Chesterton Interchange Station, Cambridgeshire, CB4 0DL
Construction Environmental Management Plan (CEMP: Biodiversity)
Report for Volker Fitzpatrick

<table>
<thead>
<tr>
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<th>Natalie Hughes BSc ACIEEM</th>
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</tr>
</tbody>
</table>
Contents

1 INTRODUCTION ........................................................................................................................................ 4
2 CONSTRUCTION MITIGATION PLAN ................................................................................................. 8
3 METHOD STATEMENTS .......................................................................................................................... 17
APPENDIX 1: SITE PLAN AND DEVELOPMENT PROPOSALS ............................................................ 25
APPENDIX 2: REPTILE EXCLUSION FENCING SPECIFICATION ............................................................ 27
APPENDIX 3: LOG PILE AND HIBERNACULA SPECIFICATION ............................................................. 29
APPENDIX 4: LEGISLATION ..................................................................................................................... 33
1 Introduction

1.1 The Ecology Consultancy was commissioned by Volker Fitzpatrick in October 2014 to produce a Construction Environmental Management Plan (CEMP: Biodiversity) for a proposed interchange station at Chesterton, Cambridgeshire (‘the site’). The CEMP: Biodiversity is required to discharge Planning Condition 8 from Cambridge County Council.

1.2 Cambridge County Council secured planning permission in 2010 to construct a new railway station and public transport interchange. This includes the construction of a station building, two platforms and a car park. The planning permission had three conditions relating to ecology, this CEMP: Biodiversity is required to discharge Planning Condition 8 (Box 1).

<table>
<thead>
<tr>
<th>Box 1: Cambridgeshire County Council - Planning Condition 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>No development shall commence (including demolition, groundworks, vegetation clearance) until a construction environmental management plan (CEMP: Biodiversity) has been submitted to and approved in writing by the Local Planning Authority. The CEMP: Biodiversity shall include the following:</td>
</tr>
<tr>
<td>a) Risk assessment of potentially damaging construction activities</td>
</tr>
<tr>
<td>b) Identification of “biodiversity protection zones”.</td>
</tr>
<tr>
<td>c) Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements).</td>
</tr>
<tr>
<td>d) The location, timing and minimisation of sensitive works to avoid harm to biodiversity features.</td>
</tr>
<tr>
<td>e) The times during construction when specialist ecologists need to be present on site to oversee works.</td>
</tr>
<tr>
<td>f) Responsible persons and lines of communication.</td>
</tr>
</tbody>
</table>
The role and responsibilities on site of an Ecological Clerk of Works (ECoW) or similarly competent person.

Use of protective fences, exclusive barriers and warning signs. The approved CEMP: Biodiversity shall be adhered to and implemented in full through the construction period, unless otherwise agreed in writing by the Local Planning Authority.

BACKGROUND

Description of Development

1.3 The proposed development at the site involves the construction of a 450m² station building, two 280m long platforms and a car park. The development will involve the clearance of existing habitats within the site including scrub and ephemeral / short perennial vegetation. One building will be relocated, one other will be retained and three will be demolished as part of the proposed works. The proposed works are due to start in 2015 for completion by December 2016 and cover an area of approximately 9.95ha.

Purpose of Development

1.4 The development of the new station is required in order to provide crowding relief at the existing station and to support current and future development sites.

Previous Ecological Studies

1.5 The following ecological studies were undertaken in support of the planning application:

- Report into the findings of an extended Phase 1 Habitat Survey and Protected Species scoping exercise of land at Chesterton Sidings, Cambridge (Cambridge Ecology, 2012a).
- Supplementary Phase 1 and Botanical Survey: Cambridge Science Park Station within the Proposed Interchange Area (Cambridge Ecology, 2013a).
1.6 An updated scoping survey of the site was also carried out in October 2014 (The Ecology Consultancy, 2014a).

1.7 An Ecological Design Strategy (EDS) was produced for the scheme in January 2015 (The Ecology Consultancy, 2015b).

1.8 A summary of the ecology baseline, taken from these reports, is included below to provide a context for the CEMP: Biodiversity.

SITE CONTEXT AND STATUS

1.9 The site is situated off of Cowley Road, Chesterton, Cambridge. The residential area of Chesterton is located to the south and west of the site. To the north of the site is Cowley Park industrial / business park. The site is bounded by a railway line to the east, beyond which is a series of caravan parks. The National Grid Reference at the centre of the site is TL 475 607.

1.10 No statutory or non-statutory\(^1\) nature conservation designations apply to the site, however the site is adjacent to Bramblefields Local Nature Reserve, which is designated for its importance for birds, along the south western boundary of the site. No other statutory nature conservation designations apply to any sites within a 1km radius. Five non-statutory sites were located within 1km of the Chesterton Sidings site, the closest of which was the River Cam, 0.3km to the south of the site.

