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The Cambourne to Cambridge Order

Cambridgeshire County Council

Transport and Works Act 1992

Transport and Works (Inquiries Procedure) Rules 2004

Inquiry into:

THE CAMBOURNE TO CAMBRIDGE ORDER

SUMMARY PROOF OF EVIDENCE

of

Paola Reason

of RSK Biocensus

On behalf of Cambridgeshire County Council

17 August 2025

Planning Inspectorate Reference: DPI/E0535/25/1

1.0 INTRODUCTION

1.1 Qualifications and Experience

- 1.1.1 I am Paola Reason, a Director of RSK Biocensus. I have been a consultant for approaching 30 years, and I am a Fellow of the Chartered Institute of Ecology and Environmental Management. I have provided advice on hundreds of developments, and my particular expertise is bats. I have continuously held a Level 2 Natural England bat licence (or equivalent) for over 25 years, and I have had a major input into relevant national guidelines and standards relating to bats.

1.2 Scope of evidence

- 1.2.1 All UK bat species are legally protected. My evidence outlines the overall approach and findings of the bat assessment as presented within the Environmental Statement (ES) for the Scheme, and the Habitats Regulation Assessment (HRA) for the Eversden and Wimpole Woods Special Area of Conservation (SAC). Following Natural England's lead and concerns, I make particular reference to barbastelle. I consider whether the impacts of the Scheme have been fully considered and adequately mitigated. This evidence addresses one aspect of Matter 4c identified in the Secretary of State's Statement of Matters.
- 1.2.2 In addition to covering the outcomes of the ES and HRA, my Proof of Evidence also responds to objections that have been made in relation to effects on bats and specifically barbastelle.

1.3 Survey standards and assessment

- 1.3.1 Survey methods were guided by published good practice standards for bat assessments and the assessment used relevant baseline information to predict the effects of the Scheme on Important Ecological Features, in accordance with CIEEM guidelines.
- 1.3.2 A significant effect was defined as an effect that could have an impact upon the structure, form, function and conservation status of a designated site, or species population where these were defined as Important Ecological Features. Where effects require mitigation; the mitigation hierarchy was adopted.

2.0 Key stakeholder engagement: Natural England

- 2.1.1 The proposed bat survey methodology and approach was agreed in 2022 through Natural England's Discretionary Advice Service (DAS), who responded: '*Natural England has no objection to the proposed approach to barbastelle bat survey and data gathering set out in [WSP's] Technical Note.*'
- 2.1.2 In January 2025, Natural England responded to the Scheme with a detailed representation covering six areas:
1. Habitats Regulations Assessment
 2. Lighting plans – Pre-Construction, Construction, and Operation phases
 3. Crossing-point mitigation
 4. Foraging areas
 5. Cotton Orchard County Wildlife Site (CWS)
 6. Further surveys and analysis relating to bats
- 2.1.3 Importantly, this representation did not take fully into account the East West Rail (EWR) data-sharing agreement which underpinned WSP's survey approach and informed the response received via DAS. Between January 2025 and now, Natural England have been engaged in a series of meetings to ensure a full understanding of the data collected and how that data has informed the Scheme design including mitigation. Those meetings have led to a series of Technical Notes setting out WSP's position, leading to a greater understanding on Natural England's part and aiding a resolution of issues raised in their representation.
- 2.1.4 The Applicant and Natural England are in the process of finalising a Statement of Common Ground (SoCG). At the point of exchange of proofs (third meeting held 13 August 2025), all items raised in Natural England's representation are considered resolved, either fully or provisionally, subject to further discussion at detailed design stage.

3.0 BASELINE

3.1 Studies undertaken

- 3.1.1 A number of standard techniques were applied to collect data to inform the bat assessment within the ES. The data-sharing agreement with East West Rail (EWR) also allowed the use of advanced techniques (radio-tracking) collected for that scheme over a wide area, which included woodlands local to this Scheme.
- 3.1.2 As a whole, I believe that the combined data set, including the wide-ranging EWR and other publicly-available radio-tracking studies, is a sufficient baseline on which to undertake an impact assessment and to determine the location, extent and design of mitigation.

