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Your ref: Cambourne to Cambridge TWAO



Secretary of State for Transport
c/o Transport Infrastructure Planning Unit
Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

transportinfrastructure@dft.gov.uk

BY EMAIL ONLY

Cambourne to Cambridge busway Transport and Works Act Order application

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Correspondence about this consultation should be sent to the case officer, Catherine Duerden, via email at catherine.duerden@naturalengland.org.uk and copied to consultations@naturalengland.org.uk.

We do not intend to make oral representations at any hearings that may be called but would instead submit further written representations as required. We would also be open to providing further advice to the applicant via Natural England's existing Discretionary Advice Service (DAS) agreement with the Greater Cambridge Partnership (GCP).

Yours faithfully,

Catherine Duerden
Higher Officer - Sustainable Development, West Anglia Team

Natural England's Representation

Additional information is required in order to assess the impacts of the Cambourne to Cambridge busway scheme, and whether the proposed mitigation is sufficient. We believe that insufficient evidence has been provided to fully assess the likely negative effects on protected species.

Natural England's concerns are primarily around barbastelle bats *Barbastella barbastellus* - the loss of potentially important foraging habitat and food sources, maintaining connectivity of bat habitat within the wider landscape and direct mortality of bats (i.e. hit by buses or swept into their backdraught). This representation covers our initial observations, but we may add to these should a public inquiry be called. We will, however, limit any additional points to those associated with bats.

All bats are European protected species, making it an offence to kill, injure or disturb them. Barbastelle bats have a higher level of protection, as Annex II species, and they are a conservation priority on both a local and national scale. As the Cambourne to Cambridge busway proposal covers matters which go beyond the scope of Natural England's [standing advice](#), and this location is important for internationally protected barbastelle populations, we consider this to be an exceptional case and have chosen to provide more detailed comments in this instance.

This landscape is particularly important for this species, as it is within the 10km Impact Risk Zone (IRZ) of Eversden and Wimpole Woods Special Area of Conservation (SAC). The proposal is therefore subject to the Habitats Regulations Assessment (HRA) process.

A known maternity roost is also located in Madingley Wood Site of Special Scientific Interest (SSSI), close to the route's red line boundary. Other colonies are also located nearby, but our present comments mainly focus on this population as it is on the opposite side of the proposed busway to the SAC and therefore most at risk of severance.

The genetic health of one barbastelle colony is dependent on the genetic health of the colonies around it. As the Madingley Wood population is almost definitely functionally linked to the Eversden and Wimpole Wood SAC population, given the proximity and likelihood of shared autumn swarming sites (at currently unknown locations), the health and survival of the Madingley Wood population is therefore important for maintaining genetic diversity to support the SAC population.

1. Habitats Regulations Assessment

The Statement to Inform Habitats Regulations Assessment [TR5.11] quotes Natural England's most recent advice in paragraph 4.2.8, provided under our Discretionary Advice Service (DAS) in July 2022. We believe that our comments in the following sections align with this previous advice.

Natural England advises that TR5.11 is not robust enough to provide sufficient certainty of no adverse effect on the integrity of Eversden and Wimpole Woods SAC. Paragraph 7.2.5, for example, relating to the loss of foraging habitat, is too simplistic and lacks evidence to support the statement that 'the loss of these foraging areas are highly unlikely to have a significant effect on Barbastelle Bats given the availability of habitat in the wider landscape'. The submitted Bat Activity Report [TR5.5] does not give enough consideration to foraging habitat, and the potentially most valuable foraging habitat impacted by the scheme (Coton Orchard) was not surveyed. This topic is expanded upon in parts 4 and 5, below.

We disagree with the conclusion of paragraph 7.2.37 that there will be no adverse effects as a result of mortality from collisions. Given the low number of bats per colony, it may only take a handful of collisions to significantly reduce the population size of a colony. As stated above, the genetic health of one barbastelle colony is dependent on the genetic health of the colonies around it. We also believe that paragraphs 7.2.31 and 7.2.34 are misleading – our advice is that, as barbastelles are one of the most light-averse bats, they should only be considered an 'open flying' species when full darkness is reached. In locations close to roost sites, as is likely to be the case at various points here, barbastelles require continuous shaded routes in order to begin commuting before full darkness, therefore a 20m gap is likely to be a barrier until later in the evening, or result in lower flying behaviour, putting the bats at greater risk. This is explored further in part 3, below.

The mitigation measures relied upon for the conclusions of section 7.2 are presumed to align with those detailed in Technical Report 5 – Ecology [C2C-11-TR05-00]. Our following comments are therefore primarily based on the information provided in C2C-11-TR05-00.

2. Lighting plans – Pre-Construction, Construction, and Operation phases

Barbastelles are one of the most light-averse bats, with light pollution considered to be a limiting factor for the species. There is evidence that barbastelles are territorial, with individuals returning to the same feeding locations year after year, with hunting grounds overlapping only minimally with those of other colony members. Even low levels of light could therefore have significant impacts as individuals may be prevented from using or getting to their existing foraging areas and have to find new hunting grounds or encroach onto others' territories. This additional searching and defence of resources would increase energy expenditure and impact the health and breeding success of the colony. See [Edition 1 Definition of favourable conservation status for barbastelle bat - RP2974](#) for further information.

