
**SUMMARY OF PROOF OF EVIDENCE OF
PROFESSOR JOHN ALTRINGHAM**

**ON BEHALF OF

GWENT WILDLIFE TRUST**

In the matter of:

**Public Local Inquiry into the M4 relief road around Newport: The effects of the
proposed M4 extension across the Gwent Levels**

February 2017

INTRODUCTION

1. I am John Altringham. I hold a BSc in Biology (University of York) and a PhD in Zoology (St. Andrews University). I am Emeritus Professor of Animal Ecology and Conservation at the University of Leeds (Professor 1999-2016). I have conducted and published research for 38 years and have written over 150 scientific papers and reports on a broad range of topics. I was awarded the Scientific Medal of the Zoological Society of London in 1994 “for distinguished work in zoology”.
2. I have been actively involved in bat research and conservation for over 30 years and have written three major books on bat biology and conservation. I have extensive field experience with wild bats in the UK and abroad, applying a wide range of techniques to their study. My research has been funded by government and by national and international conservation charities. I regularly advise Natural England, Natural Resources Wales, Scottish Natural Heritage, the Bat Conservation Trust and Wildlife Trusts, on bat ecology and conservation issues. I am a governance volunteer and advisor to the National Trust and hold other advisory conservation posts. I am also a regular contributor to BBC Natural History Unit programmes.
3. I have conducted research into the effects of transport infrastructure on bats. This demonstrated that major roads reduce bat activity and species diversity over more than 1 km either side of the road, and that current mitigation practice is largely ineffective. I have recently published a major DEFRA-funded report on the same topic. This summarises current knowledge in the field of road ecology related to bats, details extensive further research that supports our earlier conclusions, and provides detailed best practice guidance on survey, monitoring and mitigation for bats on transport infrastructure. This report was produced with the aid of a steering group whose members included representatives from the statutory nature conservation organisations of the UK and Highways England. I have also been an invited speaker on the subject at recent conferences and workshops in the UK, Australia and Denmark.

Overview

4. My evidence considers the likely effects on bats of the proposed M4 extension across the Gwent levels, through an assessment of the Environmental Statement (ES), the mitigation proposals within it and my own research experience. It also includes a brief discussion of well documented, long-term impacts of roads on wildlife that are not acknowledged by the Environmental Statement.

5. The bat surveys along the proposed route described in the ES use appropriate methods and are reasonable in scope. The data are sufficient to show that the footprint of the motorway falls on important bat habitat along most of its route and the road has the potential to do considerable damage to bat populations.
6. The ES concerns itself almost entirely with impact during construction and makes insufficient reference to the long-term, landscape-scale impact of the operational phase of the road. This is despite the fact that our work is cited and extensively quoted, and this issue is a major part of our DEFRA report. That report shows that major roads, whether under construction or long-established, are associated with lower bat activity and species diversity for at least 1-1.6 km either side of the road. The causes are multiple and not all are well understood, but the effect is clear and widespread. The 'missing' bats have died or been displaced – and displacement probably also leads to population decline, since displaced bats will be in competition for resources with other bats. The ES fails to take account of this basic ecological principle and assumes that there is lots of empty habitat waiting for these displaced bats to move into. There is not, it is already occupied.
7. Chapter 10 of the ES assesses the likely impact of the construction of the road on bats as moderate adverse without effective mitigation. It is claimed that the package of mitigation measures proposed will reduce the impact to slight adverse. However, despite citing our DEFRA report and quoting extensively from the best practice recommendations within it, the ES ignores the evidence we provide that shows the proposed mitigation will be at best high-risk and largely ineffective and at worst completely ineffective. Table 10.18 presents the evidence the authors of the ES have collated side by side with details of the proposed mitigation. This shows that most species will not benefit from the mitigation, and acknowledges the lack of evidence for its effectiveness for others. If the ES had included evidence from my publications, its authors would have been bound to conclude that the situation is significantly worse than they suggest. In addition to passing over much important evidence, the ES does not appear to have taken on board the critical distinction between the **use** of a structure by individual bats and its **effectiveness** at protecting bat populations. Reports are cited that describe the use of overpasses and underpasses by small numbers of bats in support of their value as mitigation tools. There is no mention of the number of bats that no longer go near a site or cross the road, or those that cross the road at risk of being killed. The purpose of mitigation is to ensure that a very large majority of the bats

present before construction continues to cross the road safely after construction. By these criteria, most mitigation is untested or failing. Our critical study is not cited at all, despite being a widely publicised, freely available, open source paper.

8. Bat boxes are put forward as effective replacements to lost roosts. In fact, bat boxes and bat barns represent a high risk, poorly assessed mitigation 'solution' to lost roosts – there is no guarantee that they will work and a high probability that they will not. Stone et al. (2013), in an analysis of Natural England (English Nature) derogation licence returns, found that the odds are against effective uptake of new roosts and in particular bat boxes. Stone et al. (2013) reported that only 13% of bat boxes erected for mitigation were used and no assessment can be made of their value as effective replacement roosts. Stone et al. (2013) also highlight poor levels of compliance: 67% of licencees failed to submit post-development reports and post-development monitoring was conducted at only 19% of sites. Our experience, discussed in many of our reports, is that non-compliance is still an issue and most of the reports that are submitted are not fit for purpose.
9. Based on current evidence over the road structures (with the probable exception of wide green bridges) are not effective at helping bats cross safely. Under the road solutions (culverts and underpasses) have the potential to be effective if large enough, sited on pre-existing commuting routes and well connected to the landscape. Unfortunately, most of those proposed in the ES are too small, most will be placed well away from known commuting routes and many will be poorly connected to existing commuting routes. In combination, these factors are highly likely to make the mitigation ineffective.
10. In summary, in addition to there being no consideration of the long-term effects of the operational road on bats, there is considerable scientific uncertainty about the likely success of the short-term construction mitigation plan, and as such the plan does not meet the requirements of European law, which demands that the success of the mitigation must be “beyond reasonable scientific doubt”.