3.2 Context

Landscape context

- 3.2.1 The busway joins Cambourne and new housing development to the west with Cambridge. Most of the open land crossed by the Scheme is arable farmland of lower value to bats, including the footprint of the travel hub. There are a number of major roads which are of relevance; notably the A1303 and the A428 which are both crossed by barbastelle.
- 3.2.2 West Cambridge is interspersed with green open spaces and waterbodies largely managed for people and wildlife, and barbastelle have been recorded in these areas. The roads running (broadly) east-west are lined along much of their lengths with substantial tree lines and hedgerows. The eastern end of the Scheme includes scrubland and young woods on the east side of the M11 (designated a City Wildlife Site), and Bin Brook (also a City Wildlife Site), and these more open areas are less well-connected.
- 3.2.3 From a 'bat perspective', the night-time landscape is largely dark (other than at a limited number of junctions) and therefore permeable to bats along much of its length. Of note are also Madingley Wood, 800 Wood, and Coton Orchard.

Madingley Wood and 800 Wood

- 3.2.4 Madingley Wood is an ancient woodland Site of Special Scientific Interest (SSSI) that supports a breeding population of barbastelle. This SSSI lies directly alongside the A1303 which carries a significant amount of traffic. The wood is part of the 500+ ha University-owned Madingley Estate. Adjacent, and also part of the Madingley Estate, is 800 Wood, a developing woodland planted more than 15 years ago. The planting design incorporates glades and rides, making it good for foraging bats, though some areas are still densely planted.

Coton Orchard

- 3.2.5 The 100-year-old Coton Orchard has recently been designated a County Wildlife Site. It has been treated as being of importance to barbastelle, at the request of Natural England.
- 3.2.6 Coton Orchard contains a mix of hedgerows, lines of trees, scrub, traditional orchard and a larger expanse of formerly intensive orchard. Much of the footprint is managed through a relatively intensive mowing regime. An area to the east has been left unmanaged, with the majority of this area succeeding to woodland dominated by a closed canopy with lines of orchard trees still present. The far eastern section is dense scrub.
- 3.2.7 Barbastelle are moth specialists foraging predominantly in habitats where moth biomass is high; common and abundant moth species are consumed most frequently. In terms of habitat structure, barbastelle are 'edge-feeders', hunting predominantly where dense vegetation borders open ground, such as woodland edge, tree-lines, hedgerows, woodland rides, and above woodland canopy. Thus, the denser areas of scrub are less suitable for a species such as barbastelle that hunts along such edge habitats.

4.0 BASELINE SURVEY DATA

4.1 Use of woodlands

Extensive radio-tracking surveys of barbastelle throughout the wider landscape from the studies referenced earlier have identified the use of multiple woodland sites for foraging and roosting, including for maternity roosts.

- 4.1.1 No barbastelle roosts were recorded within the Order limits. The closest woodlands to the Scheme are Madingley Wood and Hardwick Wood.
- The home range and core foraging areas for barbastelle within Madingley Wood lie primarily north of the woodland, within the Madingley Hall estate, south of Madingley village and the woodland itself. They also extend south of the woodland and into the Scheme boundary. T
 - he home range and core foraging areas for barbastelle from the Hardwick Wood colony primarily extend north of the woodland east of Highfield Caldecote and Bourn Airfield, and extend beyond St Neots Road and the A428, as well as within the Scheme boundary.
 - Surveys have not identified any link between the breeding colonies identified within different woodlands (including the Eversden and Wimpole SAC); however, they do share the same foraging resources.

4.2 Commuting routes and foraging areas

- 4.2.1 Radio-tracking was used to determine core foraging areas and home ranges for local barbastelle colonies and, in combination with the other techniques used, it is possible to have reasonable confidence in the areas which appear to be of greater importance to barbastelle in particular.
- 4.2.2 With respect to Coton Orchard, while this area does provide some suitable foraging habitat for bats, the data does not indicate that it is of particularly high value to any species (though quieter calling species such as brown long-eared bats tend to be under-recorded, especially in clutter).
- 4.2.3 At Natural England's request, all time-stamped static data were re-analysed to determine where early-evening records of barbastelle were recorded to determine if they were seeking early shade outside of their roost woodlands. Typically, the first barbastelle in any survey was recorded much later than sunset (mean +1.79 hours), with only 6% of recordings collected within 60 minutes of sunset. At Coton Orchard, only three registrations within the whole data set (0.26%) were recorded within 60 minutes of sunset.
- 4.2.4 At Madingley, where the breeding barbastelle closest to the Scheme roost, the observations made using thermal imagery confirm that bats are crossing the A1303 in darkness; the earliest registrations to date being 70, 83 and 85 minutes after sunset. More data are currently being analysed.