1.11 The site was dominated by areas of scrub, woodland and ephemeral / short perennial vegetation. A large area of hard-standing was present within the centre of the site and semi-improved grassland, broadleaf woodland, bare ground and scattered trees were also present. This constitutes a mosaic of habitats, which is a UK Biodiversity Action Plan (BAP) habitat. A number of rubble and debris piles and five disused buildings were located throughout the site. Four ponds were located within 500m of the site, two to the south-west of the site within Bramblefields Local Nature Reserve (LNR), one to east of the site and one to the north of the site within the railway sidings. An engineered ditch was located to the north of the site.

1.12 During the latest scoping survey carried out in October 2014 by The Ecology Consultancy, the site was assessed as having negligible potential to support dormice, low potential to support water voles and badgers, medium potential to support great

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\(^1\) Principally sites receiving protection under the Wildlife and Countryside Act, 1981 (as amended)
crested newts and high potential to support breeding birds. Reptiles have been confirmed as present within the site. One building, B3 had low potential to support roosting bats, whilst the others (B1, B4 and B5) had negligible potential, building B2 was excluded from the survey as it will not be impacted by the works (The Ecology Consultancy, 2015a). The trees within the site were assessed as having low potential to support roosting, foraging and commuting bats.

**LEGISLATION**

1.13 This CEMP: Biodiversity has been prepared with due consideration for all relevant legislation, which is included in Appendix 3.

**GLOSSARY**

**Table 1:** Glossary of terms used in report

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ECOW</td>
<td>Ecological Clerk of Works</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
</tr>
</tbody>
</table>
2 Construction Environmental Management Plan: Biodiversity

SPATIAL SCOPE

2.1 This CEMP: Biodiversity applies to the all land within the site boundary (Figure 1, Appendix 1).

ECOLOGICAL CLERK OF WORKS

2.2 A suitably qualified ecologist will be appointed to supervise the implementation of this CEMP: Biodiversity, in an Ecological Clerk of Works (ECoW) role. The ECoW will be responsible for the following:

- Ensuring all works on site comply with relevant legislation in relation to protected species and that the CEMP: Biodiversity is adhered to throughout the construction phase of development;
- Providing advice to developers and contractors on how best to minimise impacts on wildlife throughout the construction phase of development;
- Being the main point of contact should any issues relating to ecology arise during construction;
- Making the relevant people aware of any ecological issues that occur during the construction phase;
- Giving Toolbox Talks on protected species and sensitive habitats to contractors carrying out work within the site;
- Supervising any construction activities that have the potential to impact on protected species and / or sensitive habitats;
- Deciding on the exact positioning of reptile fencing and mitigation and enhancement measures depending on on-the-ground conditions; and
- Monitoring of fence lines throughout the construction phase of development.

2.3 The contracted Ecological Clerk of Works will be provided with a rolling programme of works to determine the requirement for their presence on site.

2.4 The times during construction when the ECoW is responsible for ensuring that the CEMP: Biodiversity is followed and when the ECoW needs to be present are shown in Tables 2 and 3. Other persons responsible for ensuring that the CEMP: Biodiversity is
adhered to at different times throughout construction are also shown in Tables 2 and 3.

2.5 If the ECoW identifies any issues in relation to ecology or considers that the CEMP: Biodiversity is not being adhered to at any point during construction, the developer will be contacted and measures will be taken to resolve any issues. If the developer identifies any ecology issues, the ECoW will be contacted for advice immediately.

CURRENT SITE CONDITIONS

2.6 This CEMP: Biodiversity has been prepared based on ecological information collected in October 2014. If on visiting the site, nearer the time of construction the ECoW considers that the baseline has changed, mitigation measures may need to be altered accordingly.

RISK ASSESSMENT OF CONSTRUCTION ACTIVITIES

2.7 The following construction activities will be required as part of the works. The ecological risk of each activity is assessed and measures for reducing the impact are detailed below. The time of year during which ecology surveys and ecologically sensitive works will be carried out can be found in Table 2.

Vegetation and Rubble Pile Clearance

Potential Impacts

2.8 Clearance of vegetation from the works site will be required prior to the start of construction. This will include the removal of scrub, tall ruderal vegetation, semi-improved grassland, trees and other habitats present within the site. This work has the potential to impact reptiles, bats, breeding birds and great crested newts, if present.

Measures to Minimise Impacts

2.9 To minimise the risk of killing and injury of protected species during vegetation clearance, the vegetation clearance method statement in Section 3 will be followed.

2.10 The ECoW will give toolbox talks to all contractors working on the development. These will cover all potential protected species, invasive species and habitats relevant to the site and what to do should any such flora or fauna be discovered during the works, as detailed in Section 3.
Ground Clearance

Potential Impacts

2.11 Ground clearance will involve the use of machinery to remove topsoil, rubble and debris piles from the works area. This has the potential to impact disturb, injure or kill reptiles and great crested newts and to disturb, damage or destroy badger setts if confirmed present. Ground clearance also has the potential to damage retained habitats and trees.

