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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

Keith Jones BSc (Hons) PhD MRSB CBiol

RPS Planning and Environment: Ecology and Nature Conservation

Document Reference: WG 1.18.2

M4 CORRIDOR AROUND NEWPORT**Summary Proof of Evidence – Ecology and Nature Conservation****Contents**

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1. INTRODUCTION

1.1 Author

1.1.1 My name is Alan Keith Jones and I am a Senior Director at RPS Planning and Environment. I hold a BSc Honours Degree in Geography and Biology and a PhD in Plant Ecology. I am a Member of the Royal Society of Biology and a Chartered Biologist. I have been a professional ecologist since completing my PhD research in 1979.

1.2 Scope of Evidence

1.2.1 My evidence is concerned with the ecological and nature conservation interests of the land which would be affected by the published Scheme, and adjoining areas, and the effects on those interests resulting from the construction and operation of the road. Where appropriate in my evidence I also refer to the Proofs of Evidence of the other ecology witnesses; Mr Jon Davies (dormouse and water vole) (WG 1.19.1), Mr Richard Green (bats) (WG 1.20.1) and Dr Simon Zisman (birds) (WG 1.21.1).

1.2.2 Approximately two thirds of the route for the proposed new section of motorway crosses the Gwent Levels. The Gwent Levels are an area of flat reclaimed coastal grazing marshes and are designated as a series of Sites of Special Scientific Interest (SSSIs).

1.2.3 The Levels are dissected by extensive networks of tide locked freshwater drains known locally as reens with connecting field ditches. The reens and ditches support a wide range of aquatic plants, including many rare or scarce species, that in turn support a wide variety of other wildlife. There is a diverse community of insects and other invertebrates inhabiting the reens and ditches. The unmown ditch banks and rough grassland areas provide habitat for the shrill carder bee. The reens and ditches also provide habitat for protected species including otter, water vole, grass snake and amphibians.

- 1.2.4 The route for the proposed new section of motorway would cross the Rivers Usk and Ebbw. At the location of the proposed crossing, the River Usk is designated nationally and internationally as a SSSI and Special Area of Conservation (SAC). The Severn Estuary to the south is also subject to national and international designations as a SSSI, (SAC), Special Protection Area (SPA) and Ramsar Site.
- 1.2.5 Around the proposed junctions at the western and eastern ends of the Scheme, the ground is higher and agricultural use is a mixture of grazing and arable. Field boundaries are generally hedgerows and there are small areas of woodland, including some which are ancient woodland. An access road is proposed at the eastern end of the Scheme connecting to Ifton Quarry. There are extensive woodlands (including both ancient woodlands and plantations) to the west and north of Ifton Quarry.
- 1.2.6 A section of the route passes through the southern section of the Tata Steel Llanwern Steelworks site. This part of the steelworks site has been used as settlement and water treatment lagoons, many of which are now naturally revegetated.

2. METHODOLOGY AND CONSULTATION

2.1 Introduction

2.1.1 The effects of the published Scheme on ecology and nature conservation are described in Chapter 10 of the March 2016 Environmental Statement (ES) (Document 2.3.2), in the September 2016 ES Supplement (Document 2.4.4) and in the December 2016 ES Supplement (Document 2.4.14). This explains that the assessment was carried out taking account of the appropriate guidance.

2.2 Baseline Data Collection

2.2.1 The baseline data collection was divided into two separate tasks: desk study, and surveys undertaken specifically for the M4CaN Scheme. Ecology surveys for the M4CaN Scheme were carried out on behalf of the Welsh Government in 2014 by or for Arup. Hyder carried out a survey of wintering birds over the winter of 2014/2015. Further surveys were carried out in 2015 and 2016 by RPS (or sub-consultants commissioned by RPS).

2.3 Consultations

2.3.1 NRW were consulted on the scope and methodologies of the 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.

2.4 Assessment of Implications (of highways and/or roads projects) on European Sites (AIES)

2.4.1 An Assessment of Implications (of highways and/or roads projects) on European Sites (AIES) 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 sites considered either alone or in-combination with other plans and projects.

3. SCHEME DESIGN

3.1 Introduction

3.1.1 Mr Matthew Jones and Mr Ben Sibert explain in their Proofs of Evidence (WG 1.1.1 and WG 1.5.1 respectively) the process of option selection and Scheme design undertaken for the published Scheme.

