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Department for Economy and Infrastructure



Llywodraeth Cymru
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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-

Proof of Evidence

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1. Introduction and Scope of Evidence

1.1 Personal details

- 1.1.1 My name is Simon Zisman. I am employed by RPS as Senior Director and Director of Ecology (Scotland). I hold a BSc Honours Degree in Geography, an MSc in Rural Resources and Environmental Policy, a PhD in coastal habitat conservation and am a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 1.1.2 My evidence is concerned with the Scheme design, baseline condition, environmental assessment, and mitigation elements of the proposed M4CaN Scheme (hereinafter “the Scheme”) in relation to birds.
- 1.1.3 I have worked as an environmentalist specialising in ornithology for over 20 years. My previous roles before joining RPS included Environmental Scientist at the Nature Conservancy Council, and Environmental Scientist at an international firm of consulting engineers (now part of Royal Haskoning DHV), where I worked primarily on coastal developments. I subsequently worked as Assistant Conservation Officer, then Conservation Officer for the Royal Society for the Protection of Birds (RSPB) from 1999 to 2006, protecting ornithological interests through planning casework, working on several developments in proximity to internationally designated estuarine wildlife sites. Whilst at RSPB, I was also responsible for delivering species conservation initiatives, including for farmland birds, and taking forward habitat creation and restoration projects on the Forth and Clyde estuaries.
- 1.1.4 I started at RPS in 2006 as Senior Ecologist, and took over responsibility for leading the Scottish Ecology team in 2007, subsequently becoming Senior Director. I have continued my specialist interest in birds, undertaking and over-seeing ornithological field work,

carrying out pre- and post-construction monitoring, and providing ornithological advice to developers and public bodies on a variety of projects at the pre-planning, submission and construction phases. This work has included a variety of site sensitivity assessments, ornithology chapters for Environmental Statements, mitigation strategies, Habitat Management Plans, Breeding and Wintering Bird Protection Plans, background technical reports, Habitats Regulations Assessments and inputs as ornithological expert witness to other public inquiries.

- 1.1.5 I have also managed Ecological Clerk of Works inputs on a number of large scale projects, including the dualling of the A9 between Kincaig to Dalraddy, in the Cairngorm National Park, and the Westlink and River Crossing, Inverness.
- 1.1.6 My team members have been involved in the ornithological work on the M4 Corridor around Newport (M4CaN) since June 2015, assessing the ornithology surveys already underway, and contributing ornithological inputs to the Environmental Statement (ES), associated technical reports, 2016 bird surveys and ES Supplements. My direct involvement dates from late November 2016. I have therefore drawn from the work of my RPS colleagues on this project and carried out field visits to the Scheme corridor and other locations relevant to the key species under consideration. Neither my team members nor I had involvement in the development of the route selection or initial work on the Scheme.
- 1.1.7 Parts of my evidence are therefore based on surveys carried out by others, including by Arup and their specialist consultants in 2014, Hyder in 2015, and my colleagues in RPS and other specialist consultants in 2015 and 2016. I adopt their findings as the basis of my evidence, and confirm that all the opinions expressed in this Proof of Evidence are my own.
- 1.1.8 The evidence I will give is based on my own conclusions regarding the potential effects of the Scheme on birds 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 bone fide opinions.

1.2 Scope and Structure of this Evidence

Ornithological Evidence

- 1.2.1 My evidence is concerned with the assessment of effects on birds resulting from the construction and operation of the Scheme.
- 1.2.2 In this evidence, I summarise the methods, baseline, effects and mitigation for the Scheme with reference to Chapter 10 Ecology and Nature Conservation of the March 2016 Environmental Statement (ES) (Document 2.3.2), the Statement to Inform an Appropriate Assessment (SIAA) (Document 2.3.4), the September 2016 ES Supplement (Document 2.4.4) and the subsequent December 2016 ES Supplement (Document 2.4.14). I also take account of consultee responses and objections in so far as they relate to birds, and I draw conclusions based on the evidence which I present.
- 1.2.3 Where appropriate in my evidence, I also refer to that of the other witnesses, specifically Mr Matthew Jones on route selection (WG 1.1.1), Mr Ben Sibert on the Scheme design (WG 1.5.1), Mr Peter Ireland (WG 1.7.1) on Environment, Mr Phillip Evans on noise and vibration (WG 1.14.1), Mr Richard Graham on water quality (WG 1.15.1) and Mr Keith Jones (WG 1.18.1) on details of ecological designations, legislation, policies and consultation.

General Ornithological Background

- 1.2.4 Birds have diverse physical and ecological characteristics, adopting various strategies to find food, shelter, nest sites and breeding habitat. Some species occupy the same area and habitats all year, while some move, either locally (for example from upland breeding habitats to

lowland or coastal wintering habitats) or more widely, undertaking international or continental migrations.

- 1.2.5 Consequently, mobility and migration differ between species and seasons. Certain birds come to Britain during the summer in order to breed, whilst others come during the winter to escape colder northern climates on their breeding grounds, and make use of available autumn, winter and spring food resources here. Other species are permanent inhabitants.
- 1.2.6 Birds present during this migration period can be transient, stopping off on their way to or from other wintering areas outside the UK, or they can remain in the UK, in one area or, moving between suitable habitats and locations, depending on food availability, weather and other factors such as disturbance.
- 1.2.7 Birds have a range of different food requirements. These vary between species and, in some cases, with the time of year or stage in the bird's life cycle. Physical and behavioural differences allow different species and in some cases, different sexes of the same species, to access different food resources. Food availability is one important factor that influences bird distribution, breeding success and mortality. The daily exposure of inter-tidal habitats is one example of variation in food availability that influences bird distribution at the local level.
- 1.2.8 As a diverse order, bird species have a range of habitat requirements. Some occupy specialised habitat niches, whilst others can take advantage of a broader range of conditions. Different species also have differing capacities to colonise new habitat types, with certain species having colonised urban and industrialised environments.
- 1.2.9 Birds need to nest each year in order to breed. Nest requirements vary considerably depending on the species, with most birds typically being ground nesting, shrub and tree nesting, or cliff nesting. Birds such as peregrine and barn owl have adapted to make use of artificial

structures for nesting. Nest location is driven by the need to reduce risk of predation and to access food resources to allow incubation and sufficient foraging for young when they hatch and leave the nest.

1.2.10 The distribution of birds defines their breeding, migratory or wintering range. Some species have a distribution that encompasses the UK or large parts of it, whilst others are localised. The UK forms part of the breeding or wintering range of many European species.

1.2.11 The distribution ranges and population sizes of breeding, migratory and over-wintering birds vary over time, with a range of influences being responsible for fluctuating numbers and evolving distributions. Birds can therefore be distributed in various ways, for example, abundant and widespread, abundant in smaller localised ranges, or uncommon but occurring across large ranges. Ranges can change in response to land use and environmental variables, including climate change. Certain species have become locally extinct due to human activity (notably habitat modification and hunting) but can return to former historical ranges through conservation efforts and/or natural re-colonisation.

1.2.12 Birds are the most comprehensively monitored species group in the UK. Consequently, as a result of local, regional and national monitoring schemes, there is a variety of pre-existing population and distribution data sources from which to draw on as part of the baseline assessment. Some bird monitoring covers all species whilst others focuses on a particular species group, species or a particular geographic area. Resulting information is reported in a variety of outlets, including County Bird Records and Reports, nature reserve monitoring reports, and a variety of other outputs.

1.2.13 The habitats along the M4CaN corridor are characteristic of many heavily modified lowlands in and around estuaries, broadly comprising a mix of farmland (with varying degrees of active farm management),

industrial and urbanised areas, brownfield sites, wetlands, hedges and pockets of woodland. Farmland habitats typically encompass a variety of features, depending on the intensity of management. Some areas within these landscapes are also designated for nature conservation.

Policy and Legislation Relating to the Protection of Birds

- 1.2.14 In common with other taxa, birds and their habitats receive protection through a variety of policy and legal mechanisms, details of which are provided by Mr Keith Jones in his Proof of Evidence (WG 1.18.1). The legislative and policy frameworks for international, national and non-statutory designations are detailed in Section 4 (sections 4.2, 4.3 and 4.4. respectively), together with details of their qualifying interests.
- 1.2.15 In relation to designated sites, birds are protected through European legislation, notably the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Document 3.1.21) and Council Directive 2009/147/EC on the Conservation of Wild Birds (Document 11.3.35). Both are transposed into national law in England and Wales by the Conservation of Habitats and Species Regulations 2010 (commonly referred to as the ‘Habitats Regulations’) (Document 3.1.22).
- 1.2.16 Special Protection Areas (SPAs) are sites classified in accordance with Article 4 of the EC Directive 79/409/EEC on the Conservation of Wild Birds (Document 11.3.35) which came into force in April 1979 (often referred to as the Birds Directive). They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.
- 1.2.17 Details of the operation of SPA-related regulations in relation to road projects are provided by Mr Keith Jones in his Proof of Evidence (WG 1.18.1). Effects on the European Sites have been assessed separately in a process known as Assessment of Implications (of highways and/or

road projects) on European Sites, and the results of the assessment have been provided in the form of a SIAA (Document 2.3.4).