Measures to Minimise Impacts

2.12 A reptile translocation will be carried out prior to ground clearance. This will involve the installation of secure temporary reptile exclusion fencing around the perimeter of the works footprint following vegetation clearance. Reptiles will then be trapped from the fenced area to a designated receptor site. Following the completion of trapping, a destructive search of the works area will be carried out. All works will be carried out during the active period for reptiles (April to September, weather dependent) and will be supervised by the ECoW. The fencing will be retained and monitored throughout the construction period and removed upon completion of works. Detailed method statements for fence installation, reptile trapping, destructive search, fence monitoring and fence removal are provided in Section 3.

2.13 Great crested newt surveys will be carried out on the ponds within 500m of the works area. If great crested newts are found to be present with any of the ponds, a European Protected Species Mitigation (EPSM) licence from Natural England will be required. The works area will then need to be trapped of great crested newts as detailed in Section 3.

2.14 A walkover badger survey of the development site, and land within 30m of it, will be carried out immediately prior to the start of works. If any setts are identified, works within 30m of any holes may require an EPSM licence from Natural England.

2.15 A root protection zone will be set up around any trees that will not be removed as part of the works. This will involve the installation of barrier fencing around trees or areas of woodland to stop works from encroaching into the root protection zone as detailed in BS 5837:2012 (British Standards, 2012).

2.16 The ECoW will give toolbox talks to all contractors working on the development. These will cover any potential protected species and habitats that they may encounter within
the site and what to do should any be discovered during the works.

**Building Demolition**

*Potential Impacts*

2.17 The demolition of three buildings will be required, whilst another building will be relocated as part of the works. Building B1 is due to be demolished and has been assessed as having a low potential to support roosting bats (Cambridge Ecology, 2012 and The Ecology Consultancy, 2015a). The demolition of this building therefore has the potential to impact roosting bats. Three buildings are located within areas of habitat with the potential to support reptiles and great crested newts. Buildings B3, B4 and B5 also have the potential to support breeding birds.

*Measures to Minimise Impacts*

2.18 Prior to demolition, one bat presence / likely absence survey of building B1, which was assessed as having a low potential to support roosting bats, will be carried out between May and August.

2.19 If a bat roost is identified, an EPSM licence from Natural England would be required before the building can be demolished. Any work that would impact any bat roost would be carried out under a Method Statement and supervised by a licensed bat ecologist to ensure that bats would not be killed or injured as a result of the proposals. Interim roosts for bats to be moved to during this process would be provided, and would remain as permanent enhancement measures post works.

2.20 If no bat roosts are identified within the building, demolition can proceed without mitigation. The buildings situated within habitat suitable for reptiles and great crested newts will be demolished / moved after the completion of the reptile translocation unless the ECoW deems ecological supervision to be sufficient. The ECoW will check buildings for the presence of breeding birds prior to demolition. If a bird nest is identified, no works will take place on the building until all young have fledged, as confirmed by the ECoW.

2.21 The ECoW will give toolbox talks to all contractors working on the development. These will cover any potential protected species and habitats that they may encounter within the site and what to do should any be discovered during the works.
**Ditch Works**

*Potential Impacts*

2.22 Any works within 10m of the engineered ditch have the potential to impact water voles, if present. Works and storage of materials in close proximity to the ditch also have potential to pollute the watercourse.

*Measures to Minimise Impacts*

2.23 An updated water vole survey will be carried out immediately prior to the start of works if works are proposed to be within 10m of the ditch. If any signs of water vole are found an EPSM licence from Natural England may be required.

2.24 No works or storage of materials will take place within a designated protected area around the ditch. The Environment Agency’s Pollution Prevention Guidance (PPG) 5: ‘Works & Maintenance In or Near Water’ (Environment Agency, 2014) will be followed to minimise any risk of pollution entering the watercourse.

2.25 The ECoW will give toolbox talks to all contractors carrying out work in close proximity to the ditch. This will cover water voles and any other potential protected species and habitats that they may encounter within the site and what to do should any be discovered during the works.

**Ground Works**

*Potential Impacts*

2.26 Excavations created as part of the works may cause animals such as badgers or other mammals to become trapped.

*Measures to Minimise Impacts*

2.27 Excavations will not be left open overnight. Where this is not possible, they will be securely covered or a means of escape for any animals that may become trapped will be provided, such as a wooden board. All excavations will be checked for the presence of animals each morning and immediately prior to backfilling.

2.28 The ECoW will give toolbox talks to all contractors working on the development. These will cover any potential protected species and habitats that they may encounter within the site and what to do should any be discovered during the works.
General Construction Works

Potential Impacts

2.29 Construction of the Station / Interchange Area has the potential to cause visual, vibration or noise disturbance to the LNR. Dust, emissions and accidental spillages may negatively impact the habitats and protected species present within and in close proximity to the site. Damage to retained habitats and protected species may occur from accidental or uncontrolled movement of construction vehicles or personnel.

Measures to Minimise Impacts

2.30 The existing buffer of vegetation between the LNR and the Station / Interchange Area will be retained and enhanced to reduce disturbance and provide screening. Contactors will comply with Environment Agency PPG 1: ‘Basic Good Environmental Practices’ (Environment Agency, 2013) in respect of implementation of pollution prevention measures and strict control of dust and other emissions. Fencing and notice signs will be erected around construction areas to contain works and to stop encroachment into areas of retained habitat. Root protection zones will be set up around any retained trees as detailed in Paragraph 2.11 above.