3.2 Scheme Design

3.2.1 Changes were made to the conceptual design prior to submission of the Draft Statutory Orders, some of which have implications for ecology and nature conservation. Some of these changes responded directly to the aim of minimising the effects of the Scheme on the Gwent Levels SSSIs, in some cases following requests from NRW. These include:

- a) The number, location and size of the Water Treatment Areas have been rationalised, including moving them at the request of NRW, where practicable, to the north side of the new section of motorway across the Gwent Levels.
- b) At the request of NRW, providing reed connectivity along the north side of the new section of motorway to allow conveyance of rainfall flows in a flooding event, with smaller field ditches to the south.
- c) Reducing the 3 metre off set for the highway fence line from the toe of the highway embankments to 1 metre across the Gwent Levels which decreases the amount of highway land within the Gwent Levels SSSIs.

3.2.2 Some of the other changes have resulted in slight increases in the extent of the works within the Gwent Levels SSSIs compared to the conceptual Scheme and these were taken into account in the assessment of effects in the March 2016 ES (Document 2.3.2).

4. POTENTIAL ECOLOGICAL EFFECTS AND MITIGATION

4.1 Introduction

4.1.1 Approximately two thirds of the route for the proposed new section of motorway crosses the Gwent Levels. The special features of the Gwent Levels SSSIs which would be crossed by the Scheme are in summary:

- a) reed and ditch habitat;
- b) insects and other invertebrates (aquatic); and
- c) shrill carder bee.

4.1.2 The crossing of the River Usk (SAC and SSSI) would be via a bridge with approach viaducts on either side, that on the west crossing the River Ebbw (SINC) and the port area of Newport. There would be no structures within the channel of the River Usk.

4.1.3 An area of saltmarsh on the east bank of the River Usk is included in the River Usk SAC although it is not a qualifying feature for which the SAC is designated. The eastern pylon of the bridge would be constructed within this area of saltmarsh.

4.2 Potential Impacts

4.2.1 Areas of potential impact which are relevant to road proposals are effects of land take, effects of construction and effects of the operational road.

4.3 Mitigation

4.3.1 Mitigation has been considered as an intrinsic and iterative part of the Scheme development and assessment process informed by consultation with stakeholders.

4.3.2 A significant element of the proposed mitigation is the SSSI Mitigation Strategy. This was attached to the March 2016 ES as Appendix 10.35

(Document 2.3.2) and a revised version was published as Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14). The aim of the strategy is to provide mitigation for the loss of coastal grazing marsh habitat as a result of the Scheme and, where practicable, to ecologically enhance land within the Gwent Levels SSSIs. The land identified in the revised proposals at Tatton Farm, Maerdy Farm and Caldicot Moor is sufficient to satisfy the requirement for mitigation of the loss of grazing marsh.

4.3.3 Land at the north of Caldicot Moor is proposed to provide wetland habitat as essential mitigation for the effects on a range of protected species including Cetti's warbler and common crane. An area of land at the south of Tatton Farm would be used to provide habitat for great crested newt.

4.3.4 The draft Environmental Commitments Register which would be annexed to the CEMP formed Appendix 18.1 of the March 2016 ES (Document 2.3.2). It was retained in draft form to allow for additions and amendments following consultation with key-stakeholders. An updated version of the draft Register formed Appendix R18.1 of the September 2016 ES Supplement (Document 2.4.4) and it was further updated as Appendix SR18.1 of the December 2016 ES Supplement (Document 2.4.14) and this will continue to be updated during the course of the Public Inquiry.

4.3.5 Measures to avoid adverse effects include the following:

- a) No construction in the wetted channels of the Rivers Usk and Ebbw defined as the channel below Mean High Water as explained in March 2016 ES (Document 2.3.2) Chapter 2: Scheme Description.
- b) Minimise land take within the Gwent Levels SSSIs and, where practical, avoid land take to the south of the line of the new motorway.

4.3.6 Measures to reduce adverse effects include the following:

- a) Provision of water treatment areas to control the volume and quality of water discharged to the reen system.
- b) Maintaining all existing reen connections across the line of the new section of motorway.
- c) Provision of permanent mammal fencing along the new section of motorway.
- d) Avoidance of lighting other than at junctions and the river crossings.
- e) Design of lighting of the River Usk and River Ebbw crossings to avoid lighting of the river channels and banks.
- f) Minimise light spill through lighting design.
- g) Provision of mammal crossings at suitable locations across the line of the new section of motorway.
- h) Provision of mammal tunnels adjacent to all reen culverts.
- i) Design of planting to guide bats to culverts and other crossings.
- j) Provision of eel passes on all new sluices.
- k) Use of plant material from existing reens and ditches to encourage colonisation of new reens and ditches by aquatic macrophytes.

4.3.7 Where it has not been possible to avoid or reduce adverse effects, in accordance with DMRB Volume 11, Section 2, Part 5 (HA 205/08) (Document 13.2.6) measures to offset such effects have been sought. These include the following:

- a) Replacement of reens at a ratio of 1:1.