Natural England therefore requests that we see and approve detailed lighting plans and strategies for both the Construction and Operation phases before agreeing to this scheme. This should include details of the current Pre-Construction lux levels in areas of ecological sensitivity, in addition to the modelled lux level changes for the subsequent phases. Crossing points should be shown to have no change from the baseline. There should not be just 'some' mitigation/buffering for increased levels of lighting, as is stated in paragraph 7.4.27 of the Technical Report 5 – Ecology [C2C-11-TR05-00] – the increased lighting should be completely mitigated for where it needs to be.

Natural England requests to see the Ecology Site Management Plan to make sure lighting and illuminated compounds are sensibly located. Working time plans should also be provided to make sure there will be no lighting when there may be an overlap between working and bat activity. We suggest a strict 'no night working allowed' commitment, secured through an appropriate planning mechanism. There should be no light spill at all onto important bat habitat (i.e. it should not be 'limited' as is suggested by paragraphs 7.4.28 and 7.4.29 of the Technical Report 5 – Ecology [C2C-11-TR05-00]). We advise that a '10m dark corridor', as specified in paragraph 7.4.30 is not wide enough, particularly if there are strong light sources nearby. More information is needed to back up paragraph 7.4.31, i.e. an explanation of how the dark corridors will be maintained and monitored, and exactly what the 'appropriate additional or remedial measures' would be.

The following guidance note, published 2023, should also be followed: [Guidance Note 8 Bats and Artificial Lighting | Institution of Lighting Professionals](#)

3. Crossing point mitigation

Technical Report 5 – Ecology [C2C-11-TR05-00] paragraph 7.4.24 (and TR5.11 paragraph 7.2.29) states that 'the gap between the canopy heights either side of the new road should be less than 20m to encourage bats to maintain their flight height over the road'. We strongly advise that 20m is much too wide for an effective crossing point, and request that the exact specifications and width of each crossing point be provided at this stage within a definitive plan. The gap between canopies should not be any wider than a standard two-lane road, preferably less – we believe this would be narrower than 7m, depending on the bus width.

Crossing points should therefore be no wider than this, and canopies should ideally be touching. The narrower the crossing point is, the better chance it will work, particularly if crossing points are likely to be used at dusk. Barbastelles would not cross a 20m gap at height before complete darkness, they would instead cross close to the ground where it is more shaded – this therefore would encourage collisions with traffic rather than preventing it, particularly in locations close to roost sites.

We advise that an analysis of the timings of first and last bat pass registrations (relative to sunset and sunrise), particularly for barbastelles, should be carried out to inform which crossing points (and foraging areas, as discussed in parts 4 and 5, below) are currently being used outside of full darkness hours. This would therefore pinpoint the locations that should be prioritised for the highest quality mitigation measures to prevent barbastelle bats flying closer to the roadway at dusk and dawn (as they are more willing to fly higher and in more open areas once it is fully dark). The submitted Bat Activity Report [TR5.5] does not provide any of the timings of bat registrations, but we assume that these will have been recorded during the surveys, so this should be possible.

The design of mitigation would also be aided by further investigation into the current road crossing behaviour of bats in the area, particularly where crossings are likely to be close to roost sites and therefore used before full darkness. There is currently a lack of knowledge around how some bat species cross roads, including barbastelles, and populations in different locations may exhibit different behaviours and adaptations. Questions of both how local bats are crossing, and where they are crossing should seek to be answered, particularly close to Madingley Wood SSSI. A review of satellite imagery looking for likely points, such as at bridges and where tree canopies are close together, followed by the use of infra-red camera technology would facilitate this. If it can be shown that bats from the local populations exhibit specific behaviours at existing roads, or are used to particular crossing features, it would give more confidence in the likely effectiveness of similar features incorporated into these proposals. It would also highlight where compensatory landscape enhancements could be most valuable, if they improve connectivity to or provide additional foraging habitat close to existing road crossings.

4. Foraging areas

Insufficient consideration has been given to impacts on areas which may be important bat foraging habitats where these are not the surveyed 'crossing point features'. This is explored further in part 5, below, in relation to Coton Orchard, as a key example.

There also appears to have been no consideration of impacts to bat prey species, their habitat and larval/food plants, which may impact the viability of existing foraging sites. As explained in paragraph 3.9 of [Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastella barbastellus* - ENRR657](#), for example.

As stated in part 2, above, the territorial nature of barbastelles means that impacts to even one bat's foraging site or commuting route could have implications for the rest of the colony.

5. Coton Orchard County Wildlife Site (CWS)

As Coton Orchard has recently been designated as a County Wildlife Site (CWS) the map in Figure 5.2 of Appendix A of the Technical Report 5 – Ecology [C2C-11-TR05-00] should be updated to reflect this (along with any similar maps, or references to designated sites).

Whilst Natural England's remit does not extend to County Wildlife Sites, their important role within the ecological network means that we do not support their destruction or degradation. There is also evidence that this site could provide supporting habitat for barbastelle bats, particularly from the nearby Madingley Wood SSSI population, and our comments in relation to the orchard will therefore focus on this.