1.2.18 The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) (Document 11.3.36) is also relevant and covers all aspects of wetland conservation and wise use. The Convention has three main 'pillars' of activity: the designation of wetlands of international importance as Ramsar sites; the promotion of the wise-use of all wetlands in the territory of each country; and international co-operation with other countries to further the wise-use of wetlands and their resources. The UK ratified the Convention in 1976 and has generally chosen to underpin the designation of its Ramsar sites through prior notification of these areas as Sites of Special Scientific Interest (SSSIs). Accordingly, these receive statutory protection under the Wildlife & Countryside Act 1981 (as amended) (Document 3.1.7). Government has issued policy statements relating to the special status of Ramsar sites. This extends the same protection at a policy level to listed Ramsar sites in respect of development as that afforded to sites which have been designated under the EC Birds and Habitats Directives.

1.2.19 The Welsh Government has particular responsibilities with respect to Sites of Special Scientific Interest (SSSIs) under section 28G of the Wildlife and Countryside Act 1981 (Document 3.1.7). 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.*”

1.2.20 As described by Keith Jones in his evidence, Sites of Importance for Nature Conservation (SINCs) are important for conservation of local biodiversity, enabling the planning system to recognise and thus protect or enhance areas of substantive nature conservation value

outside the limited network of statutorily protected SSSIs. A number of them include named species of birds or highlight their importance for certain bird groups so are considered below.

1.2.21 Birds, their nests and eggs are also afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000 (Document 3.1.12). With certain exceptions for game birds and so-called 'pest' species, it is an offence to:

- a) intentionally kill, injure or take any wild bird;
- b) intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- c) intentionally take or destroy the egg of any wild bird.

1.2.22 Schedule 1 birds cannot be intentionally or recklessly disturbed when at or near an active nest and there are penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development, even in circumstances where that development is fully authorised by consents such as a valid planning permission.

1.2.23 A number of birds are listed under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 as of principal importance for the conservation of biodiversity in Wales. These include lapwing, curlew, cuckoo, kestrel, starling, song thrush, dunnock, house sparrow, tree sparrow and bullfinch.

1.2.24 The Welsh Government Trunk Road Estate Biodiversity Action Plan (TREBAP) 2004-2014 (Document 6.1.1) and the Newport Local BAP 2014 (Document 11.2.30) both contain habitat action plans for habitats that are important for birds. The TREBAP also contains a species action plan for barn owl.

Designated Sites Relating to Birds

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- 1.2.25 The boundaries of statutory designated nature conservation sites within the study area are shown on March 2016 ES Figures 10.1 (International Statutory Sites), 10.2 (National Statutory Sites) and 10.3 (Non Statutory Sites) (Document 2.3.2). These include sites specifically designated to protect birds, notably SPAs and those which include birds as part of wider nature conservation interests.
- 1.2.26 The Severn Estuary SPA/Ramsar Site is one of the largest estuaries in Britain. It straddles the coasts of Wales and England and encompasses extensive intertidal mud-flats and sand-flats, rocky platforms and islands. A consequence of the large tidal range is that the Severn Estuary has an extensive intertidal zone, one of the largest in the UK. The Severn Estuary is primarily of importance to birds during the spring and autumn migration periods (for waders), and in winter (for large numbers of swans and ducks, as well as waders).
- 1.2.27 In the five year period leading up to its designation in 1993, the average peak count of birds in the Severn Estuary was 68,026, made up of 17,502 wildfowl and 50,524 waders. The species for which the SPA/Ramsar Site is designated are included in Table 5.3 of the Statement to Inform Appropriate Assessment (SIAA) (DOC. 2.3.4). Apart from one qualifying breeding species, lesser black-backed gull, which nests on the islands of Steep Holm and Flat Holm within the estuary, all other qualifying SPA species are migratory or over-wintering waders and wildfowl.
- 1.2.28 Whilst of international importance for birds, there are large urban developments on the estuary, including the cities of Cardiff, Newport and Bristol. The combination of cities, transport infrastructure (including bridges) etc. within estuarine SPAs/Ramsar sites is common around the UK.
- 1.2.29 The Scheme does not cross the SPA and Ramsar Site so will not result in any loss of its inter-tidal or other habitats. The proposed M4CaN is

closest to the SPA where it crosses the lower reaches of the River Ebbw and, although further away, the River Usk. Qualifying species using the crossing locations as flyways or using adjacent habitats for foraging, loafing or roosting are considered to be connected to the Severn Estuary SPA and Ramsar Site.

1.2.30 The only SPA and Ramsar qualifying species present in significant numbers along the new section of motorway are redshank, gadwall and pintail. These birds were recorded around the Usk and Ebbw river crossings and to the south of the Tata Llanwern Steelworks. The other thirteen SPA qualifying species were either not recorded, or were present in insignificant numbers. Consequently, there was no likely significant effect anticipated on the SPA in relation to these species.

1.2.31 In conjunction with the March 2016 ES (DOC. 2.3.2), an Assessment of Impacts on European Sites (AIES) has been carried out under guidance in DMRB HD44/09 (Document 6.1.8) to fulfil the requirements of the Habitats Regulations (Document 3.1.22) in relation to potential effects on European sites, notably the Severn Estuary SPA. The results were published in the SIAA (DOC. 2.3.4) and are also relevant to the Severn Estuary Ramsar Site in relation to birds. The conclusion of the SIAA was that there would be no adverse impact on the integrity of the Severn Estuary SPA/Ramsar Site, either alone or in combination with other plans or projects.

1.2.32 The findings of the March 2016 ES (DOC. 2.3.2), the September 2016 ES Supplement (Document 2.4.4) and SIAA (Document 2.3.4) on the Scheme's impact on the SPA (and associated Ramsar site) are reported in the Sections below.

1.2.33 Of the five Sites of Special Scientific Interest (SSSI's) crossed by the Scheme, four are within the Gwent Levels but have no named ornithological qualifying features. The fifth SSSI is the River Usk (Lower Usk) SSSI, across the southern end of which a new crossing will be

built. The SSSI has kingfisher, dipper and grey wagtail listed as breeding features, but habitats in this lower part of the SSSI are not ideal for these three birds (the SSSI is many kilometres long and is predominantly freshwater, the main habitat of these species).

Greenshank and green sandpiper are the two SSSI wintering and passage species listed. Both use inter-tidal brackish waterways such as the lower reaches of the River Usk.

1.2.34 There are two other SSSIs in the wider area that have birds as named features.

1.2.35 Magor Marsh SSSI (part of a Gwent Wildlife Trust Reserve) lies approximately 700 m east of the new section of motorway and is the largest remnant of the formerly extensive fenlands near the Gwent coast. There are no named birds as qualifying features but the citation describes Magor Marsh as an important breeding ground for water and marsh birds.

1.2.36 The Newport Wetlands SSSI (encompassing a National Nature Reserve and RSPB Reserve) is approximately 1.4 km south of the proposed new section of motorway and supports nationally (UK) important over-wintering numbers of shoveler and black-tailed godwit. Other over-wintering species that use the site include gadwall, wigeon, shelduck, dunlin, redshank, whimbrel and curlew. During the summer, the wet grasslands, saline lagoons and reedbeds on the site support an exceptional variety of breeding birds, including nationally (UK) important breeding populations of avocet, redshank, lapwing, water rail, Cetti's warbler and bearded tit. In addition, breeding populations of ringed plover and little ringed plover are also present. The Newport Wetlands Nature Reserve is managed as a partnership between NRW, RSPB and Newport City Council and is located within the western part of the Newport Wetlands SSSI.

1.2.37 The assessment of the Scheme's impact on SSSIs with birds as named features is presented in Chapter 10: Ecology and Nature Conservation of the March 2016 ES (Document 2.3.2) and summarised below.