- b) Replacement of field ditches at a ratio of 1:1
- c) Landscape/habitat provision shown on the revised Environmental Masterplan (EMP) (September 2016 ES Supplement (Document 2.4.4) Figure R2.6).
- d) Replacement of saltmarsh.
- e) Ecological enhancement of land (e.g. recutting of former ditches, removal of hedgerows, reseeded grassland) at Maerdy Farm, Tatton Farm and Caldicot Moor.
- f) Provision of three replacement badger setts.
- g) Provision of bat barn north of Magor.
- h) Use of woodland soils and rootstocks in new planting areas.
- i) Provision of bat boxes.
- j) Investigate the potential for translocation of waxcap turf.

4.3.8 Measures to be implemented during construction, over and above measures to control pollution, would include the following.

- a) Biosecurity method statement for site works, including ecology surveys.
- b) Capture and translocation of dormouse.
- c) Capture and translocation of reptiles.
- d) Capture and translocation of water vole.
- e) Capture and translocation of great crested newt.
- f) Removal of bat roosts at the appropriate season.
- g) Closure of badger setts at the appropriate season.

- h) Pre-construction surveys for bats, badger, water vole, otter, great crested newt and features of importance to grass snake to confirm measures required during construction.
- i) Clearance of vegetation suitable for nesting birds outside the bird breeding season.
- j) Management of surface water and groundwater during construction including maintenance of water levels in reens and field ditches, de-watering of borrow pits and provision of temporary water treatment areas.
- k) Construction lighting would be designed and managed to minimise light spill outside the working area.
- l) Installation of piles for the east pylon of the River Usk crossing outside the main fish migration period.
- m) Provision of mammal fencing during construction if and where required.
- n) Provision of means of escape from excavations.
- o) Provision of barn owl nest boxes.
- p) Construction sites at Great Pencarn, Newport Docks and Tata Steel would be restored on completion of construction.

4.4 Monitoring

4.4.1 Monitoring would be undertaken both during the construction and operation of the new section of motorway to confirm the effectiveness of mitigation measures, and if necessary, to inform the need for any changes in management of impacts.

4.4.2 The Contractor would be responsible for monitoring the performance of the completed Environmental Design for the duration of the Aftercare Period (5 years from completion of construction). The environmental

performance of the project would be monitored against the commitments, objectives and targets identified in the Environmental Management System and more specifically, the Register of Environmental Commitments, which would include all of the mitigation requirements as set out in the AIES, ES, licences/consents, and other documentation.

- 4.4.3 Following the 5 year aftercare period responsibility for the management and maintenance of the Scheme's soft estate, including all elements of the environmental design and mitigation, would revert to Welsh Government. In common with other strategic highways that are the responsibility of the Welsh Government a specification for that ongoing management and maintenance would be produced at that time. It would incorporate measures to address ongoing commitments made previously with respect to the Scheme.

5. EFFECTS OF THE PUBLISHED SCHEME ON ECOLOGY AND NATURE CONSERVATION

5.1 Introduction

5.1.1 The effects of the land take, construction and operation of the M4CaN Scheme on ecology and nature conservation are reported in Chapter 10 Ecology and Nature Conservation of the March 2016 ES (Document 2.3.2), in the September 2016 ES Supplement (Document 2.4.4) and in the December 2016 ES Supplement (Document 2.4.14).

5.1.2 For the purposes of the assessment the designated sites and nature reserves were considered in their own right, and the other Valued Ecological Receptors (VERs) were grouped together under Ecological Units based on the habitats and species present that would be affected in similar ways.

5.1.3 The Ecological Units and their component VERs are as follows.

a) Rivers (Usk and Ebbw)

- i) Rivers
- ii) Sub-tidal benthic habitat
- iii) Intertidal mudflats
- iv) Coastal saltmarsh
- v) Migratory fish
- vi) Estuarine migratory fish assemblage

b) Reens, ditches, reedbeds and ponds

- i) Eutrophic standing waters
- ii) Ponds
- iii) Reedbeds
- iv) Aquatic macrophytes
- v) Otter
- vi) Water vole
- vii) Grass snake
- viii) Great crested newt and other amphibians

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- ix) Freshwater fish assemblage
 - x) Freshwater invertebrates
- c) Grazing Marsh
- i) Coastal and floodplain grazing marsh
 - ii) Shrill carder bee
 - iii) Wet grassland plants
- d) Farmland
- i) Lowland mixed deciduous woodland
 - ii) Wet woodland
 - iii) Hedgerows
 - iv) Lowland meadow
 - v) Dormouse
 - vi) Badger
 - vii) Hedgehog
- e) Industrial land
- i) Open mosaic habitats on previously developed land
 - ii) Reptiles (Common lizard, slow worm)
 - iii) Terrestrial invertebrates
- f) Bats
- i) Breeding Birds
 - ii) Wintering Birds

5.1.4 Effects on dormouse and water vole are described in their Proofs of Evidence by Mr Jon Davies (WG 1.19.1), on bats by Mr Richard Green (WG 1.20.1), and on birds by Dr Simon Zisman (WG 1.21.1).

