

Adran yr Economi a'r Seilwaith  
Department for Economy and Infrastructure



Llywodraeth Cymru  
Welsh Government

**The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East of Magor) Connecting Road) Scheme 201-**

**The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East of Magor) Connecting Road) (Amendment) Scheme 201-**

**The London to Fishguard Trunk Road (East of Magor to Castleton) Order 201-**

**The M4 Motorway (West of Magor to East of Castleton) and the A48(M) Motorway (West of Castleton to St Mellons)(Variation of Various Schemes) Scheme 201-**

**The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and the M48 Motorway (Junction 23 (East of Magor) Connecting Road) and The London to Fishguard Trunk Road (east of Magor to Castleton) (Side Roads) Order 201-**

**The Welsh Ministers (The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and the M48 Motorway (Junction 23 (East of Magor) Connecting Road) and the London to Fishguard Trunk Road (East of Magor to Castleton)) Compulsory Purchase Order 201-**

**The M4 Motorway (Junction 23 (East Of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East Of Magor) Connecting Road) (Supplementary) Scheme 201-**

**The Welsh Ministers (The M4 Motorway (Junction 23 (East Of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East Of Magor) Connecting Road) and The London to Fishguard Trunk Road (East of Magor to Castleton)) Supplementary Compulsory Purchase Order 201-**

**Summary Proof of Evidence**

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**Welsh Government, Bats**

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## **1. Introduction and Scope of Evidence**

### **1.1 Personal details**

1.1.1 My name is Richard Austin Green and I am owner and Director at Richard Green Ecology Ltd (RGEL). I hold a BSc Honours Degree in Applied Biology, specialising in Ecology. I am a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Chartered Environmentalist with the Society for the Environment. I have been a professional ecologist since completing my BSc Honours Degree in 1993.

1.1.2 The Proof of Evidence I will give is based on my own conclusions regarding the potential effects of the Scheme on bats and has been prepared in accordance with CIEEM's Code of Professional Conduct. I confirm that the opinions expressed are given in a fair and impartial manner and are my true and professional bona fide opinions.

### **1.2 Scope and Structure of this Evidence**

1.2.1 My Proof of Evidence is concerned with the environmental assessment, Scheme design and mitigation elements of the proposed M4CaN Scheme (hereinafter "the Scheme") in relation to bats.

1.2.2 My Proof of Evidence is presented in the following structure:

- a) Introduction and Scope of Evidence
- b) Methodology and Consultation
- c) Baseline Conditions
- d) Potential Impacts of the Scheme on Bats
- e) Mitigation for Bats

- f) Residual Effects of the Scheme on Bats
- g) Consultees' Responses and Objections to the Scheme
- h) Summary and Conclusions

## **2. Methodology and Consultation**

### **2.1 Methodology**

- 2.1.1 The effects of the published Scheme on bats are described in Chapter 10 of the March 2016 Environmental Statement [Document 2.3.2] and in the Environmental Statement Supplement [Document 2.4.4]. These explain that surveys and assessment were carried out taking account of appropriate guidance.
- 2.1.2 Bat surveys have been undertaken in 2014, 2015 and 2016 to inform the development and provide a baseline for assessment of the Scheme. These consisted of bat roost potential assessments and bat emergence surveys of buildings and trees, bat hibernation roost surveys, walked bat activity transect surveys, static bat activity monitoring at likely bat flight lines severed by the Scheme, and manned dusk and dawn surveys at seven underpasses and bridges crossing the existing M4 motorway. Survey methods were agreed with NRW. In addition, a desk study of bat records within the study area was undertaken.
- 2.1.3 In conjunction with the ES, an Assessment of Impacts on European Sites (AIES), including the Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena Special Area of Conservation (SAC), which includes lesser horseshoe bat and greater horseshoe bat as qualifying features, has been carried out and was reported on separately in the Statement to Inform an Appropriate Assessment (SIAA) [Document 2.3.4]. The conclusion of the SIAA report was that there would be no adverse effect on the

integrity of the European site considered either alone or in combination with other plans and projects.

## **2.2 Consultation**

2.2.1 NRW were consulted on the scope and methodologies of the bat surveys and regular meetings have been held with NRW throughout the development of the proposals. To the extent that there remain some matters of concern to NRW, discussions continue between NRW and the design team with a view to their resolution.