2.31 The ECoW will give toolbox talks to all contractors working on the development. These will cover any potential protected species and habitats that they may encounter within the site and what to do should any be discovered during the works.

Night Works

Potential Impacts

2.32 Night time working may be required as part of the proposed works. This will require the use of lighting which has the potential to impact foraging bats.

Measures to Minimise Impacts

2.33 Night time working will be kept to a minimum where possible. Where lighting is required, lights will be kept away from areas of woodland and hedgerows and lighting will be directed to where it is needed with minimal light spillage. Detailed specifications for the use of lighting during night works can be found in Section 3.

2.34 The ECoW will give toolbox talks to contractors carrying out night works. These will cover any potential protected species and habitats that they may encounter within the site and what to do should any be discovered during the works.
## Table 2: Timings for ecology surveys and ecologically sensitive works

<table>
<thead>
<tr>
<th>Task</th>
<th>Timeframe</th>
<th>Duration</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reptile population estimate survey</td>
<td>Between April and September, prior to the start of construction&lt;sup&gt;2&lt;/sup&gt;</td>
<td>20 survey visits, minimum 4 weeks</td>
<td>ECoW</td>
</tr>
<tr>
<td>Great crested newt eDNA surveys</td>
<td>Between mid-April and end of June, prior to the start of construction</td>
<td>1 day to collect samples, 2 weeks for analysis</td>
<td>ECoW</td>
</tr>
<tr>
<td>Great crested newt population estimate surveys (if required)</td>
<td>Between mid-March and mid-June, prior to the start of construction</td>
<td>6 survey visits</td>
<td>ECoW</td>
</tr>
<tr>
<td>Botanical survey</td>
<td>Between May and August, prior to the start of construction</td>
<td>1 survey visit</td>
<td>ECoW</td>
</tr>
<tr>
<td>Invertebrate survey</td>
<td>Between April and August, prior to the start of construction</td>
<td>1 survey visit</td>
<td>ECoW</td>
</tr>
<tr>
<td>Great crested newt mitigation - licence application and translocation (if required)</td>
<td>Between March and September (weather dependent), prior to the start of construction</td>
<td>Minimum 30 days trapping + time for licence application, translocation set-up, receptor site creation etc.</td>
<td>ECoW</td>
</tr>
<tr>
<td>Receptor site enhancement</td>
<td>Any time prior to translocation, prior to the start of construction</td>
<td>Approximately 1 week</td>
<td>Contractors, supervised by ECoW</td>
</tr>
<tr>
<td>Vegetation clearance within works area</td>
<td>Between April and September when reptiles are active, prior to the start of construction</td>
<td>Approximately 3 days</td>
<td>Contractors, supervised by ECoW</td>
</tr>
<tr>
<td>Clearance of bird nesting habitat</td>
<td>Between September and February – no ecological supervision required</td>
<td>As required</td>
<td>Contractors, supervised by ECoW (if required)</td>
</tr>
<tr>
<td>Installtion of reptile exclusion fencing around donor site</td>
<td>Between April and September, prior to</td>
<td>Approximately 1 week</td>
<td>Contractors, supervised by ECoW</td>
</tr>
</tbody>
</table>

<sup>2</sup> The timings for reptiles surveys is weather dependent and could theoretically commence in March if there are at least 5 consecutive days with daytime temperatures over 9°C. Although reptiles may occasionally be active on cooler days, consistently warmer temperatures are required for a valid survey. Once reptile felts are laid, we can monitor temperatures and commence with surveys at the earliest opportunity.
<table>
<thead>
<tr>
<th>Task</th>
<th>Timeframe</th>
<th>Duration</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement of artificial refugia: felt and corrugated iron sheets</td>
<td>Any time, prior to the start of construction</td>
<td>1 week to ‘bed in’</td>
<td>ECoW</td>
</tr>
<tr>
<td>Reptile trapping and translocation</td>
<td>Between April and September (weather dependent), prior to the start of construction</td>
<td>Minimum 30 visits (weather and population dependent), minimum 3 weeks assuming more than one check a day.</td>
<td>ECoW</td>
</tr>
<tr>
<td>Removal of trapping refugia and supervised destructive search</td>
<td>Between April and September</td>
<td>Approximately 2 weeks</td>
<td>Contractors supervised by ECoW</td>
</tr>
<tr>
<td>Monitoring and repair of exclusion fencing</td>
<td>Once a week</td>
<td>Throughout construction</td>
<td>Contractor and ECoW</td>
</tr>
<tr>
<td>Removal of exclusion fencing</td>
<td>Between April and September upon completion of works</td>
<td>Approximately 1 week</td>
<td>Contractors supervised by ECoW</td>
</tr>
<tr>
<td>Reptile population surveys of receptor site</td>
<td>One year post-management</td>
<td>20 survey visits, minimum 4 weeks</td>
<td>ECoW</td>
</tr>
</tbody>
</table>

2.35 If great crested newts are found to be present in any of the ponds within 500m of the site, a European Protected Species Mitigation (EPSM) licence from Natural England will be required. This will affect the timings of the works stated above.