5.2 Changes in Air Quality

5.2.1 The March 2016 ES (Document 2.3.2) (section 10.6) concluded with respect to the air quality effects of the operation of the new section of

motorway that whilst there would be increases in annual mean NO_x concentrations and nitrogen deposition at the designated sites assessed, no exceedances of the critical loads are predicted and exceedances of the precautionary annual mean NO_x objective are limited to only two of the eleven designated sites assessed, and then only within 20 m of the centre line of each carriageway and thus only a very small proportion of the designated site would be affected. Overall, the effect of the Scheme is considered to be 'not significant' for designated sites. Similarly for the habitats present along the corridor of the road, there would be no significant effects as a result of NO_x concentrations.

5.2.2 With respect to nitrogen deposition, the critical loads of none of the habitats present along the corridor of the new section of motorway would be exceeded and there would be no significant effects.

5.2.3 The same conclusions can be drawn with respect to the effects of construction of the new section of motorway based on the air quality information provided in the September 2016 ES Supplement (Document 2.4.4).

5.3 Designated Sites

5.3.1 The only European designated site which would be affected by the land take for the Scheme would be the River Usk SAC where the east pylon of the River Usk crossing would be located within an area of saltmarsh. The saltmarsh would be replaced by creation of new saltmarsh in an area to be used for construction of the River Usk Crossing once the construction works are complete. Saltmarsh is not one of the features for which the SAC is designated. Thus there would be no loss or adverse effect on a key feature of the SAC as a result of land take. There would be no significant effects on the SAC as a result of land take, during construction, or during the operation of the Scheme.

- 5.3.2 The site for the east pylon of the new crossing of the River Usk is also within the River Usk (Lower Usk) SSSI and the loss would be mitigated by the creation of a new area of saltmarsh once the construction works are complete.
- 5.3.3 As well as the River Usk (Lower Usk) SSSI, the new section of motorway would cross the Gwent Levels St Bride's SSSI, the Nash and Goldcliff SSSI, the Whitson SSSI, and the Redwick and Llandevenny SSSI. The land take for the Scheme would have significant effects on these SSSIs.
- 5.3.4 The maintenance of reed connections by culverting across the road and the replacement of infilled and culverted reeds and infilled field ditches are integral to the design of the Scheme. The proposals for mitigation for the loss of grazing marsh within the SSSIs are set out in the revised SSSI Mitigation Strategy (Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14)).
- 5.3.5 Taking into account that this additional mitigation and enhancement would commence in advance of construction, and that improvements in the ecological interest of grasslands would be expected to be manifest within a few years, the magnitude of the land take impacts on the Gwent Levels SSSIs (National (High) value) is assessed as Moderate Adverse and the significance of effects as Moderate or Large in the short term. The magnitude of impacts would be Minor Adverse and the Significance of effects Slight or Moderate in the medium/long term. Taking a precautionary approach the short, medium and long term effects on the Gwent Levels SSSIs would be significant in EIA terms.
- 5.3.6 The assessment of the construction phase takes into account the replacement of saltmarsh within the River Usk (Lower Usk) SSSI, which would be affected by the construction of the new River Usk Crossing, and which forms part of the Scheme design; construction land take within the Gwent Levels SSSIs which would be restored to grassland; together with the additional mitigation set out in the revised

SSSI Mitigation Strategy (Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14)). The magnitude of the impacts would be Minor Adverse leading to effects of Slight or Moderate significance in the medium term. In the long term the magnitude of impacts would be Negligible Adverse and the significance of effects Slight. In EIA terms, taking a precautionary approach, the effects would be significant in the short and medium terms and not significant in the long term.

5.3.7 During operation of the Scheme some sections of the Gwent Levels SSSIs to the north of the new section of motorway would be severed from the major parts of the designated sites to the south. All of the grazing marsh areas could continue to be managed alongside the operation of the Scheme and the effects would not be significant.

5.4 **Other significant ecological effects**

5.4.1 I have summarised the significant effects of the Scheme on non-statutory designated sites and nature reserves, and on the habitats and species of the Rivers (Usk and Ebbw); Reens, Ditches, Reedbeds and Ponds; Grazing Marsh; Farmland; and Industrial Land Ecological Units, as well as Bats, Breeding Birds and Wintering Birds, in the table at Appendix A to my Proof of Evidence.