1.2.38 Of the Sites of Importance for Nature Conservation (SINCs) within 1 km of the Scheme, one (Bowkett Field, Barecroft) makes reference to birds in general, noting that scrub, field margins and reens host many bird species. The Land at Barecroft Common SINC refers to nesting birds such as lapwing and curlew. Five other SINCs within 1 km refer specifically to Cetti's warbler in their outline descriptions (LG Duffryn Site 1 (South Lake Drive), Solutia Site, Alpha Steel Site, Elver Pill Reen Grassland and Pond, and Greenmoor Pool), whilst Afon Ebbw River makes reference to kingfisher and sand martin.

1.2.39 The findings of the March 2016 ES (DOC. 2.3.2), September 2016 ES Supplement (Document 2.4.4) and December 2016 ES Supplement (Document 2.4.14) on the Scheme's impact on SINCs with birds as features are summarised below.

Structure of Evidence

1.2.40 My 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 Birds
- e) Mitigation for Birds
- f) Residual Effects of the Published Scheme on Birds
- g) Consultees' Responses and Objections to the M4CaN Scheme
- h) Summary and Conclusions

1.2.41 I respond to objections which have been made to the Scheme relevant to my expertise, and finally draw conclusions based on the evidence which I present.

1.2.42 As noted above, in my evidence I also refer to that of Mr Matthew Jones (WG 1.1.1), Mr Ben Sibert (WG 1.5.1), Mr Peter Ireland (WG 1.7.1), Mr Phillip Evans (WG 1.14.1), Mr Richard Graham (WG1.15.1) and Mr Keith Jones (WG 1.18.1).

2. Methodology and Consultation

2.1 Methodology

2.1.1 Bird surveys associated with previous iterations of the M4 improvement had been undertaken during 2006 to 2008. Taking their results and coverage into account, and consultation feedback from NRW (refer to Consultation section below), bird surveys for the current Scheme were carried out by Arup in 2014, Hyder in 2015, Thomson Ecology and RPS in 2015 and 2016. The resulting winter and breeding bird data have enabled the likely impacts of the Scheme on birds to be assessed and relevant mitigation to be designed.

2.1.2 An account of these surveys is contained in Chapter 10 of the March 2016 ES (Document 2.3.2) (specifically ES Appendices 10.12, 10.13 to 10.16 and 10.29), and the ES Supplement (September 2016) Appendices (Document 2.4.4), specifically Appendices S10.4 and S10.5. Assessment followed relevant guidance, listed in 10.3.1 of the March 2016 ES (Document 2.3.2). Mr Keith Jones (WG 1.18.1) also provides a timeline of consultations in his Proof of Evidence, which includes NRW feedback on survey method.

2.1.3 The surveys for the Scheme therefore built on previous results, took account of feedback from NRW, and as a result have ensured coverage of habitats for wintering, passage and breeding birds, distributed along the corridor of land within the study area.

2.1.4 The survey areas included floodplain grazing marsh, farmland, wooded field boundaries, tracks and roads, river and estuary edges, reed beds, wet scrub, lagoons, woodland, reens and ditches.

Winter Bird Surveys

2.1.5 Following on from a range of surveys for earlier iterations of the motorway, surveys for the current M4Can Scheme began in early 2014, with winter bird surveys carried out on behalf of the Welsh Government

by Arup. These consisted of walkover surveys and vantage point surveys from January to March 2014. Survey methods were agreed with NRW and reported in Appendix 10.12 of the March 2016 ES (DOC. 2.3.2).

2.1.6 2014/2015 winter bird surveys were conducted from September 2014 to April 2015 by Hyder Consulting (UK) Ltd, also on behalf of the Welsh Government, using transect and vantage point surveys, informed by further guidance from NRW. Together with the additional desk study requested by NRW, the winter 2014/2015 results are reported in Appendix 10.14 of the March 2016 ES (Document 2.3.2).

2.1.7 Further winter surveys were completed by Thomson Ecology, for RPS and on behalf of the Welsh Government in October 2015 and March 2016 inclusive, using transects and vantage point surveys consistent with the methods used for the winter 2014/2015 survey by Hyder Consulting (UK) Ltd. Results from this fieldwork were reported in Appendix S10.4 ES Supplement (Document 2.4.4).

Breeding Bird Surveys

2.1.8 Breeding season bird surveys for the M4CaN Scheme were carried out by Arup in 2014 using standard generic breeding bird survey methods. Results are reported in Appendix 10.13 of the March 2016 ES (Document 2.3.2).

2.1.9 In 2015, breeding season surveys were carried out by Thomson Ecology. To provide up-dated additional detail, the 2015 fieldwork also included targeted surveys for breeding waders and for barn owl. Waders are a species group that is known to potentially breed on grazing marsh. Results were reported in March 2016 ES (Document 2.3.2) Appendix 10.28.

2.1.10 Barn owls were known to be in the general area of the Gwent Levels, following the 2014 Phase 1 survey. Barn owl surveys were therefore

completed in 2015, taking account of desk study information and a review of previous locations identified through Phase 1 Habitat and bat surveys. The resulting barn owl results were reported in the March 2016 ES (Document 2.3.2) (Appendix 10.29). As noted above, barn owl is specially protected under the Wildlife and Countryside Act 1981 (Document 3.1.7). Taking into account the protected status of barn owl, the status of the species in the vicinity of the proposed motorway is valued as County (Medium) value.

2.1.11 In 2016, as part of the on-going commitment to up-date survey coverage, additional breeding bird surveys were completed. These were reported in Appendix S10.5 of ES Supplement (Document 2.3.2 and Document 2.4.4).

2.1.12 Species-specific surveys were also carried out for Cetti's warbler, continuing the up-date of the data on this species. The Llanwern area is known to be a stronghold in Gwent for Cetti's warbler and this was confirmed by the surveys. Cetti's warbler is specially protected under the Wildlife and Countryside Act 1981 (Document 3.1.7). The population of Cetti's warbler present in the study area is of National (High) value.

2.1.13 Following records of common cranes in the Gwent Levels in 2014 and 2015, the M4CaN team recorded the species in 2016. Although not a Schedule 1 or Annex 1 bird, common crane is a key species, given its recent return to breed in Wales. Crane surveys were therefore set up in 2016 to monitor the activity of this species at its breeding location within the Scheme corridor, following liaison with relevant consultees. The survey information has been shared with NRW and RSPB and the report of the survey was published as Confidential Appendix SS10.8 of the December 2016 ES Supplement (Document 2.4.14). The single pair of cranes bred successfully, fledging one chick. This is the first known breeding of the species in Wales after an absence of some 400

years. On this basis common crane is treated as a nationally important bird, and of High value.

2.1.14 The crane survey information has been shared with NRW and RSPB but at these parties behest RPS has been asked to maintain confidentiality of this data.

2.2 Consultation

2.2.1 Consultation with key stakeholders on this Scheme dates back to 2013 but forms part of an even longer history of dialogue on bird surveys which encompass earlier phases of this development, for which bird surveys were also completed. This is evident in the EIA Scoping Report (Appendix 5.1 of the March 2016 ES, (Document 2.3.2)), including Appendix 9.1 of that report. Consultation in relation to this current phase is summarised in the Proof of Evidence of Mr Matthew Jones (WG 1.1.1) and also in the Proof of Evidence of Mr Keith Jones (WG1.18.1), specifically in relation to ecology and nature conservation (Section 2.3).

2.2.2 As noted in paragraph 2.2.1 of Appendix 10.12 of the March 2016 ES (Document 2.3.2), the approach to the winter bird survey for 2014 was agreed with NRW during a meeting in December 2013 and via correspondence in February and March 2014.

2.2.3 NRW were also consulted and agreed the scope of additional bird surveys necessary to inform the EIA at a meeting on 30th January 2015 at a meeting with Hyder Consulting (the Employer's Agent (now incorporated into Arcadis) and NRW. A note of this meeting was included in the Scope of Ecological Surveys report (Appendix 9.1 of the ES Scoping Report, which is in Appendix 5.1 of the March 2016 ES (Document 2.3.2)).

2.2.4 Subsequent meetings with NRW considered a draft of the Ecology Survey Scoping Report. These meetings were held on 9th April 2015,

12th May and 15th May 2015. Based on these discussions further surveys were carried out in 2015 by RPS (or sub consultants commissioned by RPS) in order to further inform the assessment of the likely effects of the Scheme, specifically breeding bird, breeding wader and breeding barn owl surveys. Surveys of buildings for bats also provided additional information on potential breeding barn owl locations. NRW's formal response to the Scoping Report (including some comments on the scope of surveys) was provided in a letter dated 18th September 2015, after the summer survey season of 2015 was completed.