**Biodiversity Protection Zones**

2.36 The site contains areas of open mosaic habitat. This habitat will be retained within the site wherever possible. The areas of open mosaic habitat that will be retained are shown in Figure 1, Appendix 1. The creation of new areas of habitat within the site will be through the provision of a green roof.

2.37 Areas designated as reptile receptor areas will be retained and maintained throughout the construction and operational phases of the development.

2.38 The Bramblefields Local Nature Reserve to the south-west of the site is a statutory designated site. The woodland and scrub vegetation present along the south-west boundary of the site will be retained and enhanced to provide a buffer between the LNR and Station / Interchange Area.
Any other areas of habitat to be retained within the site will be protected from construction related impacts through the installation of fencing around retained habitat. Root protection zones for trees and areas of woodland will also be fenced off to avoid encroachment during construction.

**TIMEFRAMES AND RESPONSIBILITY FOR IMPLEMENTATION**

2.40 The CEMP: Biodiversity will be implemented at the outset of development and will be adhered to until completion of all construction works. The persons responsible for ensuring that the CEMP is adhered to at each phase have been allocated.

2.41 Table 3, below, details when construction and ecological mitigation phases will be carried out. Where no dates are given, the work will be carried out in accordance with the timeframes given in Table 2, above.

**Table 3: Construction and ecological mitigation timeline**

<table>
<thead>
<tr>
<th>Construction / Ecological Mitigation Phase</th>
<th>Start Date (provisional)</th>
<th>End date / duration (provisional)</th>
<th>Responsible Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation clearance</td>
<td></td>
<td>Completed late Feb 2015</td>
<td>Carried out under watching brief by Whitcher Wildlife</td>
</tr>
<tr>
<td>Reptile Fencing</td>
<td>April 2015</td>
<td>April 2015</td>
<td>TBD/ECoW</td>
</tr>
<tr>
<td>Reptile translocation</td>
<td></td>
<td>3 – 9 weeks (depending on reptile population)</td>
<td>ECoW</td>
</tr>
<tr>
<td>Destructive search</td>
<td></td>
<td>Approximately 2 weeks</td>
<td>ECoW (contractor to carry out work under ECoW supervision)</td>
</tr>
<tr>
<td>Demolition / site clearance</td>
<td>End March</td>
<td>Mid-April</td>
<td>ECoW and developer (contractor to carry out work under ECoW supervision)</td>
</tr>
<tr>
<td>Ground works</td>
<td>June 2015</td>
<td>March 2016</td>
<td>Developer</td>
</tr>
<tr>
<td>Construction</td>
<td>June 2015</td>
<td>September 2016</td>
<td>Developer</td>
</tr>
<tr>
<td>Landscaping - habitat enhancement and restoration</td>
<td>June 2016</td>
<td>September 2016</td>
<td>Developer (under ECoW supervision)</td>
</tr>
<tr>
<td>Reptile fence removal</td>
<td></td>
<td>Approximately 1 week</td>
<td>ECoW (contractor to carry out work under ECoW supervision)</td>
</tr>
<tr>
<td>Completion</td>
<td></td>
<td>December 2016</td>
<td>Developer</td>
</tr>
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</table>
3 Method Statements

SITE CLEARANCE

Vegetation

3.1 Vegetation will be cleared from the development footprint prior to the installation of reptile fencing in order to allow any reptiles and small mammals that may be present to naturally disperse from the works areas. This will be carried out following the completion of a reptile population survey of the site and the designation of a suitable receptor site. Vegetation clearance must also take place prior to implementation of any site clearance works and before any plant enters the site.

3.2 Vegetation clearance will be kept to the minimum necessary for safe implementation of the works. Hand tools and strimmers will be used, with vegetation cut to 150mm.

3.3 Vegetation clearance will be carried out outside of the bird nesting period, March to September, inclusive. Where this is not possible, the ECoW will check all bird nesting habitats and verify that no nests are present. If a bird nest is identified, a buffer zone will be established around the nest (buffer distance to be determined based on site conditions). No works will be permitted within this buffer zone until all young have fledged, as confirmed by the ECoW.

3.4 All trees that require felling or pruning as part of the works will be assessed for their potential to support roosting bats through a ground level assessment. If any features with the potential to support roosting bats are identified, further survey would be required to determine the presence / likely absence of roosting bats. If bats are found to be roosting in any tree that requires felling or pruning, an EPSM licence from Natural England would be required.

3.5 If any invasive plant species are discovered during vegetation clearance, works in the area will stop immediately and a specialist qualified to deal with invasive species will be contacted.

Rubble and debris

3.6 Rubble and debris piles will be dismantled by hand under the supervision of the ECoW. Any material that cannot be removed by hand will be left in situ until the reptile translocation is completed.
3.7 Any animals found during vegetation clearance and rubble pile removal will be captured and relocated to the designated receptor site.