6. CONSULTEE'S RESPONSES AND OBJECTIONS TO THE M4CAN SCHEME

6.1 Introduction

6.1.1 In my Proof of Evidence I have addressed matters raised in consultation responses and objections to the Draft Orders for the M4CaN Scheme which are relevant to ecology and nature conservation.

6.1.2 Consultation responses have been submitted by:

Newport City Council (SUP0192)

Monmouthshire County Council (ISU0002)

6.1.3 Objections have been submitted by the following organisations:

Natural Resources Wales (OBJ0268)

Royal Society for the Protection of Birds (OBJ0245)

Gwent Wildlife Trust (OBJ0270)

Wildlife Trusts Wales (OBJ0260)

Woodland Trust (OBJ0271)

Bat Conservation Trust (OBJ0298)

Buglife (OBJ0267)

Gwent Ornithological Society (OBJ0297)

Friends of the Earth Cymru (OBJ0125)

6.1.4 I have addressed the relevant points in my Proof of Evidence. Where appropriate, consultees' responses and objections are also addressed by Mr Jon Davies (dormouse and water vole) (WG 1.19.1), Mr Richard Green (bats) (WG 1.20.1) and Dr Simon Zisman (birds) (WG 1.21.1).

6.1.5 In addition to the responses and objections from the organisations I have referred to above, individuals have also objected to the Scheme on the basis of effects on ecology and nature conservation. The matters raised are covered in the more detailed responses and objections made by the organisations to which I have responded in this section.

6.2 My Responses

6.2.1 Where comments relate to incomplete or inadequate surveys, further surveys were carried out subsequent to the March 2016 ES (Document 2.3.2) and were appended to the September 2016 ES Supplement (Document 2.4.4) or the December 2016 ES Supplement (Document 2.4.14). These include surveys for great crested newt, dormouse, bats, wintering and breeding birds.

6.2.2 Where NRW have requested mitigation strategies for protected species these have been prepared in consultation with NRW (dormouse, great crested newt, bats and water vole) and published in draft as Appendices to the December 2016 ES Supplement (Document 2.4.14), or NRW have subsequently advised that these are not required at this stage and can be prepared and agreed in advance of commencement of construction (badger, reptiles, otter and barn owl).

6.2.3 I have responded to all of the relevant points in my Proof of Evidence. In this summary I refer to some of the specific matters raised.

6.2.4 NRW stated that further detailed discussions were required on the Drainage Strategy, Reen Mitigation Strategy, pre-CEMP and SSSI Mitigation Strategy. Revised versions of the Drainage Strategy and SSSI Mitigation Strategy and a Supplementary File Note on the Reen Mitigation Strategy were provided to NRW and discussed at a meeting on 6th September 2016. The Supplementary File note on the Reen Mitigation Strategy and the revised Drainage Strategy were appended to the September 2016 ES Supplement (Document 2.4.4) as

Appendices R2.1 and R2.2 respectively. A revised Pre-CEMP was published as Appendix SR3.2 of the December 2016 ES Supplement (Document 2.4.14). The revised SSSI Mitigation Strategy was also appended to the December 2016 ES Supplement as Appendix SR10.35.

- 6.2.5 The Gwent Wildlife Trust stated that Barecroft is part of their Magor Marsh Nature Reserve and that this loss of a section of nature reserve has not been considered in mitigation/compensation proposals.
- 6.2.6 As explained in the September 2016 ES Supplement (Document 2.4.4), the information on the extent of Magor Marsh Nature Reserve which formed the basis for the boundary of the reserve shown on the March 2016 ES Figure 10.3d (Document 2.3.2) did not include Barecroft Fields. Regardless of ownership, the effects of the Scheme on the Barecroft Fields SINC were assessed as part of the assessment of the effects on non-statutory designated sites and this identifies that there would be a loss of a small area of land at the north west corner of the SINC (March 2016 ES paragraph 10.7.33) (Document 2.3.2). There would also be some disturbance during construction and operation of the new section of motorway as this would be adjacent to the site. The Barecroft Fields SINC is also part of the Gwent Levels - Redwick and Llandeveyny SSSI and the effects were included in the assessment of effects on SSSIs.
- 6.2.7 Accepting that the Gwent Wildlife Trust consider Barecroft Fields to be part of Magor Marsh Nature Reserve, a receptor of Regional/County (Medium) value, then the magnitude of the impacts on the reserve would be Minor Adverse as a result of land take, and construction and operation of the new section of motorway. These would be effects of Slight Adverse significance and would be not significant in EIA terms.
- 6.2.8 Newport City Council requested confirmation as to the rate of 'provision' for loss of SINC. The Council refers to the March 2016 ES Table 10.2 (Document 2.3.2) which states that "*The target is to replace*

BAP habitats lost at a ratio of 1.5:1, not just those habitats within SINC's".