Ordinarily, Natural England advises that existing treelines, hedgerows, and woodlands (including orchards) should be retained, enhanced, and maintained as dark corridors for commuting and foraging. This proposal, however, intends to cut straight through the middle of Coton Orchard, so this matter needs bespoke attention.

A bat activity survey of Coton Orchard has not been carried out, therefore the full importance of this habitat is unclear. The submitted Bat Activity Report [TR5.5] for the rest of the scheme does anecdotally mention bats, including some barbastelle, foraging over the orchard trees near to some of the crossing point surveys, e.g. paragraphs 5.4.2 (crossing point 3), 5.5.3 (crossing point 4), and 5.12.3 (crossing point 13). No mention is made of the orchard or specific foraging habitats in the summary conclusion, however, or any of the above crossing points. We therefore believe that some of the foraging habitats potentially impacted by the scheme have not been given due consideration.

We request that bat activity surveys of the orchard and adjoining scrub/woodland be carried out. If static detectors are to be used, a higher number of static detectors should be deployed due to the size and complexity of the habitat. Statics should not be moved between surveys, as this adds unnecessary complexity to results. A wide range of weather conditions should also be included – there may be lower bat numbers in this type of habitat on fair weather nights as barbastelles tend to spread out more thinly and travel further afield, they are likely to concentrate in more sheltered areas such as the orchard in worse weather, particularly if this is close to a roost site. A greater level of analysis should also be undertaken to understand the activity patterns of different species, time of usage relative to sunset and weather, and to inform the mitigation required.

There are already indications that this orchard and associated scrub could be an important foraging resource for barbastelles, judging by the number of invertebrates, especially moth species, found there during surveys. Paragraph 5.7.16 of the Environmental Statement [CtoC-10-ES0-00] reports that 239 invertebrate species were identified within Coton Orchard, *'including 119 species of Lepidoptera (moths mostly, as well as butterflies)'*.

Barbastelles are moth specialists, with over 90% of their preferred prey being micromoths of the families *Pyrilidae*, *Geometridae*, *Arctiidae*, *Noctuidae*, *Tortricidae* and *Gelechiidae* (see paragraph 3.1 of [Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastella barbastellus* - ENRR657](#) for further details). Annex E of the Terrestrial Invertebrates Survey Report [TR5.14] details that a large number of these micromoth species were found within the orchard, providing further evidence of its value.

The potential impact of the scheme on these micromoths should therefore be taken into account in order to assess potential impacts on barbastelles. An analysis of the larval and foodplants of the moths should be undertaken, compared to the plants that are to be removed should the scheme go ahead, and replacement plants and their associated habitats should be included in mitigation plans (preferably within the vicinity of the orchard, and/or near commuting routes between Madingley Wood and the orchard) to increase micromoth numbers.

As Coton Orchard is relatively close to Madingley Wood SSSI, and the trees within the orchard offer more shelter and shade than most surrounding habitat, it is likely to provide

particularly useful foraging habitat during poor weather conditions, as well as at dusk and dawn en-route to other foraging areas. Whilst no time registrations have been provided for recorded bat sightings, the text in TR5.5 paragraph 5.4.2 may support the use of the orchard by barbastelles during dusk as it is stated that the two barbastelles were seen foraging over the orchard, and 'later' flew away in different directions (the start times of the Crossing Point 3 surveys were 21:00 in July, and 20:45 in August – i.e. at sunset). This also indicates that these barbastelles have not travelled far to reach the orchard, as it would likely have been too light prior to sunset for them to commute.

[ENRR657](#) explains how important it is to have shaded commuting routes and foraging opportunities close to roost sites, and how extremely disruptive tree works and scrub removal alongside flightlines and within foraging areas can be, potentially causing extensive detours, delays or isolation. Removing trees, scrub and/or understorey plants will also increase local wind speeds and lower the humidity, both changes that will lead to lower insect abundance and availability. The effects of buses would then add to this issue. When too many foraging opportunities are lost along a flightline, the bats will cease to use it, even if its connectivity is maintained.

Deemed Planning Drawing CtoC-16-DP4-00 (sheets 13 and 14) currently specifies the speed limit of buses within Coton Orchard as 50mph. We request that this is reduced to 30mph throughout the orchard and adjoining scrub/woodland, particularly during dusk/dawn and darkness hours. This would act as a mitigation measure for both bats and barn owls, allowing them more reaction time to reduce the risk of collisions and backdraught effects (which pull bats towards the buses).

6. Further surveys and analysis relating to bats

In the Ecological Survey Validity Report 2024 [TR5.16] we disagree with the conclusion of Table TR5-16-2-1 (Validity assessment results) regarding 'Foraging and commuting bats' surveys. This solely focuses on crossing point surveys and neglects to consider foraging habitat, specifically the absence of activity surveys within the orchard. We advise that additional surveys and/or analysis (such as that suggested in parts 3 and 5, above) should be carried out to inform specific avoidance and mitigation measures relating to barbastelle foraging habitats, particularly within Coton Orchard.