2.2.5 Although the ES (DOC. 2.3.2) was published in March 2016, winter bird surveys (September 2015 to March 2016) and breeding season surveys were completed over the 2016 breeding season, in response to these NRW comments, and also to provide on-going up-date and further baseline information.

2.2.6 RPS, on behalf of the Welsh Government, consulted RSPB during 2016 in relation to crane survey and breeding data, and has met with them on 18th January 2017 to discuss bird issues and possible areas for further data sharing in 2017.

3. Baseline Conditions

3.1 Desk study data

3.1.1 Desk study data in relation to this Scheme were collated in three reviews. The 2014 Arup desk study identified records of key bird species within 2km of the Scheme, including data from the New M4 project (Appendix 10.2 of the March 2016 ES, (Document 2.3.2)). Hyder undertook an up-date in early 2015, and identified records of 120 species of protected and notable birds within 2km of the proposed new section of motorway. RPS subsequently carried out a further desk study review for the March 2016 ES, drawing, as previous desk studies had done, on a number of survey schemes, publications and records, for example those provided in annual reports from the Gwent Ornithological Society.

3.1.2 Birds identified as key species were Annex 1 qualifying species of the Severn Estuary SPA or feature of the Severn Estuary Ramsar description, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (Document 3.1.7) and notable species listed on other conservation lists, such as Red or Amber listed Birds of Conservation Concern (BoCC) (Document 11.3.19).

3.1.3 Bird records were distributed across the search area but with concentrations of records around Magor Marsh, Newport Wetlands Reserve, around Newport and around Marshfield, and across the Gwent Levels generally.

3.2 Bird activity

3.2.1 The bird and other surveys completed for the Scheme are listed by Mr Keith Jones in his Proof of Evidence (Section 3, WG 1.18.1). Results

from these bird surveys have been presented in the March 2016 ES (Document 2.3.2), September 2016 ES Supplement (Document 2.4.4) and in the Confidential Appendix SS10.8 of the December 2016 ES Supplement (Document 2.4.14) on cranes.

3.2.2 Following a review of the baseline bird data and ES assessment of ornithological effects, I have considered survey findings for key species in relation to the designated sites in the area.

SPA Qualifying Species

3.2.3 As I have already noted, the Severn Estuary SPA and Ramsar site is primarily designated for its wintering and passage birds, with lesser black-backed gull being the only qualifying breeding species. As habitats encompassed by the Scheme are generally either unsuitable, sub-optimal or distant from the SPA, its qualifying species were either not recorded or were typically present in low numbers.

3.2.4 The only new section of motorway which is nearer to the SPA, and contains suitable habitat is where the Severn Estuary SPA projects northwards, into the lower reaches of the River Ebbw and Usk. The habitat underlying and adjacent to the Scheme crossings are saltmarsh and intertidal mudflats within the channels of the Rivers Ebbw and Usk, as shown in March 2016 ES (Document 2.3.2) Figure 10.4 and the plan of intertidal habitats at Figure 10.6. Further habitat details are summarised by Mr Keith Jones (WG 1.18.1). Given that inter-tidal mudflat and saltmarsh habitats at the new motorway crossings at the Esk and Usk Rivers may be used by birds that have some connectivity with the SPA/Ramsar site, I have reviewed the baseline data, impact assessment and mitigation in relation to these birds in the sections below.

3.2.5 Survey results showed that the study area populations of three named SPA birds were of National (High) value (redshank, gadwall and pintail). Three were of County (Medium) value (teal, pochard and

shoveler), and six had District (Low) value populations (shelduck, wigeon, tufted duck, curlew, lapwing and mallard).

Redshank

- 3.2.6 Redshank are small wading birds. As a breeding species they mainly occur in wet grassland and saltmarsh habitats. Their numbers increase markedly with passage and over wintering birds arriving to take advantage of the food resources of estuaries around the UK, during which time they are reliant on the inter-tidal prey inhabiting mudflats.
- 3.2.7 From desk study and field surveys, redshank is the most frequently recorded and abundant SPA qualifying species recorded in the study area.
- 3.2.8 Winter walkover surveys recorded redshank each year from 2014 to 2016. The maximum count during January to March 2014 walkovers was 130 birds, representing 5.13% of the latest SPA population estimate of 2,536 (2,013 birds being the original SPA citation). The maximum redshank count during September 2014 to March 2015 walkover surveys was 38 birds (1.5%) and over 100 birds (minimum 3.9%) during the October 2015 to March 2016 surveys.
- 3.2.9 Vantage point surveys were also carried out at the Scheme's two river crossings. January to March 2014 vantage point surveys identified two mid to high tide redshank roosts, one on the western bank of the Ebbw River, in the vicinity of the proposed bridge crossing (opposite the southern area of the landfill site) and the second several hundred metres downstream (Appendix 10.12 of the March 2016 ES (Document 2.3.2)). The Ebbw crossing is shown in the graphic in Appendix A, for illustrative purposes. Redshank were recorded at the River Usk vantage point location, but with much lower activity levels in comparison to the Ebbw. Redshank distribution was similar during the more intensive September 2014 to March 2015 surveys, with the majority of observations being on the banks of the River Ebbw, and a

small number also recorded foraging in the sludge beds to the east of the River Usk. The birds were recorded foraging and roosting throughout both vantage point survey areas. On the River Usk, birds appeared to favour the area just north of the crossing point. On the Ebbw River, the favoured foraging and roosting areas were just to the north and south of the crossing point. The October 2015 to March 2016 surveys recorded a broadly similar distribution.

Gadwall

3.2.10 Gadwall is a widespread duck species present all year round, but with highest numbers in winter when populations are boosted by continental immigrants. The early 2014 winter survey recorded a maximum of two gadwalls during winter walkover surveys, 0.83% of the recent SPA population estimate of 241 birds (330 at SPA citation), within the large reens in the field network south of Tata Llanwern Steelworks site. No gadwalls were recorded during vantage point surveys at either river crossing. Observations of gadwall on both the Ebbw and Usk Rivers were again low over the 2014/2015 winter, with only a single duck recorded by vantage points surveys on the Ebbw (none on the Usk). Walkover transects recorded gadwall throughout September to December (inclusive), including a peak count of 33 birds (October 2014), 13.69% of the most recent SPA population estimate. These birds were mostly in Section 3 (favouring ditches to the south of the Tata Llanwern Steelworks site (with a record of 4 birds in Section 4). The 2015/2016 walkover surveys recorded gadwall numbers in this area with broadly comparable numbers (30 in November 2015), and no gadwalls were recorded from the river vantage points.

Pintail

3.2.11 Pintail is a duck with a wide geographic range across the northern hemisphere. Birds migrate to the UK during winter months as these areas provide a refuge from colder climes in Iceland and Scandinavia,

where this species breeds. This species was not recorded in the early 2014 surveys. The 2014/2015 walkover surveys recorded foraging and roosting to the south of the Tata Llanwern Steelworks site, with a maximum count of 25 birds, 4.89% of the Severn Estuary mean 2008/2009 to 2012/2013 peak of 511 birds (compared to the SPA citation mean peak 1991/1992 – 1995/1996 count of 599 birds).

Teal

3.2.12 Teal is a widespread small dabbling duck that occurs across the UK, and in Wales as a passage and over-wintering species. From January to March 2014, the maximum count during winter walkovers was 40 birds, which represents 0.90% of the latest Severn Estuary SPA population estimate of 4,459 (the citation population being 1,998 birds). During the September 2014/March 2015 winter walkover surveys, teal were distributed across the site but appeared to favour the wet ditches to the south of the Tata Llanwern Steelworks site. The maximum winter walkover count was 102 birds, representing 2.29% of the latest SPA population estimate. The October 2015 to March 2016 surveys resulted in a similar peak count of 111 birds, with the species recorded in each month. Whilst widely distributed, they were again mainly distributed in count Section 3 (Tata Llanwern Steelworks).

3.2.13 From the January to March 2014 vantage point surveys at the Scheme's two river crossings a maximum count of 57 teal was observed at the River Ebbw crossing but were not recorded at the River Usk. A maximum count of 34 birds was recorded during winter 2014/2015 vantage point surveys. The 2015/2016 vantage point surveys recorded small numbers in flight at both the River Usk and River Ebbw.

SSSI Ornithological Features

3.2.14 The only SSSI crossed by, or within proximity of the new section of motorway that has birds as notified features is the River Usk (Lower

Usk) SSSI (Document 11.4.8). This site would be crossed by a bridge near the SSSI's southern end. The birds in this location have been surveyed by winter vantage point, walkover and breeding bird surveys since January 2014, and also by preceding surveys for the earlier versions of the M4 scheme. The broad areas encompassing winter bird interests are shown on Figure 10.8 of the March 2016 ES (Document 2.3.2).