- 6.2.9 By way of clarification I here provide a summary of the replacement ratios for the various BAP habitats which would be affected by the Scheme. It should be noted that the SINC's are generally designated on the basis of the BAP habitats present.
- 6.2.10 Coastal saltmarsh: The ratio of replacement habitat to the area permanently lost would be approximately 2.1:1.
- 6.2.11 Eutrophic standing waters: The replacement ratio for replacement of reens would be 1.06:1 and for ditches 1.08:1 (so effectively 1:1). The reason that the ratio of new to existing is not greater is because NRW were concerned that the original proposals could have had adverse effects on the hydrology of the levels. In addition to the reen mitigation strategy the current proposals for SSSI mitigation (revised SSSI Mitigation Strategy published as Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14)) include re-cutting of 5,865 m of former ditches at Maerdy Farm and Caldicot Moor. Including these additional ditches, the ratio of ditch replacement on this basis would be 1.76:1.
- 6.2.12 Reedbeds: The ratio for replacement of reedbeds would be 1.5:1.
- 6.2.13 Coastal and floodplain grazing marsh: The strategy to mitigate the effects of loss of grazing marsh was described in the SSSI Mitigation Strategy (March 2016 ES Appendix 10.35). This strategy has been revised through discussion with NRW and a revised SSSI Mitigation Strategy was published as Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14). Two types of mitigation have been considered; firstly reversion of arable land to permanent grassland; and secondly, enhancement of the biodiversity value of existing grasslands. The requirements for grazing marsh mitigation have been discussed with NRW and it has been agreed that, for arable reversion, a

mitigation ratio of 1:1 has been used since the arable land is not considered to contribute in any material way to SSSI purposes. For grassland enhancement, recognising that the land already has biodiversity value, a mitigation ratio of 1.5:1 has been used, so for every hectare of grassland lost, 1.5 ha would be enhanced.

6.2.14 Lowland Mixed Deciduous Woodland (including Wet Woodland): The overall replacement ratio of woodland along the full length of the Scheme would be 2.1:1.

6.2.15 Hedgerows: The new section of motorway would result in the loss of a total of some 35.8 km of hedgerows of which some 8.2 km are species-rich intact hedgerows. The revised EMP (September 2016 ES Supplement (Document 2.4.4) Figure R2.6) shows some 4.1 km of hedgerow planting. NRW have indicated that hedgerow planting would not be appropriate within the Gwent Levels SSSIs. This is because hedgerows along the field boundaries can result in overgrowth/shading of the reens and field ditches with adverse effects on aquatic macrophytes and invertebrates which are the important features of the SSSIs. The extensive woodland and other landscape planting proposed at the Castleton and Magor Interchanges means that there would be little opportunity for hedgerow planting in these areas. The woodland and linear planting at Castleton and Magor at either end of the route would provide habitats of greater biodiversity value and would provide wildlife corridors.

6.2.16 Lowland Meadow: Based on the Phase 1 Habitat Survey mapping, the Scheme would result in the loss of some 7.01 ha of unimproved grassland. The landscape proposals shown on the revised EMP (September 2016 ES Supplement (Document 2.4.4) Figure R2.6) include some 38.1 ha of species-rich grassland. This is primarily on south facing road embankments and on the banks enclosing the water treatment areas.

- 6.2.17 Open Mosaic Habitats on Previously Developed Land: The March 2016 ES (Document 2.3.2) para 10.7.204 explains that there are areas of ‘brownfield’ land at: Great Pencarn; south of the Solutia works; in Newport Docks; south of the Tata Steelworks at Llanwern; and at Green Moor. Following completion of the works all temporary construction work sites would be removed and the land affected would be restored. In restoring the construction sites at Great Pencarn, within Newport Docks and Tata Steel, so far as practicable a mosaic of habitat types providing some of the characteristics of brownfield land would be provided.
- 6.2.18 The Woodland Trust referred to damage and loss of ancient woodland. The March 2016 ES (Document 2.3.2) at paragraph 10.4.64 explains that the woodlands at Pwll Diwaelod, Berryhill Farm, Pye Corner, Roggiett Brake and Rogiet Rectory Wood are included in the Forestry Commission Ancient Woodland Inventory. Detailed National Vegetation Classification (NVC) surveys of these woodlands confirmed that the woodlands at Pwll Diwaelod, part of the woodland at Berryhill Farm, and the woodlands at Roggiett Brake and Rogiet Rectory Wood were ancient woodland. However at Pye Corner a small scrubby plantation includes a small part of an area that is shown as ancient semi-natural woodland in the ancient woodland inventory. However, with the exception of a narrow strip of mature trees beside Picked Lane there does not appear to be any evidence of old woodland. Aerial photographs from 1945 and 1979 show that the site was a field when the photographs were taken. It is evident that most of the current wooded area has been established relatively recently.
- 6.2.19 Thus Chapter 10 of the March 2016 ES (Document 2.3.2) identifies that areas of ancient woodland at Pwll Diwaelod, Berryhill Farm, and Roggiett Brake would fall within the limit for temporary and permanent works for the Scheme.