**FENCE INSTALLATION**

3.8 Temporary reptile exclusion fencing will be installed around the boundary of the works area, including any areas required for machine access or storage of materials. This will provide a physical barrier preventing any animals from entering the construction site and being harmed. The ECoW will supervise the installation of the fencing, which will be carried out during the active period for reptiles (April to September, weather dependent).

3.9 Any animals found during fence installation will be captured and relocated to the designated receptor site.

3.10 A specification for the reptile exclusion fencing is included in Appendix 2. Selection of an appropriate fencing material is left to the discretion of the developer / contractor. However, the fencing must comply with the following criteria:

- The fencing membrane must be of a type that will not break down or become brittle under exposure to weather and UV light. Suitable materials include ‘1000 gauge’ transparent polythene sheet (least durable), woven polypropylene (more durable) and black polythene DPC (most durable);
- Fencing should be installed to the correct height and depth with adequate ‘underlap’ and a ‘top curl’, to prevent animals from passing underneath or climbing over the fence;
- The fencing membrane should be taught and should be installed with no noticeable creases;
- Wooden restraining posts should be installed at 10m intervals to ensure the fence is fully secure;
- The fence should be secured to post with pads and nails (not battens which animals can climb);
- The fence posts should be positioned on the outside of the exclusion area;
- Any joins in the membrane must be ‘curl-joined’ and should continue underground as well as above;
• Backfill should be placed turf down in the trench and well compacted by foot so that there are no cracks or crevices. All fence trenches must be filled the same day as they have been dug; and

• Fencing layout must avoid gaps. Where this is not possible ‘returns’ must be installed to reduce the risk of reptiles entering the works area. The ‘return’ fence should be about 3-5 metres in length, as advised by the ECoW.

REPTILE TRANSLOCATION

3.11 Following a reptile population estimate survey and the designation and enhancement or creation (if required) of suitable on or off site receptor areas, reptiles will be trapped from within the fenced area and translocated to designated receptor site. Reptile trapping will take place between April and September in suitable weather conditions. Optimal weather conditions are temperatures between 10ºC and 18ºC with intermittent or hazy sunshine and little or no wind, before 11am and after 3pm (Froglife, 1999, Griffiths and Inns, 1998). However, optimal temperatures and times vary according to the time of year and prevailing weather conditions. No trapping visits will be carried out in heavy rain or on extremely hot days.

3.12 Artificial refugia consisting of tiles of heavy-grade roofing felt of between 50cm and 100cm in length and 50cm wide, and sheets of corrugated steel, will be distributed cross the site at a high density. The minimum number of trapping visits will be dependent upon the findings of the reptile population survey carried out prior to the start of works. If a small population is identified, a minimum of 30 visits will be required, whilst for medium to large populations, 60-90 visits will be carried out. Trapping will cease once the minimum number of trapping visits have been completed with five consecutive visits clear of reptiles. Trapping will not be undertaken during the reptile hibernation period (October-March, depending on weather conditions).

3.13 All animals captured from the site will be caught and then released into the receptor areas, into or near to a hibernaculum. The sex and life stage of all reptiles caught will be recorded and animals will be placed in a secure container with grass bedding and kept in the shade for transport and until release. Grass snakes and common lizards will be kept separately, in marked containers. The translocation procedure implemented will follow guidelines produced by Herpetofauna Groups of Britain and Ireland (1998).

3.14 The habitat within the donor sites will be repeatedly strimmed throughout the trapping period as required to aid capture effort. The exclusion fencing will also be maintained
throughout the trapping period (see ‘Monitoring’, below). When the donor area becomes clear of reptiles (following five clear visits), it will be carefully destructively searched as detailed below.

**GREAT CRESTED NEWT TRANSLOCATION (if required)**

3.15 If great crested newts are found to be present within any of the ponds within 500m of the site, an EPSM licence will be acquired to trap and translocate great crested newts from the works area. Depending on the findings of population surveys, on or off site receptor sites will need to be identified and created or enhanced prior to trapping. Trapping will require pitfall buckets being installed at 10m intervals along the temporary exclusion fencing (installed as detailed above). Each bucket will be contain a mammal ladder, float and vegetation. The buckets will be checked for great crested newts each morning before 11am. If any great crested newts or other animals are found, they will be translocated to designated receptor sites.

3.16 If a small population of great crested newts is identified during population surveys, a minimum of 30 visits will be required, whilst for medium to large populations, 60-90 visits will be carried out. Trapping will cease once the minimum number of trapping visits have been completed with five consecutive visits clear of great crested newts. Trapping will not be undertaken during the great crested newt hibernation period (October-February/March, depending on weather conditions) and can be carried out alongside the reptile translocation. Following the completion of trapping, and once reptile trapping is complete, the works area will be destructively searched as detailed below.

**DESTRUCTIVE SEARCH**

3.17 Following five clear visits for reptiles and great crested newts (if required), the vegetation and soil within the donor sites will be ‘destructively searched’ for reptiles and great crested newts under the supervision of the ECoW. A tracked excavator with a toothed bucket will carefully break up and remove the vegetation and top-soil to a depth of approximately 150mm. As the toothed bucket disturbs the ground, any animals present will be sighted and captured by an ecologist and released into the receptor areas. The excavator will not track onto areas that have not been destructively searched.

