebrates. The banks will be created with reference to Buglifes guidance (Buglife, undated) and will be described in detail within the LEMP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>birds.</td>
<td>2 x 1SP Schweglar Sparrow Terrace boxes should be included.</td>
</tr>
</tbody>
</table>

8.0 References

ARG UK (2010) ARG UK Advice Note 5: Great crested newt habitat suitability index.


CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. 2nd ed. Winchester. CIEEM.


HMSO (2006) Natural Environment and Rural Communities Act (NERC Act), London. HMSO.

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Websites:


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9.0 Figures

Figure 1: Phase 1 Habitat Plan
Figure 2: Bat Survey
Figure 3: Reptile Survey
Figure 4: Water Vole Survey
No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.
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Sources: BSG Ecology

LEGEND
- Site boundary
- Survey area boundary
- Location of automated bat detectors

Trees with potential to support roosting bats
- High
- Moderate
- Low
No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.
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LEGEND

Site boundary
Survey area boundary
Areas where reptile presence was recorded
Figure 4: Water vole survey results (ditches)

No dimensions are to be scaled from this drawing. All dimensions are to be checked on site. Area measurements for indicative purposes only.

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Sources: BSG Ecology
10.0 Photographs

1. Arable fields dominate the Site.

2. The east and western sections of the railway line on Site is dominated by scrub.

4. Bannolds Drove looking south. The ditch was dredged in August 2017.
Appendices

Appendix 1. Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

National Planning Policy Framework (England)

The Government published the National Planning Policy Framework (NPPF) on 27th March 2012. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

In conserving and enhancing the natural environment, the NPPF (Paragraph 109) states that ‘the planning system should contribute to and enhance the natural and local environment’ by:

a) Recognising the wider benefits of ecosystem services;

b) 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, including by establishing coherent ecological networks that are more resilient to current and future pressures;

c) Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

Paragraph 117 refers to how planning policies should aim to minimise impacts on biodiversity, to: ‘identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;’ and to ‘promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan.’

Paragraph 118 of the National Planning Policy Framework advises how, when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the mitigation hierarchy. The mitigation hierarchy advises that if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts),
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adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

Where proposals or activities require planning permission, the NPPF states that ‘...local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

d) Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;

e) Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;

f) Opportunities to incorporate biodiversity in and around developments should be encouraged;

g) Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and

h) The following wildlife sites should be given the same protection as European sites:

1) potential Special Protection Areas and possible Special Areas of Conservation

2) listed or proposed Ramsar sites; and

3) sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.’

In respect of protected sites, the NPPF requires local planning authorities to make ‘distinctions...between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.’

In paragraph 125 the NPPF states that ‘by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.’ This applies to
protected species that are a material consideration in the planning process including bats and may also apply to other light sensitive species.

**Government Circular ODPM 06/2005 Biodiversity and Geological Conservation (England only)**

Paragraph 98 of Government Circular 06/2005 advises that “the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned...”

Paragraph 99 of Government Circular 06/2005 advises that “it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted”.

**Standing Advice (GOV.UK - England only)**

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: ‘Local planning authorities should take advice from Natural England or the Environment Agency about planning applications for developments that may affect protected species.’ GOV.UK advises that ‘some species have standing advice which you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.’

The standing advice (originally from Natural England and now held and updated on GOV.UK) provides advice to planners on deciding if there is a ‘reasonable likelihood’ of protected species being present. It also provides advice on survey and mitigation requirements.

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6 [https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals#standing-advice-for-protected-species](https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals#standing-advice-for-protected-species)
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When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: ‘The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee...it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.’

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England)

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Sections 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

The S41 lists are used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty has been published by Defra. One of the key messages in this document is that ‘conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.’ In England the administration of the planning system and licensing schemes are highlighted as having a ‘profound influence on biodiversity conservation.’ Local authorities are required to take measures to ‘promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that ‘the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.’

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The

7 [https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals#standing-advice-for-protected-species](https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals#standing-advice-for-protected-species)
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UK Post-2010 Biodiversity Framework\(^8\), which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

**European protected species (Animals)**

The Conservation of Habitats and Species Regulations 2010 (as amended)\(^9\) consolidates the various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

“European protected species” (EPS) of animal are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). They are subject to the provisions of Regulation 41 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a) Intentionally or deliberately capture, injure or kill any wild animal included amongst these species

b) Possess or control any live or dead specimens or any part of, or anything derived from a these species

c) deliberately disturb wild animals of any such species

d) deliberately take or destroy the eggs of such an animal, or

e) intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a) to impair their ability—

4) to survive, to breed or reproduce, or to rear or nurture their young, or

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\(^8\) JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*, July 2012. ([http://jncc.defra.gov.uk/page-6189](http://jncc.defra.gov.uk/page-6189))

\(^9\) The Conservation of Habitats and Species Regulations 2017 serve to consolidate and update the Conservation of Habitats and Species Regulations 2010.
5) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

b) to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of the Regulations (2010), a licence can only be issued where the following requirements are satisfied:

a) The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'

b) ‘There is no satisfactory alternative’

c) The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive. Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.
Competent authorities

Under Regulation 7 of the Conservation of Habitats and Species Regulations 2010 (as amended) a “competent authority” includes “any Minister of the Crown, government department, statutory undertaker, public body of any description or person holding a public office.

In accordance with Regulation 9, “a competent authority, in exercising any of their functions, must have regard to the requirements of the [Habitats and Birds] Directives so far as they may be affected by the exercise of those functions”. This means for instance that when considering development proposals a competent authority should consider whether EPS or European Protected Sites are to be affected by those works and, if so, must show that they have given consideration as to whether derogation requirements can be met.

Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species (Amendment) Regulations 2012 has placed new duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, ‘Birds Directive’) (Regulation 9A(2) & (3) require that ‘in the exercise of their functions as they consider appropriate’ these authorities must take steps to contribute to the “preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of upkeep, management and creation of such habitat…”

In relation to the duties placed on competent authorities under the 2012 amendment Regulation 9A (8) states: ‘So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).’

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**Badger**

Badger is protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as “a structure or place, which displays signs indicating current use by a badger”.

ODPM Circular 06/2005 provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that “The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions.”

Natural England provides Standing Advice, which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

**Reptiles**

All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as “European Protected species” under the provisions of the Conservation of Habitats and Species Regulations 2010 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

All six native species of reptile are included as ‘species of principal importance’ for the purpose of conserving biodiversity under Sections 41 (England) of the NERC Act 2006. Current Natural England Guidelines for Developers states that ‘where it is predictable that reptiles are likely to be killed or injured by activities such as site

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2 http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/speciedinks.aspx


http://publications.naturalengland.org.uk/publication/76006?category=31018
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clearance, this could legally constitute intentional killing or injuring.’ Further the guidance states: ‘Normally prohibited activities may not be illegal if ‘the act was the incidental result of a lawful operation and could not reasonably have been avoided’. Natural England ‘would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.’

The Natural England Guidelines for Developers state that ‘planning must incorporate two aims where reptiles are present:

• To protect reptiles from any harm that might arise during development work;

• To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.’

Water vole

Water vole is protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill, injure or take any water vole, damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or disturb voles while they are using such a place. Water vole is listed as a Species of Principal Importance under the provisions of the NERC Act 2006.