5.0 IMPACTS AND EFFECTS

- 5.1.1 Potential impacts are described below, separated into the impacts relating to construction and those of operation. For each potential impact, the likelihood of that impact occurring is then assessed.
- 5.1.2 Potential construction impacts comprise:
- loss of roosts through removal (direct impact, with the potential for mortality) or indirect disturbance from construction activities;
 - fragmentation of the landscape through loss of commuting routes; and
 - loss of foraging habitat
- 5.1.3 Potential operational impacts comprise:
- indirect loss of roosts through disturbance/abandonment;

- indirect loss/degradation of foraging habitat through disturbance, change in management, and/or prey availability;
- fragmentation of the landscape through the barrier effect of the new busway; and
- mortality from collision with buses.

5.2 Construction impacts

Roost loss (direct/indirect) and mortality

- 5.2.1 A relatively small number of trees are anticipated to be lost to the Scheme, and these may form part of the current or future roost resource. However, these form a very small proportion of the overall roost resource, and both direct and indirect impacts from construction are unlikely.

Fragmentation of the landscape through severance;

- 5.2.2 Land take could result in the loss of commuting routes or foraging habitat; both could be indirectly affected by lighting. However, construction activities which result in gaps in commuting routes are unlikely to cause fragmentation of the landscape to the extent that would impact barbastelle. Night-time working will be avoided, avoiding the impacts of construction lighting (other than on an occasional/ temporary basis).

Loss/degradation of foraging habitat

- 5.2.3 Only a very small proportion of a 'typical' barbastelle core sustenance zone (the area required to sustain a colony) would be directly affected, i.e. removed, or indirectly affected on a temporary basis by lighting, noise or increased human presence. Much of the habitat to be removed is sub-optimal.

5.3 Operational impacts

Indirect loss of roosts

- 5.3.1 As for construction, disturbance could affect only a small proportion of the overall roost resource, and the likely overall impact would be negligible.

Indirect loss/degradation of foraging habitat

- 5.3.2 Indirect loss of foraging habitat could arise through disturbance (noise, lighting, additional human presence) or reduction in prey (through unfavourable changes in management, including hydrological change, and lighting). However, only a very small proportion of a 'typical' barbastelle CSZ could be indirectly affected, with much of this of lower value to bats.

Barrier effect of the new busway

- 5.3.3 In theory, bats could be reluctant to cross the busway due not only to the removal of linear features but to noise, lighting, and potentially additional human presence from traffic and street lighting. However, this is unlikely, particularly for barbastelle. Natural England's own report on the status of barbastelle notes that 'roads, motorways, and other clearings in natural vegetation do not appear to be a major barrier to movement or dispersal in the landscape and so probably do not restrict habitat accessibility to a significant extent'.
- 5.3.4 Currently, west of Cambridge is predominantly a dark landscape supporting robust linear features, with localised lighting within the Hardwick and Madingley barbastelle home ranges. New lighting will be limited to areas required to meet H&S standards.

Mortality

- 5.3.5 The Scheme will run single-decker buses that have a typical body height of 3.1m; ten services per hour in each direction. Operation is limited to between approximately 6.00am and midnight, resulting in a limited period of overlap where bats are flying and the buses are operational.

- 5.3.6 A comprehensive collision-risk assessment for Coton Orchard was presented to Natural England on 09 June 2025 that determined the risk of collision was very low.

5.4 Designated sites: Eversden and Wimpole SAC

- 5.4.1 The Eversden and Wimpole SAC, designated for its maternity colony of barbastelle, lies 6km south of the Scheme; six km is the outer radius of the CSZ for barbastelle (Collins, 2023). Thus, whilst no 'roost swapping' was recorded between the SAC and other known woodland breeding populations during radio-tracking, there is the potential for land within the Scheme footprint to be functionally linked to the SAC (i.e. used by one or more barbastelle that also use the SAC). However, a detailed assessment concluded that, following mitigation, there would be no adverse effects on the integrity of the SAC.