3.2.15 The River Usk (Lower Usk) SSSI citation notes it supports a wide range of riverside breeding birds such as sand martin and kingfisher nesting in eroding earth cliffs. Yellow wagtail, grey wagtail and dipper occur with increasing frequency above the tidal limit at Newbridge. In addition it notes that the cut-off meander at Llanfihangel Gobion is an important area for wintering and passage migrants including teal, greenshank and green sandpiper (Document 11.4.8).

3.2.16 The M4CaN crossing over the River Usk therefore would not affect the part of the SSSI where the notified bird features are concentrated. The SSSI's breeding feature species were either not recorded or were recorded in very low numbers, as habitats in this part of the river are generally unsuitable or absent for the majority of birds featured, and sub-optimal for grey wagtail. For its three wintering SSSI bird features the crossing location does include suitable habitats. The survey data on teal have already been considered above. The remaining two wintering and passage species, greenshank and green sandpiper, were either not recorded or were recorded in very low numbers.

3.2.17 The Magor Marsh SSSI is as an important breeding ground for water and marsh birds (Document 11.4.1). There will however, be no land take, construction or operational impacts on this SSSI, given the separation distance from the Scheme, and therefore no effects on its bird interests.

3.2.18 The Newport Wetlands SSSI is designated for breeding and over-wintering birds (Document 11.4.7). As a result of its distance from the Scheme, there will also be no direct land take or impacts from construction or operational disturbance. None of its notified bird species are therefore considered further.

3.2.19 Overall, the survey and desk study results demonstrate that the Scheme would not have a significant impact on any qualifying bird features of SSSIs crossed by the Scheme or other SSSIs in the wider area.

SINC'S With Ornithological Features

3.2.20 The majority of the SINC'S that are crossed by, or are in proximity to the Scheme, do not have specific bird interests.

3.2.21 The Afon Ebbw River SINC does, however, have kingfisher and sand martin as named interests but these were not recorded in significant numbers by the vantage point surveys.

3.2.22 Cetti's warbler, a Schedule 1 breeding bird, is a named interest in a number of SINC'S crossed by the Scheme. The species only began to breed in the United Kingdom in 1973 and has seen a rapid expansion in numbers across southern Britain, believed to be taking advantage of milder winters. A small passerine, it is vocal during the breeding season but is also skulking and can therefore be difficult to detect. Its presence is most often given away by its loud vocal behaviour. It is a resident species, and inhabits areas with a mix of open scrub, reed bed, and open water, and forages on small insect prey. It has become sufficiently well established that it is no longer considered a rare species and the species was recorded in six of the eight breeding bird transects carried out in 2014. Following liaison with stakeholders, a targeted breeding Cetti's warbler survey was carried out in 2016. In combination with previous data, this revealed the greatest concentration of singing males to be south of the Tata Llanwern

Steelworks area from Tatton Farm to Green Moor, notably where there is a combination of reedbeds, scrub, grassland and ditches and water bodies. The broad areas that encompass the majority of Cetti's warbler recorded are shown on Figure 10.8 of the March 2016 ES (Document 2.3.2).

3.2.23 Five of the SINC's within 1 km of the Scheme name Cetti's warbler in their outline descriptions, with one more (Bowkett Field, Barecroft) noting scrub, field margins and reens hosting many bird species (a suitable habitat combination for Cetti's warbler). Of these SINC's, only Solutia and Bowkett Field would be directly affected by the new section of motorway.

3.2.24 The Solutia SINC would be directly impacted through loss of habitat. It comprises a series of improved and semi-improved grasslands with traditional ditches and ponds. Chainage 11550 to 12350 would cut through the southern part of the SINC and Water Treatment Area 6 would be located in the south eastern part of the site. The total area lost from the SINC would be approximately 12.70 ha out of a total area of 64.40 ha (19.7%), with 6.03 ha of the remainder severed from the rest by the motorway, leaving it isolated to the south. This part of the SINC would still be contiguous with the Alpha Steel SINC and Great Traston Meadow (owned by the Gwent Wildlife Trust) to the south. Cetti's warbler was recorded at the southern boundary of the Solutia SINC in the 2014 breeding bird survey.

3.2.25 Bowkett Field, Barecroft SINC is described as hosting many bird species and Cetti's warbler was recorded in the 2014 breeding bird survey at the site's northern end of the SINC. The Scheme would remove 0.53 ha of the 2.13 ha SINC (24.9%) and 0.1 ha (2.11%) of the adjoining Barecroft Field, which shares similar habitat.

3.2.26 Elver Pill Reen Grassland and Pond SINC has Cetti's warbler as a named species, and had three singing males recorded from with the

site during the 2016 breeding bird surveys, with additional singing birds in proximity to the SINC boundary.

3.2.27 Although not a named species in the description of interests for the Spencer Works SINC, the 2016 breeding season survey recorded Cetti's warbler calling within and adjacent to it, in the Tata Llanwern Steeleworks lagoons area. The SINC's interests are marshy grassland and wet drains. The Scheme would remove 59.8% of the SINC's area, from chainage 15700 to 16300.

3.2.28 The extent of habitat loss from the four SINC's known to support Cetti's warbler (Solutia, Spencer Works, Barecroft Fields and Bowkett Field, Barecroft) is 16.14 ha.

3.2.29 Land at Barecroft Common SINC has supported nesting birds such as lapwing and curlew. The site comprises three large flat fields, in close proximity to Magor Marsh Gwent Wildlife Trust Reserve and other SINC's (none of which have named bird species).

Common Crane

3.2.30 Whilst not covered by any designations, and whilst also not a protected species, common crane has been recorded in the Scheme area, and has been assessed as a key species. It is a tall grey bird, with long legs and neck linked to wetland areas and open grassland habitats. The birds in the area are from The Great Crane Project, a conservation initiative centred around south west England, which has undertaken a programme of releasing captive bred birds into the wild.

Barn Owl

Barn owl is a Schedule 1 species and so has also been considered a key species. It inhabits southern Wales in small numbers and there are suitable foraging and nesting habitats along and adjacent to the Scheme. A likely nest site was identified but no barn owl were recorded

breeding in the study area. The 2016 barn owl survey results are presented in the March 2016 ES (Document 2.3.2) Appendix 10.29.

3.3 Evaluation Methodology

3.3.1 The effects of the published Scheme on ornithological interests are described in Chapter 10 of the March 2016 ES (Document 2.3.2). This explains that the assessment was carried out taking account of the relevant guidance. The methodology for evaluating the importance of ornithological interests is relatively well established. I have considered the evaluation criteria used in the March 2016 ES and found them to be valid and appropriate.

3.3.2 Having considered the baseline bird interests, the Scheme's predicted impacts on these are set out in the following Section.

4. Potential Effects of the Scheme on Birds

4.1.1 Road schemes can affect birds in various ways. Areas of potential impact which are relevant to the Scheme are as follows:

4.1 Effects of land take

4.1.1 Direct habitat loss would result from permanent land take for the road, added to which there would be temporary habitat loss for areas needed to accommodate construction activities. The loss of habitat can remove breeding, foraging, roosting and commuting areas, or a combination of these.

4.1.2 The indirect effects of land take would be severance or fragmentation of habitats where a scheme creates a physical barrier, affecting their continuity and accessibility for birds. This can prevent or disrupt movement of birds between nesting, roosting and feeding areas. The severity of fragmentation effects on most bird species is moderated by their ability to fly between sites.

4.2 Effects of construction

4.2.1 Road construction can affect birds by causing disturbance. This can result in birds using up extra energy if forced to take flight, or it can reduce their energy intake if they are put off from feeding. The consequences of both are generally inconsequential in terms of productivity or mortality, providing alternative habitat is available for them to move to, and that the frequency and duration of disturbance is not excessive.

4.2.2 The most potentially harmful time for birds to be disturbed is when they are nesting. This is because even temporary abandonment of eggs or young can lead to loss of eggs (due to chilling) or young (due to predation). Disturbance to nesting species of birds listed on Schedule 1

of the Wildlife and Countryside Act 1981 (as amended) (Document 3.1.7) is illegal and therefore must be avoided.