## **3. Baseline Conditions**

3.1.1 14 bat species have been recorded within 5 km of the Scheme, from desk study records and survey undertaken for the Scheme. Common pipistrelle was the most frequently recorded species across the search area.

3.1.2 Surveys confirmed that woodland and areas comprising tree lined lanes and watercourses were found to have the highest levels of bat activity within the study area.

3.1.3 Small numbers of lesser horseshoe bats (up to a maximum average of 2.5 passes per night) were recorded to the east of the River Usk between Pye Corner and the eastern end of the study area. A single greater horseshoe bat was recorded to the west of the River Ebbw.

3.1.4 The diversity of bat species recorded during surveys for the Scheme was consistently higher at the eastern end of the proposed new section of motorway around Llandeenny and Magor than the western end.

3.1.5 The areas from Berryhill Farm to Maerdy Farm in the west, around the East Usk Railway, and immediately south of the existing M4 Magor interchange (Junction 23A) had relatively high levels of Myotis bat species, probably due to the existing roadside and rail side woodland/planting in those areas.

- 3.1.6 The total number of known tree roosts that would be destroyed consists of three confirmed and three probable roosts, affecting low numbers (1-3 bats) of common pipistrelle, brown long-eared and noctule bats. The total number of buildings with roosting bats that would be destroyed consists of nine buildings, affecting seven low value common pipistrelle bat roosts, two low value soprano pipistrelle bat roosts, one low value brown long-eared bat roost and one common pipistrelle bat maternity roost.

#### **4. Potential Impacts of the Scheme on Bats**

- 4.1.1 Road schemes can affect bats in various ways. Areas of potential impact which are relevant to road proposals are effects of land take, effects of construction and effects of the operational road. These include:
- a) Loss of roosting, foraging and commuting habitats
  - b) Severance and fragmentation of habitats
  - c) disturbance of roosting, foraging and commuting bats
  - d) Effects of lighting, contributing to disturbance and severance
  - e) A risk of pollution and changes in hydrology affecting invertebrates that form part of bats' diets
  - f) Mortality from impact with moving vehicles when crossing the road
- 4.1.2 All of the above effects may contribute to an overall reduction in the value of habitats for bats close to roads, further exacerbating the barrier/severance effect of roads on bats.

## **5. Mitigation for Bats**

- 5.1.1 Bat survey results and discussion with NRW informed the development of the Scheme design to minimise impacts on bats and, in particular, lesser horseshoe bats, as a qualifying feature of the Wye Valley and Forest of Dean Bat Sites SAC.
- 5.1.2 A Draft Bat Mitigation Strategy (Appendix SS10.5 of the December 2016 ES Supplement [Document 2.4.14]) has been produced with the aim of agreeing a final version with NRW. This will be used to support a licence application for destruction of bat roosts and other mitigation works.
- 5.1.3 Mitigation measures incorporated into the Scheme include:
- a) Avoidance/minimisation of habitat loss
  - b) Replacement of roosting, foraging and commuting habitats
  - c) Maintaining safe crossing points throughout the lifetime of the Scheme, including from land take, through construction and during operation
  - d) Avoiding pollution and changes to hydrology of the surrounding area and avoiding disturbance of bats during construction

## **6. Residual Effects of the Scheme on Bats**

### **6.1 Habitat loss**

- 6.1.1 With mitigation, I conclude that the Scheme is unlikely to have an adverse impact on bat populations due to loss of roost sites.
- 6.1.2 In the long-term, there would be an increase in the area of woodland, pond and reedbed bat foraging habitats. There would be a decrease in hedges but provision of over twice as much woodland

habitat as that lost is considered to off-set the loss of hedgerow habitat.

- 6.1.3 In my opinion, there would be a moderate adverse effect of moderate significance on bats due to temporary habitat loss in the short (1-3 years) and medium-term (4-9 years). This will extend into the long-term (greater than 9 years), until woodland planting and other habitats proposed as part of the Scheme landscaping mature sufficiently to provide habitat structure and sufficient invertebrate biomass. This is estimated to be between 10 and 20 years to be of notable value to bats and 50 to 100 years to reach full woodland maturity. In the long-term, the magnitude of habitat loss is considered to reduce to minor adverse between 10 and 20 years and to neutral within 50 years. This is considered of slight significance.