6.2.20 Pwll Diwaelod is located at the extreme western end of the Scheme.

There are three main areas of woodland at Pwll Diwaelod which are classified as semi-natural ancient woodland. Easements for access are required at three locations within those ancient woodlands and, taking a precautionary approach, the environmental assessment stated that there would be small losses of the edge of a small ancient woodland at Pwll Diwaelod. During detailed design and the development of the detailed Construction Environmental Management Plan further work would be undertaken to minimise the effects on the ancient woodland at Pwll Diwaelod.

6.2.21 At Berryhill Farm 1.04 ha was identified as ancient woodland comprising a mature oak and ash woodland including old coppice stools. Part of the original woodland has been replanted with conifers and part of this area of the wood is infested with Himalayan balsam, a non-native invasive species. All of the wood would need to be removed in order to construct the Scheme. To the extent practicable, and avoiding areas affected by Himalayan balsam, during clearance of the wood, coppice stools of hazel and other shrub species would be lifted and replanted in areas of new planting. Woodland topsoil would also be stripped and placed in new planting areas to encourage the establishment of the woodland ground flora.

6.2.22 Roggiett Brake is located at the extreme eastern end of the Scheme at the end of the proposed haul road to Ifton Quarry. The proposed haul road would pass through the southern end of the ancient woodland at Roggiett Brake. However the haul road would use an existing track which was used as a haul road when stone was transported from the quarry for construction of the Second Severn Crossing. Some clearance of scrub which has colonised the former track at the south of Roggiett Brake would be required, as would trimming of vegetation on either side of the haul road, but there would be no significant loss of woodland.

6.2.23 NRW requested an explanation as to how the project would meet the statutory duty on Welsh Government to seek to maintain and enhance biodiversity, particularly in the context of loss and severance of the Gwent Levels SSSI area and impacts on protected species, including dormouse. The statutory duty under the Environment (Wales) Act 2016 Section 6(1) is that:

“A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.”

6.2.24 There is a specific duty regarding SSSIs in Section 28G of the Wildlife and Countryside Act 1981 (Document 3.1.7) which is that an authority to which this section applies has the duty “...*to take reasonable steps, consistent with the proper exercise of the authority’s functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest.*”

6.2.25 In his Proof of Evidence (WG 1.23.1), Mr John Davies explains in relation to these duties, and to the duty relating to conserving biodiversity under Section 40(1) of the Natural Environment and Rural Communities (NERC) Act 2006 (Document 3.1.13), that in testing options using WeITAG (Document 6.1.4); selecting a route and making highway design choices that would minimise the effect on the SSSIs; and developing a comprehensive SSSI mitigation strategy, the Welsh Government has sought to maintain and enhance biodiversity insofar as that is consistent with the proper exercise of its functions regarding the motorway network.

7. CONCLUSIONS

- 7.1.1 My Proof of Evidence demonstrates that the proposed new section of motorway would pass through European, nationally and locally designated sites, and would affect habitats that support protected and notable species, such as bats, otter, dormouse, water vole, badger, hedgehog, reptiles, great crested newts and other amphibians, birds, fish, invertebrates and plant species. A comprehensive suite of ecological surveys has been carried out, commencing in 2014, continuing through 2015 and with some further surveys being undertaken in 2016.
- 7.1.2 The new section of motorway would cross the River Usk/Afon Wysg Special Area of Conservation (SAC), a European designated site. The section of the river to be crossed through Newport also forms part of a nationally designated site: the River Usk (Lower Usk) Site of Special Scientific Interest (SSSI). The east pylon of the River Usk crossing would be located within an area of saltmarsh within the SAC and SSSI. The qualifying features of the SAC (fish and otters) would not be significantly affected. Saltmarsh is not a feature of the SAC but is a feature of the SSSI and would be replaced.
- 7.1.3 The new section of motorway would cross the Gwent Levels - St Bride's SSSI, the Nash and Goldcliff SSSI, the Whitson SSSI and the Redwick and Llandevenny SSSI. The special features of these sites are the reen and ditch habitats, supporting invertebrates and the shrill carder bee.
- 7.1.4 Implementation of the Reen Mitigation Strategy described in the Supplementary File note on the Reen Mitigation Strategy (September 2016 ES Supplement Appendix S2.1) (Document 2.4.4) would ensure that there was no reduction in the extent of the freshwater ecosystem which is the basis of much of the interest of the Gwent Levels SSSIs. In addition the provision of berms within the replacement reens, and

the lack of shading hedgerows, would provide good opportunities for growth of aquatic macrophytes.