- 4.2.3 The causes of potential disturbance during construction are noise and movement (of construction vehicles and staff). Depending on the volume of noise, its suddenness and duration, it can temporarily disturb roosting, foraging, commuting or breeding birds. Movement of machinery and people can have the same effect, although generally, birds are more sensitive to people rather than vehicles, because they perceive them as a greater threat.
- 4.2.4 Many birds can habituate to disturbance to varying degrees, although this does depend on setting, species and the nature of the disturbance.
- 4.2.5 The other potential effect from construction is a risk of water pollution as a result of run-off from construction areas, with wildfowl and waders being the groups at risk. Ingestion of pollutants can be harmful but impacts could also arise indirectly by affecting aquatic invertebrates, fish or aquatic vegetation. Any resulting reduction in invertebrate or fish prey items, or the reduced abundance, die back or smothering of vegetation may have impacts on food availability for these birds.
- 4.2.6 There may be other potential subtle effects from construction lighting or settlement of dust on vegetation and waterbodies nearby, influencing insect prey distribution and abundance, that may have consequences for insectivorous species.

4.3 Effects of the Operational Road

- 4.3.1 Once the road is operational, birds can be killed or injured if hit by moving vehicles (this is not generally a problem during construction, because of speed limits placed on construction traffic). The extent to which this is a risk depends on the species' flight characteristics, and the habitats either side of the road. Of the key species, barn owl is the only bird known to be relatively susceptible to road collisions. This is

potentially for a number of reasons, including its low flight speed and typically low flight height over open spaces.

- 4.3.2 Disruption of hydrology may affect wetland sites and watercourses that provide foraging or breeding habitat.
- 4.3.3 Polluted runoff from roads may affect water courses that provide foraging or nesting habitat for birds.
- 4.3.4 There may be on-going effects from lighting, interfering with effective feeding and/or roosting.
- 4.3.5 Traffic noise may suppress breeding success in the vicinity of the road for species which depend on singing and/or calls for attracting and communicating with mates and off-spring (11.3.60).
- 4.3.6 All of the above effects may cumulatively contribute to an overall reduction in the value of habitats for birds close to roads, exacerbating the barrier/severance effect from land take.

5. Potential Effects and Mitigation for Birds

5.1 Introduction

5.1.1 The overall Scheme design and approach to mitigation is described by Mr Keith Jones in his Proof of Evidence (WG 1.18.1). It also makes extensive reference to mitigation measures detailed in the proofs of evidence of Mr Barry Woodman (WG 1.6.1) and Mr Peter Ireland (WG 1.7.1).

5.1.2 In this section, I outline the relevant design and mitigation measures proposed, in relation to the potential impacts on birds identified in Section 4. Mitigation is provided for a number of bird species via the following mechanisms:

- Benefits from mitigation provided for other species and habitats (for example replacement reens and ditches);
- Benefits from the provision of dedicated ornithology enhancement features; and
- Built in mitigation to the design process using best practice.

5.2 Mitigating effects of Land Take

Habitat Loss

There are three main components to the mitigation of habitat losses for the Scheme, which would all result in benefits for birds. .

The revised Environmental Masterplan (September 2016 ES Supplement (Document 2.4.4) Figure R2.6) sets out the habitat creation and landscape planting that would be provided along the Scheme corridor. The Masterplan would result in:-

- a) 9.9 ha of new reedbeds.

- b) 38.1 ha of species rich grassland.
- c) 4.1 km of hedgerows and hedgerows with trees.
- d) 20.8 ha of linear belts of trees and shrubs.
- e) 83.6 ha of woodland.

5.2.1 In addition to the Environmental Masterplan (September 2016 ES Supplement (Document 2.4.4)), the implementation of the SSSI Mitigation Strategy and a Reen Mitigation Strategy are the two other measures to mitigate habitat loss. The SSSI Mitigation Strategy is to mitigate the loss of coastal grazing marsh habitat and to ecologically enhance land within the Gwent Levels SSSIs. The Reen Mitigation Strategy is to mitigate the 2,755 m of reen and 9,373 m of reens and ditches that would be infilled or culverted during construction of the new section of motorway.

5.2.2 As described by Mr Keith Jones in his Proof of Evidence (WG 1.18.1), both Strategies continue to evolve through consultation with NRW. Most recently, a Supplementary File note on the Reen Mitigation Strategy and a Supplementary Drainage Strategy Report were appended (Appendices 2.1 and 2.2 respectively) of the September 2016 ES Supplement (Document 2.4.4) and the revised SSSI Mitigation Strategy was Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14).

5.2.3 The 78 ha of coastal and floodplain grazing marsh permanently lost within the Gwent Levels (86 ha including temporary impacts), would be mitigated by the implementation of the SSSI Mitigation Strategy works at Meardy Farm, Tatton Farm and Caldicot Moor. The implementation of the Reen Mitigation Strategy would replace reens at an overall ratio of 1:1 (2,826 m and 10,594 m respectively). Proposals for SSSI mitigation include re-cutting of 5,865 m of former ditches at Maerdy Farm and Caldicot Moor. The overall ratio of ditch replacement on this

basis would be 1:1.76. In addition, 9.4 ha of ponds would be created as part of the drainage system along the Scheme.

- 5.2.4 In terms of birds, the combination of these measures would reduce, although not eliminate, habitat loss impacts on key bird species in the short, medium or long term.
- 5.2.5 As wetland habitats generally established relatively quickly, wintering and migratory wildfowl such as gadwall, teal and pintail would benefit from the new reens, ditches and pools early in the Scheme's operational phase. The wetlands proposed at Caldicot Moor (pools and reedbeds) are specifically designed to support nesting common cranes, to mitigate the loss of breeding habitat to the Scheme. It crosses the lagoon where the birds nested in 2016, and whilst the crane nesting location falls outside the land take area, it is sufficiently close to the road that it is unlikely to be used again by the cranes.
- 5.2.6 Cetti's warblers are dependent on a mix of reedbed, scrub, grassland and pools or ditches. As noted above, the area with the majority of Cetti's warbler recorded along the study area is to the south of the Tata Llanwern Steelworks site and Green Moor. The habitats that would be lost due to land take (permanent and temporary) comprise regenerating vegetation formed by a mosaic of grassland and scrub and sludge lagoons. This section of the steelworks site was used as settlement and water treatment lagoons, many of which are now naturally revegetated. As explained in Chapter 3 of the March 2016 ES (DOC. 2.3.2) regarding Scheme Construction, and by Mr Barry Woodman's Proof of Evidence (WG 1.6.1) following completion of the Scheme works all temporary construction work sites would be removed and the land affected would be restored. In restoring the construction sites at Tata Llanwern Steelworks site, so far as practicable a mosaic of habitat types providing some of the characteristics of brownfield land would be provided. Such habitats include un-vegetated substrate, pools, and flower rich grassland.

5.2.7 The habitats created for the SSSI and Reen Mitigation Strategies would also benefit barn owl, by providing additional foraging habitat for this key species. Further mitigation for barn owl would be nest box provision in suitable locations to help encourage breeding barn owl further away from the motorway carriageway itself. Nest box provision for this species are well established. As reported in Keith Jones; Proof of Evidence (para. 2.5.12), NRW have also agreed that the mitigation strategy for barn owl is not required at this stage and can be finalised in advance of commencement of construction.

5.2.8 In relation to river habitats, as noted in Chapter 2: Scheme Description of the March 2016 ES (Document 2.3.2) and the SIAA (Document 2.3.4) there is embedded mitigation in the sensitive bridge design of the Scheme's river crossings. Specifically, the River Usk bridge design spans both banks using only a single support pylon, minimising inter-tidal habitat loss, habitat fragmentation and obstruction of the wetter channel. Whilst there would be 0.20 ha of saltmarsh permanently lost for the River Usk crossing, and 0.74 ha permanently lost to the Ebbw River Underbridge, approximately 2 ha of saltmarsh will be developed to mitigate these losses.

5.2.9 The removal of habitat through permanent land take is an unavoidable direct impact of road construction. However, embedded design measures have sought to reduce this. There is a diverse range of habitat creation and other enhancement measures that have and continue to be developed which would reduce habitat loss impacts on key bird species.

Severance/Fragmentation

5.2.10 The initial clearance of the Scheme corridor would result in severance of habitats. In order to minimise this impact, the habitat mitigation would also be carried out early in the programme to minimise the loss

of habitat capacity locally for nesting and foraging areas for key species, for wildfowl (including common crane) and for Cetti's warbler.

5.2.11 As highlighted above, the design of the Usk and Ebbw river crossings would retain open flyways, and would therefore minimise habitat fragmentation. The River Ebbw crossing would be a minimum of 5.71m from mean high water and the River Usk crossing 32 m from mean high water at the centre of the bridge. Taking account of the fact that clearance increases by a further 10 m approximately with the fall of the tide, this leaves significant sufficient clearance for birds to fly under both bridges, based on observations during fieldwork for the Scheme (Document 2.3.4) and at other bridge locations.