3.18 Remaining rubble and debris piles will be dismantled by hand where possible. Where this is not possible, they will be systematically dismantled using a machine and
checked for the presence of animals by the ECoW.

3.19 Any animals found during destructive search will be captured and relocated to the designated receptor site.

3.20 This will be carried out between April and September (weather dependent) when reptiles and great crested newts are active and in suitable weather conditions.

**MONITORING**

3.21 During the construction period, the fencing will be inspected and properly maintained with advice from an ECoW. Fence inspections will be carried out weekly. Should a defect (e.g. a tear in the fence) be identified by the ECoW, the contractor will repair the fence within 24 hours.

3.22 Vegetation along the fence will be controlled to prevent the fence becoming overgrown, which may allow animals to climb over the fence. Cutting the vegetation using a strimmer will be undertaken under ecological supervision and care will be exercised to prevent damage to animals or to the fence.

**FENCE REMOVAL**

3.23 The temporary reptile exclusion fencing will remain in place until all construction works are finished and all landscaping works have been carried out in order to stop reptiles entering the works area from surrounding suitable habitat. An ECoW will supervise the removal of any fencing during the active period for reptiles and great crested newts (April to September, weather dependent). Fencing should be removed by hand and care must be taken as animals may seek refuge in the shrinkage cracks that occur between the fence and the backfill on the outside of the fence.

3.24 Any animals found during fence removal will be captured and relocated to the designated receptor site.

**CREATION OF LOG PILES AND HIBERNACULA**

3.25 Log piles and hibernacula will be integrated into the landscaping design and will be created within areas of retained habitat and receptor areas. A specification sheet showing various designs for creation of log piles and hibernacula are shown in Appendix 3, in accordance with HA DMRB, Volume 10 Section 4 Annex D. These deadwood piles will be made from native hardwood locally cut from around the site.
The piles will be stacked approximately 1m in height, either in a pyramidal shape (bound with wire to prevent them breaking apart over time) or against a semi-mature/mature tree trunk. The piles will be placed equidistant from each other and will be oriented as such that their longest side faces to the south.

3.26 Hibernacula will be constructed above or below ground and will comprise native hardwood locally cut from around the site covered with turf or moss from within the site. Hibernacula should be approximately 1m in width and 2m in length. They will be interspersed with log piles within receptor areas and areas of retained and created habitat.

3.27 Log pile and hibernacula will be left untouched as regular disturbance will limit the diversity of invertebrates in log piles and hibernacula. As well as supporting many kinds of invertebrate, deadwood piles also provide good foraging areas for reptiles and birds such as robins and wrens. The piles could also provide hibernation sites for reptiles, amphibians and hedgehogs.

**PROCEDURE TO FOLLOW IF ANY PROTECTED SPECIES ARE DISCOVERED**

3.28 All contractors working on the site will be given a toolbox talk by the ECoW about protected species and habitats that they may encounter within the site. In the event that any protected species are found during construction works, all works will stop immediately and advice sought from an ECoW immediately on how to proceed.

**LIGHTING FOR NIGHT WORKS**

1.5 Night working may be required during the construction period. To avoid any disturbance to bats, the following measures should be carried out:

- Only the minimum amount of light needed for safety should be used and turned off when night works are not being carried out;

- Minimise light spill by eliminating any bare bulbs and upward pointing light fixtures. The spread of light should be kept near to or below the horizontal plane, by using as steep a downward angle as possible and/or shield hood;

- Use light sources that emit minimal ultra-violet light (Langevelde and Feta, 2011) and avoid the white and blue wavelengths of the light spectrum, so as to avoid attracting insects and thus potentially reducing numbers in adjacent areas, which bats may use for foraging;
• Avoid using reflective surfaces under lights or light reflecting off windows (e.g. onto potential bat flight lines);

• Artificial lighting should not directly illuminate hedge rows and tree lines;

• Artificial lighting should not directly illuminate any known bat roosting features; and

• Uplighters are to be avoided.
References


Cambridge Ecology (2012a). *Report into the findings of an extended Phase 1 Habitat Survey and Protected Species scoping exercise of land at Chesterton Sidings, Cambridge*

Cambridge Ecology (2012b). *Report into the findings of species specific surveys of land at Chesterton Sidings, Cambridge*

Cambridge Ecology (2013a). *Cambridge Science Park Station and Interchange Supplementary Bat Activity Survey*

Cambridge Ecology (2013b). *Supplementary Phase 1 and Botanical Survey: Cambridge Science Park Station within the Proposed Interchange Area*

Environment Agency (2013). *Pollution Prevention Guidance Series (PPGs): Basic Good Environmental Practice PPG1: Prevent Pollution*

Environment Agency (2014). *Pollution Prevention Guidance Series (PPGs): Works In, Near or Over Watercourses, PPG5: Prevent Pollution*


The Ecology Consultancy (2015a). *Chesterton Sidings, Cambridge, Ecological Scoping Survey and Preliminary Bat Roost Assessment*

The Ecology Consultancy (2015b). *Chesterton Interchange Station, Ecological Design Strategy (EDS)*
Appendix 1: Site Plan and Development Proposals
Figure 1: Map showing site boundary and retained habitat
Appendix 2: Reptile Exclusion Fencing Specification
Fence installation specification (taken from HA DMRB Volume 10 Section 4 Annex B)
Appendix 3: Log Pile and Hibernacula Specification
Example of an above ground log pile
Example of a small, log pile. Additional stability can be provided if needed by hammering posts into the ground at each end of the pile.