6.0 SCHEME DESIGN, MITIGATION AND COMPENSATION

6.1 Addressing roost loss (direct/indirect) and roost-linked mortality

- 6.1.1 Replacement roost features will be incorporated in the form of bat boxes and veteranisation of retained trees; their locations and numbers will be detailed within the Landscape and Ecological Management Plan. Mortality and injury when trees are removed will be avoided by following good practice. Specific measures would be set out in the Construction Environmental Management Plan (CEMP).

6.2 Addressing fragmentation of the landscape through severance and the barrier effect

- 6.2.1 Mitigation in the form of landscape treatments will be implemented where criteria have been met: The rationale for scoping in a location for mitigation was:
- previously recorded as a crossing location for barbastelle through radio-tracking; and/or
 - at least one barbastelle registration during CP surveys; and/or
 - at least ten bat registrations of other (more common) species were recorded during such surveys; and/or
 - barbastelle or 'at risk' species recorded during static detector surveys.
 - In additional, contextual information was also taken into consideration, including whether the feature was within or near to a barbastelle maternity colony's home range, core foraging area or juvenile sustenance zone.
- 6.2.2 At each offline location, where landscape mitigation is to address severance, features will encourage flight heights to be maintained at a height above 4m. Once mature, the gap between the canopy heights either side of the new road, will be less than 20m to encourage bats to maintain their flight height over the road. Design principles and options will be finalised at detailed-design stage.
- 6.2.3 Online mitigation will be to retain habitat *in situ* (as far as is practicable) during construction and, where this is not possible, such planting will be replaced at a similar height and density to maintain the function previously provided (again, as far as is practicable).
- 6.2.4 Outside of the landscape treatments that provide road-crossing structures, the driving principle has been to avoid lighting other than in areas where safety issues have been identified. Thus, the Scheme maintains wide ranging dark areas, avoids fragmentation and ensures landscape permeability to the bat populations within local woodlands (including individuals from the SAC). The new lighting provision will be subject to a Planning Condition.

6.3 Assessing and addressing mortality during operation

- 6.3.1 The current bus service relies on double-decker buses which pass through the edge of Madingley Wood SSSI. The new bus service would employ single-decker vehicles using a single lane in each direction, located further from bats as they emerge and forage close to their roosts. Although considered low risk, measures have been employed to provide safe crossing-points, based on a detailed understanding of barbastelle crossing-points as I have already outlined.

6.4 Addressing loss/degradation of foraging habitat

- 6.4.1 Even in the absence of mitigation, sufficient existing and accessible habitat is available within and beyond the Scheme to maintain the favourable conservation status of bat populations.
- 6.4.2 The landscaping strategy has been designed to replace existing bat foraging and commuting habitat that will be lost to the C2C Scheme (i.e. hedgerows, tree lines and grassland). In addition, to provide habitat enhancements, and provide potentially greater access to foraging habitats around and within the Scheme for bats, particularly when compared to the existing arable land. Such measures will pay particular attention to the food plants of larval moths.

7.0 RESIDUAL IMPACTS

- 7.1.1 Given the measures outlined in Section 6.0, no significant effects on bats during construction or operation are predicted.
- 7.1.2 Where elements of detailed design remain unconfirmed (this includes, at the time of writing, details of landscape strategy include vegetation removal plans, landscape treatments for severed linear features, fencing, lighting design and operational speed restrictions), the process for confirming the design that will be taken forward will be secured via planning conditions. This will be reflected in the SoCG currently being finalised.

8.0 REPRESENTATIONS RELEVANT TO MY EVIDENCE

- 8.1.1 A number of representations have been raised in relation to barbastelle, bats in general, and the Eversden and Wimpole SAC; detailed responses to each are set out in my evidence.
- 8.1.2 Of the representations raised by Natural England [CD2-REP-11], as of 13 August 2025, all are considered resolved, either fully, or provisionally, subject to further discussion at detailed design stage, as indicated in the sections above.

9.0 CONCLUSIONS

- The surveys were sufficient to provide a baseline against which the impacts could be assessed, and in line with good practice.
- The assessment was undertaken in line with relevant guidelines.
- The design followed the mitigation hierarchy.
- The mitigation and compensation measures adequately address the impacts, notably on barbastelle and Eversden and Wimpole SAC.
- The objections raised have been adequately considered and addressed as demonstrated in my evidence.
- Importantly, there is no evidence that the Scheme would materially alter the Favourable Conservation Status of barbastelle or other bat species, and there will be no adverse effect on integrity of the SAC.