5.2.12 Together with the saltmarsh creation, this aims to avoid any significant impacts on river habitats and associated species, including redshank, teal and other waders and wildfowl.

5.3 Mitigation of effects of construction

Avoidance of Disturbance or Damage to Nesting Birds

5.3.1 The main practical mitigation measure that aims to minimise the risk of disturbance to nesting birds would be to clear vegetation in advance of the bird breeding season. This avoids the risk of disturbance to Schedule 1 nesting birds, as well as damages to the nests and eggs of commoner species, as required by law.

5.3.2 NRW (OBJ0268), in its letter of the 18th October, have requested a commitment to undertake further, pre-construction bird surveys throughout the full construction area, the findings of which trigger appropriate mitigation. These would use the relevant survey method for the season (breeding or winter) and for the particular species likely to occur in each habitat. The commitment to protect birds during construction has been provided in the Register of Environmental

Commitments (updated in Appendix SR18.1 of the December 2016 ES Supplement (Document 2.4.14)).

- 5.3.3 Where nesting birds are identified, exclusion zones would be set up under the supervision of the ECOW team until young have fledged.
- 5.3.4 To minimise the risk of noise disturbance to breeding and non-breeding birds, techniques such as soft starts for piling machinery, and scheduling of works to avoid the most sensitive times of year, would also be finalised in liaison with NRW. These would be integrated with requirements regarding other sensitive species, notably fish.
- 5.3.5 The limiting of construction activities to daylight hours would provide a break in construction activity. Generally, night-working would be avoided and this would reduce impacts on night time roosts.
- 5.3.6 Other than the main construction compounds, any construction lighting would be limited to the local working area and times of working only. Lighting would be limited as required during periods of normal working hours in autumn and winter. As far as possible, task lighting would be positioned at low level on posts and directed at the work area to reduce light spillage and impacts on areas surrounding the works.

Implementation of Ecological Management

- 5.3.7 As Mr Peter Ireland explains in his Proof of Evidence (WG 1.7.1), in order to ensure proper and compliant ecological management of the construction process throughout, the Scheme would be overseen by an Environmental Liaison Group comprising key stakeholders including NRW. Reporting to them will be an Environmental Co-ordinator who would be responsible for ensuring effective liaison between environmental specialists and engineers, and for obtaining relevant licenses and consents. The suitably experienced and qualified ECOW team would be on site full-time to oversee construction activities and to ensure compliance with all environmental commitments and license

conditions. The ECOWs would have the authority to direct members of the contractor's site staff on environmental issues.

5.3.8 Based on my experience in supervising ECOW inputs into several large construction projects, certain criteria need to be met for these ECOW inputs to have their desired outcome. Specifically ECOWs must be afforded the right to halt works where there are instances of non-compliance. Secondly, it is necessary to have the direct involvement of planning authorities to ensure conditions are met and implemented. It is also necessary to select contractors who have well-established, effective and experienced internal environmental management teams that are demonstrably experienced in working co-operatively with the ECOWs and their supporting ecological specialists. These criteria can be met through appropriate commitments, specifications for contractors and appropriate contractual arrangements and lines of communication, and therefore, under these circumstances, these over-arching mitigation measures can be made to work effectively.

Pollution

5.3.9 As explained by Mr Barry Woodman (WG 1.6.1), the Scheme would include standard measures to control pollution during construction. These would be set out in a Construction Environmental Management Plan (CEMP) following the principles set out in the Pre-CEMP (March 2016 ES Appendix 3.2) (Document 2.3.2) and in the Pre-CEMP (December 2016 ES Supplement (Document 2.4.14) Appendix SR3.2). This would avoid impacts on important wetland habitat utilised by birds directly (including teal, gadwall, mallard and other wetland birds notably common crane) or indirectly (via negative impacts on invertebrates that become food for other bird species).

Severance/fragmentation

5.3.10 The early programming of habitat mitigation works would reduce the effects of severance or fragmentation during construction, notably

through the SSSI and Reen Mitigation Strategies and the Barn Owl Mitigation and Enhancement Strategy.

5.4 Mitigation of effects of the operational road

Road traffic casualties

5.4.1 In accordance with Highways Agency recommendations (Highways Agency, 2011 (WG 11.2.25), in order to help minimise the risk of collision with vehicles, where practicable and appropriate for landscape objectives, tree and shrub planting would be set back from the road edge so as to help keep bird species away from the road. The presence of hard shoulders would also assist in this.

Disruption of hydrology

5.4.2 Maintaining all existing watercourses and interlinking flows via the series of reen connections across the line of the new section of motorway is intrinsic to the design of the Scheme, as set out in the Reen Mitigation Strategy in ES March 2016 (DOC.2.3.2) Appendix 2.3 and ES Supplement September 2016. The habitat mitigation delivered through these commitments would create additional foraging and breeding habitat for a number of key birds, including gadwall and teal.

Pollution runoff

5.4.3 As explained by Mr Richard Graham in his evidence (WG 1.15.1), runoff from the new section of motorway would be intercepted and treated by various means, including grassed channels, water treatment areas, oil separator and storage lagoon. This would avoid impacts on important wetland foraging habitat for birds and overall act to protect biodiversity as a whole.

Road lighting

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- 5.4.4 As explained by Mr Ben Sibert in his evidence (WG 1.5.1), the new section of motorway would generally be unlit apart from the River Usk Crossing and the junctions and their approaches at the Castleton Interchange, Docks Way Junction, Glan Llyn Junction and the new link road connecting the new section of motorway with the A4810 and the A4810 junction and approaches.
- 5.4.5 The design of the permanent lighting for the River Usk and River Ebbw crossings would avoid lighting of the river channels and banks. As also explained in March 2016 ES (WG 2.3.2) Chapter 2: Scheme Description, luminaires would be designed to emit no light above the horizontal level. LED luminaires would be used as these can be aimed more precisely, reducing light spill into adjoining habitats and allowing birds to continue to behave as normally as possible. The combination of these measures would reduce the risk of direct or indirect changes that may inhibit foraging or roosting by waders and wildfowl on habitats adjacent to the crossings.

5.5 Monitoring in Relation to Mitigation of Bird Impacts

- 5.5.1 Monitoring would be carried out during construction and operation of the new section of the motorway in order to confirm the effectiveness of the mitigation measures, and, if necessary, to inform change in management of impacts. As noted by Mr Keith Jones (WG 1.18.1) this is in accordance with the Design Manual for Roads and Bridges (DMRB) Interim Advice Note 125/15 Environmental Assessment Update (Document 6.1.12).
- 5.5.2 The landscape elements of the Environmental Management Plan would be monitored by the Contractor during construction and maintenance periods (five years after completion of the works, after which there is a ten year maintenance contract). The South Wales Trunk Road Agent (SWTRA) would then be responsible for ongoing monitoring and

maintenance. The workings of monitoring and aftercare are described by Mr Keith Jones in his evidence (WG 1.18.1).

5.5.3 Newport City Council have requested that nesting birds should be monitored post construction to ascertain whether the road itself has impacted upon their behaviour and whether the 'mitigation' habitats are proving to be effective for bird species. The commitment to monitor the effectiveness of mitigation has been provided in the Register of Environmental Commitments (updated in Appendix SR18.1 of the December 2016 ES Supplement (Document 2.4.14)). This would include monitoring use of the SSSI Mitigation Strategy areas for breeding waders and cranes and for Cetti's warbler (year round) and the water treatment areas for Cetti's warbler (year round).

6. Residual Effects of the Scheme on Birds

6.1.1 In this section I summarise the residual effects (after mitigation) of the land take, construction and operation of the M4CaN Scheme on key ornithological interests as reported in Chapter 10 Ecology and Nature Conservation of the March 2016 ES (Document 2.3.2) and updated in the September ES Supplement (Document 2.4.4) and the December 2016 ES Supplement (Document 2.4.14), focussing on those effects which are assessed as significant in EIA terms.

6.2 Residual effects of land take

Habitat Loss

6.2.1 There would be no land take within the Severn Estuary SPA/Ramsar site boundary. As noted in the ES, however, named species of the SPA/Ramsar Site do utilise a limited number of habitats outside its boundary. Surveys showed that only the study area populations of three named species were of National (High) value, namely redshank, gadwall and pintail. Three named species populations were of County (Medium) value (teal, pochard and shoveler), and six named species had District (Low) value populations (shelduck, wigeon, tufted duck, curlew, lapwing and mallard).