## **6.2 Severance and mortality**

- 6.2.1 In my opinion, even after taking into account mitigation, there is some uncertainty over the likely success of providing safe road crossings for bats, in particular during operation. On a precautionary basis, the magnitude of impact is assessed as moderate adverse and the significance of effects as moderate.

## **6.3 Pollution**

- 6.3.1 In my opinion, measures undertaken during construction would ensure that airborne and runoff pollutants would not present a significant risk to bats.

## **6.4 Disruption of hydrology**

- 6.4.1 All existing watercourses and reed connections across the line of the new section of motorway would be retained or replaced to maintain the hydrology of the surrounding land. In my opinion, there would be no significant adverse effect on bats from disruption of hydrology.

## **6.5 Disturbance**

- 6.5.1 Bats can be relatively tolerant of noise whilst roosting, particularly if the noise is relatively regular. In my opinion, disturbance of roosting bats from noise and vibration during construction is extremely unlikely.

## **6.6 Road lighting**

- 6.6.1 The new section of motorway would be unlit apart from Junctions and their approaches and the River Usk Crossing. Lighting would take into account best practice recommendations. In my opinion the magnitude of impact of road lighting on bats would be minor adverse and the effect of lighting on foraging and commuting bats would be of slight significance.

## **6.7 Residual effects of the Scheme on the Wye Valley and Forest of Dean Bat Sites/ Safleoedd Ystumod Dyffryn Gwy a Fforest y Ddena SAC**

- 6.7.1 Considering the distance between the Scheme and the Wye Valley and Forest of Dean Bat Sites SAC and the limited numbers of lesser and greater horseshoe bats recorded in the survey area, the Scheme would not conflict with the Conservation Objectives of the SAC. It is concluded that there would be no adverse effect on the integrity of the SAC with regard to bats. NRW, agreed with the conclusion, in principle, in their response to the *Draft Orders under The Highways Act 1980 concerning The Proposed M4 Corridor Around Newport* (4 May 2016) [OBJ0268].

## **7. Consultees' Responses and Objections to the Scheme**

7.1.1 Consultation responses and objections to the Draft Orders for the Scheme which are relevant to bats have been submitted by the following organisations:

- a) Natural Resources Wales (OBJ0268)
- b) Gwent Wildlife Trust (OBJ0270)
- c) Newport City Council (SU0192)
- d) Monmouthshire County Council (ISU0002)
- e) Wildlife Trusts Wales (OBJ0260)
- f) Woodland Trust (OBJ0271) (light pollution of ancient woodland affecting bats)
- g) Bat Conservation Trust (OBJ0298)

7.1.2 I have addressed the relevant points in my Proof of Evidence. Comments generally refer to concerns over survey methods, assessment of impacts and proposed mitigation measures. Bat survey was not complete at the time of publication of the ES and further surveys have been undertaken. A Draft Bat Mitigation Strategy (Appendix SS10.5 of the December 2016 ES Supplement [Document 2.4.14]) has been produced with the aim of agreeing a final version with NRW. In particular, this addresses the effects on bat species more sensitive to roads and makes recommendations for increasing headroom in culverts at detailed design stage. The Strategy also includes details of proposed pre-construction surveys in 2017. The results of these will inform the finer detail of mitigation measures, which will be developed at detailed design stage and include replacement bat roosts, under-road crossings, landscaping/planting and temporary measures to guide bats over/under the road during construction.

## **8. Summary and Conclusions**

- 8.1.1 My Proof of Evidence concludes that the surveys undertaken for bats have been appropriate and that the assessment of effects on bats is robust. A Draft Bat Mitigation Strategy has been produced (Appendix SS10.5 of the December 2016 ES Supplement [Document 2.4.15]) and will be developed in consultation with NRW at detailed design stage in order to provide the best available mitigation to reduce effects on bats.
- 8.1.2 My Proof of Evidence includes all facts which I regard as being relevant to the opinions which I have expressed and the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- 8.1.3 I believe the facts that I have stated in this Proof of Evidence are true and that the opinions expressed are correct.
- 8.1.4 I understand my duty to the Inquiry to assist it with matters within my expertise and I believe that I have complied with that duty.