Example of a stag beetle loggery using timbers of 10-50cm diameter with bark attached and buried to depth of 60cm. Chipped wood can be included in the base or centre if the pile is large enough. Oak and beech are the best timbers but stag beetle will use timber from a variety of trees. Note these structures are stable and not easily moved.
Example of above and below ground hibernacula using branches or logs covered with turf or moss (taken from HA DMRB Volume 10 Section 4 Annex D)
Appendix 4: Legislation
BADGERS

Badgers receive protection under The Protection of Badgers Act 1992 which consolidates the previous Badger Acts of 1973 and 1991. The Act makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure or take a badger;
- Cruelly ill-treat a badger, including use of tongs and digging;
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett1 or any part thereof;
- Intentionally or recklessly disturb a badger when it is occupying a badger sett; or,
- Intentionally or recklessly cause a dog to enter a badger sett.

How is the legislation pertaining to badgers liable to affect development works?

A badger sett is defined in the legislation as "any structure or place which displays signs indicating current use by a badger". A Development Licence2 will be required from Natural England for any development works liable to affect an active badger sett, or to disturb badgers whilst in the sett. Depending on the nature of the works and the specifics of the sett and its environs, badgers could be disturbed by work near the sett even if there is no direct interference or damage to the sett itself. Natural England has issued guidelines on what constitutes a licensable activity. There is no provision in law for the capture of badgers for development purposes and therefore it is not possible to obtain a licence to translocate badgers from one area to another.

Natural England published an interim guidance document entitled ‘Badgers and Development, A Guide to Best Practice and Licencing’ (2007), which provides guidance on how development can be carried out within the law and in a way that minimises the detrimental impact on this species. Of note, Natural England advises that foraging areas should be maintained or new foraging areas created, and that access between setts and foraging/watering areas should be maintained or new ones provided (Natural England 2007).

BATS

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:
• Deliberate killing, injuring or taking (capture) of Schedule 2 species (e.g. bats)
• Deliberate disturbance of bat species as:
  o a) to impair their ability:
    ▪ (i) to survive, breed, or reproduce, or to rear or nurture young;
    ▪ (ii) to hibernate or migrate
  o b) to affect significantly the local distribution or abundance of the species
• Damage or destruction of a breeding site or resting place
• Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

• Intentional or reckless disturbance whilst occupying a place of shelter or protection; and
• Intentional or reckless obstruction of access to any place of shelter or protection.

**How is the legislation pertaining to bats liable to affect development works?**

A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Though there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded de facto protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost.

**BIRDS**

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). Among other things, this makes it an offence to:
- Intentionally kill, injure or take any wild bird
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built
- Intentionally take or destroy an egg of any wild bird
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, black redstart, hobby, bittern and kingfisher receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC). This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young
- Intentional or reckless disturbance of dependent young of such a bird.

**How is the legislation pertaining to birds liable to affect development works?**

To avoid contravention of the Wildlife and Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August\(^3\). Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Those species of bird listed on Schedule 1 are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

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\(^3\) It should be noted that this is the main breeding period. Breeding activity may occur outwith this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.
GREAT CRESTED NEWTS

The great crested newt *Triturus cristatus* receives full protection under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of species listed on Schedule 2
- Deliberate disturbance of any Schedule 2 species as:
  - a) to impair their ability:
    - (i) to survive, breed, or reproduce, or to rear or nurture young;
    - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate
  - b) to affect significantly the local distribution or abundance of the species
- Deliberate taking or destroying of the eggs of a Schedule 2 species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

The great crested newt is also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to herpetofauna liable to affect development works?

A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect the breeding sites or resting places of great crested newts, protected under The Conservation Habitats and Species Regulations 2010 (as amended). A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.
REPTILES

All reptiles native to the UK are listed under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The four most commonly encountered species of reptile; the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* are protected under Section 9(1) and 9(5) of the Act which makes it an offence to:

- Intentionally kill, injure or take a reptile,
- Sell, offer for sale, possess or transport a reptile for the purpose of sale.

An offence under the Wildlife and Countryside Act 1981 with regard to reptiles can lead to fines of up to £5000, confiscation of machinery, and/or six months imprisonment for each offence. Harm to more than one animal may be taken as separate offences. Both individuals and companies may be liable for offences.

There are no licensing provisions within the Act for development activities affecting these species. However, developers are expected to take adequate precautions to avoid breaches of the legislation, including undertaking adequate surveys and mitigation to avoid or minimise the risk of killing or injuring reptiles.