- 7.1.5 In addition to the replacement of watercourses, mitigation for the loss of grazing marsh is proposed through the revised SSSI Mitigation Strategy (Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14)). The aim of the strategy is to provide mitigation for the loss of coastal grazing marsh habitat as a result of the Scheme and, where practicable, to ecologically enhance land within the Gwent Levels SSSIs.
- 7.1.6 Three mitigation areas have been identified, these being Maerdy Farm, Tatton Farm and Caldicot Moor. The land identified at Tatton Farm, Maerdy Farm and Caldicot Moor is sufficient, based on ratios agreed with NRW, to satisfy the requirement for mitigation of the loss of grazing marsh.
- 7.1.7 The Scheme would not result in land take from the Newport Wetlands or Great Traston Meadows nature reserves. Similarly there would be no effects on the main part of Magor Marsh Nature Reserve which is open to the public. The Gwent Wildlife Trust also owns land at Barecroft Fields designated as a SINC and forms part of the Redwick and Llandevenny SSSI. Accepting that the Gwent Wildlife Trust consider Barecroft Fields to be part of Magor Marsh Nature Reserve then there would be impacts on the reserve as a result of land take, and construction and operation of the new section of motorway. These effects would not be significant in EIA terms.
- 7.1.8 The proposed new section of motorway would also cross a number of non-statutory designated sites including nine Sites of Importance for Nature Conservation (SINCs), which include mostly river, grassland and industrial habitats, and three areas of ancient woodland. In addition, there would be temporary land take during construction within three SINCs. Overall the effects on the SINCs would be significant.

- 7.1.9 Significant effects of land take on habitats would be those on grazing marsh, lowland mixed deciduous woodland, hedgerows and open mosaic habitats on previously developed land. During construction there is the potential for significant effects on rivers, saltmarsh, eutrophic standing waters and reedbeds. Operation of the proposed new section of motorway would not have significant effects on habitats.
- 7.1.10 The target in designing the Scheme has been to replace BAP habitats at a ratio of 1.5:1. This has been achieved for coastal saltmarsh, reedbeds, woodland, and lowland meadow. For reasons which I have explained, lesser ratios are proposed for eutrophic standing waters, coastal grazing marsh, hedgerows, open mosaic habitats on previously developed land
- 7.1.11 Protected species licences would be required for works affecting badger, dormouse, bats and great crested newt and these licences would be obtained from NRW prior to the commencement of works. Mitigation strategies for these species have been developed in consultation with NRW and drafts published as Appendices to the December 2016 ES Supplement (Document 2.4.14).
- 7.1.12 Significant long term effects of land take on species would be those on shrill carder bee, other terrestrial invertebrates, common crane and Cetti's warbler. There would also be significant land take effects in the short or medium term, or significant effects during construction on wet grassland plants, aquatic plants, otter, freshwater invertebrates, shrill carder bee, other terrestrial invertebrates, bats, common crane, Cetti's warbler, barn owl, and wintering birds (redshank, gadwall and pintail). Operation of the new section of motorway would have significant long term effects on otter, bats, common crane and Cetti's warbler.
- 7.1.13 Welsh Government has a statutory duty to seek to maintain and enhance biodiversity, particularly in the context of loss and severance of the Gwent Levels SSSI area and impacts on protected species,

including dormouse. The statutory duty under the Environment (Wales) Act 2016 Section 6(1) (Document 3.1.16) is that :

“A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.”

7.1.14 In relation to this duty, and to the duties relating to furthering the conservation and enhancement of the features of SSSIs under Section 28G of the Wildlife and Countryside Act 1981 (Document 3.1.7), and conserving biodiversity under Section 40(1) of the Natural Environment and Rural Communities (NERC) Act 2006 (Document 3.1.13), that in testing options using WeITAG (Document 6.1.4); selecting a route and making highway design choices that would minimise the effect on the SSSIs; and developing a comprehensive SSSI mitigation strategy, the Welsh Government has sought to maintain and enhance biodiversity insofar as that is consistent with the proper exercise of its functions regarding the motorway network.

7.1.15 My Proof of Evidence includes all the 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.

7.1.16 I believe the facts which I have stated in my Proof of Evidence are true and that the opinions expressed are correct.

7.1.17 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.