6.2.2 No additional mitigation is proposed for wintering SPA/Ramsar species. This is because the magnitude of impact, due to the small spatial scale of land take on habitats used by wintering birds associated with the Severn Estuary/Ramsar Site is judged to be Negligible Adverse at all timescales. Therefore, with respect to land take, the significance of effect for the wintering birds that are part of the Severn Estuary SPA/Ramsar Site would be Slight for species of High value (redshank, gadwall and pintail), Neutral or Slight for species of Medium value (teal, pochard and shoveler), and Neutral or Slight for species of Low Value (shelduck, wigeon, tufted duck, curlew, lapwing and mallard).

- 6.2.3 The named breeding components of the Severn Estuary SPA/Ramsar do not use the study area for breeding. Therefore the predicted magnitude of impact is No change and the significance of effect on qualifying breeding species of the SPA is Neutral.
- 6.2.4 Of the SSSIs crossed by the Scheme, only the River Usk (Lower Usk) SSSI has birds as notified features. Its breeding feature species were either not recorded or recorded in very low numbers, as habitats in this part of the river are generally absent or sub-optimal. For its three wintering SSSI bird features (teal, greenshank and green sandpiper) only teal were recorded in any significant numbers, the other two wintering and passage species either not recorded or recorded in very low numbers. From January to March 2014 teal were not recorded at the River Usk by vantage point surveys (March 2016 ES (DOC. 2.3.2) Appendix 10.12). A maximum count of 34 birds was recorded during winter 2014/2015 vantage point surveys (March 2016 ES (Document 2.3.2) Appendix 10.14) and during winter 2015/2016, vantage point surveys also recorded small numbers (ES Supplement (Document 2.4.4) Appendix S10.4). The study area population of teal is therefore considered to be of County (Medium) value. The land take has been minimised during the crossing design process, and 2 ha of replacement saltmarsh would be created south of the proposed River Usk crossing. The magnitude of impact, due to the small spatial scale on which these land take impacts would occur in areas used by teal associated with the River Usk (Lower Usk) SSSI is therefore judged to be Negligible Adverse at all timescales. The significance of effect would therefore be Neutral or Slight.
- 6.2.5 This tallies with the assessment in the March 2016 ES (DOC.2.3.2) of land take impacts on the Rivers Ecological Unit, which these birds inhabit. For the majority of the River Unit's Valued Ecological Receptors (rivers, sub-tidal benthic habitat, intertidal mudflats, migratory fish and estuarine fish assemblage) the impact assessment

concludes the Scheme's impacts would result in No change and therefore be of Neutral significance. The remaining Valued Ecological Receptor for the Rivers Unit is coastal saltmarsh. Land take would result in temporary and permanent loss of this National (High) value feature of the River Usk (Lower Usk) SSSI. In light of restoration, recovery and saltmarsh creation (which is anticipated to take approximately 10 years to become established), the expected magnitude of impact on this Ecological Unit as a result of land take is predicted to be Minor Adverse in the medium term and Negligible in the long term. The residual significance is therefore predicted to go from Slight or Moderate, to Slight significance. Other than the crossing, there would be no other land take impacts on this SSSI.

- 6.2.6 Apart from the River Usk (Lower Usk) SSSI, no other SSSIs have birds listed as qualifying features where any land take will occur. I therefore conclude that the Scheme would not have an impact on qualifying bird features of SSSIs crossed by the Scheme or other SSSIs in the wider area, as a result of land take.
- 6.2.7 Of the thirty eight SINCS within the study area (receptors of County (Medium) value), three directly affected by the permanent land take have specified bird interests.
- 6.2.8 Magnitude of impacts from land take on the SINCS was not assigned in the ES for each individual SINC.
- 6.2.9 The bird interests of the Afon Ebbw River SINC were not recorded in significant numbers by the vantage point surveys. No Change on bird interests is anticipated therefore and the residual impact of land take on this SINC is predicted to be Neutral.
- 6.2.10 The Solutia SINC is crossed by the new section of the motorway, resulting in land take of approximately 12.70 ha out of a total area of 64.40 ha (19.7%). Cetti's warbler is a named SINC breeding bird interest. Breeding survey results indicate very low numbers of Cetti's

warbler (a single breeding pair) in the land take corridor. In relation to land take effects on Cetti's warbler, I consider a precautionary assessment of impact magnitude would be Major Adverse (which would be the case in the unlikely event there were no other Cetti's warbler breeding in the SINC outside the land take area). The Environmental Masterplan and SSSI Mitigation Strategy are both designed to mitigate the impacts of habitat loss. To the extent that they would result in the creation of new wetlands and grassland, both would serve to mitigate for the loss of habitat from the Solutia SINC. Taking into account that this additional mitigation and enhancement would commence early in the construction programme, and that improvements in the ecological interest of these habitats would be expected to manifest within a few years (medium term), the magnitude of the land take impacts on the SINC's County (medium) value is assessed as Major Adverse and the significance of the effect as Moderate or Large in the short term. This would reduce to a magnitude of impact of Moderate Adverse and a significance of Moderate in the medium to long term, as mitigation areas matured.

6.2.11 Bowkett Field, Barecroft SINC is described as hosting many bird species. Although not named specifically, Cetti's warbler was recorded at the site's northern end in the 2014 breeding bird survey. The Scheme would remove 0.53 ha of the 2.13 ha SINC (24.9%) and 0.1 ha (2.11%) of the adjoining Barecroft Field, which shares similar habitat. Land at Barecroft Common SINC does not have named bird interest, but is continuous with the two sites above. Taking the same approach as with the Solutia Site SINC, in my opinion the short term and medium to long term residual impact on Bowkett Field, Barecroft SINC, on a precautionary basis, would be Major Adverse, with an effect of Moderate or Large significance in the short term. This would reduce to a magnitude of impact of Moderate Adverse and a significance of effect of Moderate in the medium term/long term.

6.2.12 Land at Barecroft Common SINC has also supported nesting birds such as lapwing and curlew. The site comprises three large flat fields, in close proximity to Magor Marsh Gwent Wildlife Trust Reserve and other SINCS (none of which have named bird species). The extent of land take at this SINC is sufficiently small scale (0.01 ha) that it is not anticipated to have an impact.

6.2.13 No other non-statutory nature reserves would be affected by land take for the Scheme.

6.2.14 The three key bird species for which there would be significant residual effects from land take outside designated sites are Cetti's warbler, barn owl and common crane.

Cetti's warbler

6.2.15 As a receptor in its own right (rather than a feature of designated sites), Cetti's warbler is judged to be of National (High) value. The species is most commonly recorded in the Industrial and the Open Mosaic Habitats on Previously Developed Land (notably Great Pencarn and Tata Llanwern Steelworks).

6.2.16 In addition to the sympathetic restoration of a mosaic of habitats on these brownfield sites, creation of new reens, reedbed and ponds through the SSSI and the Reen Mitigation Strategies would benefit Cetti's warbler. These habitats develop relatively quickly in ecological terms, and together with scrub habitat, would provide suitable conditions for this species. As scrub development takes longer, there would, however, be a gap between clearance of habitat for Scheme construction and the maturation of all new habitats and planting, even if the clearance and planting were carried out in advance of construction.

6.2.17 Taking account of the restoration of the land at Great Pencarn and Tata Llanwern Steelworks site and other enhancements of the Environmental Management Plan, and the SSSI and Reen Mitigation

Strategies, the impacts are assessed as Moderate Adverse in the short term (1-3 years), and therefore of Moderate or Large significance. In the medium to longer term, the impact of land take is expected to diminish to Minor Adverse magnitude and therefore to Slight or Moderate significance.

Barn Owl

6.2.18 For barn owl (County (Medium) value), land take would reduce the foraging area available, particularly the edges of reens and ditches which provide hunting habitat. The significance of the effect would be Moderate. The mitigation and enhancement measures would offset this land take loss, notably the Reen Mitigation Strategy and Barn Owl Mitigation Strategy also being developed with NRW. In the short term, whilst these measures become established, the magnitude of residual impact on barn owl from land take would be Moderate Adverse, resulting in an effect of Moderate significance. In the medium and long term, as habitats develop the magnitude of impacts would be Minor and the residual significance of effects would Slight.

Common crane

6.2.19 Common cranes, although not specifically protected, are a scarce bird in the UK and subject of a recent re-introduction project centred on south west England (<http://www.thegreatcraneproject.org.uk/>). The study area contains suitable habitat for breeding cranes and successful breeding and fledging was confirmed in 2016, in habitat adjacent to the Scheme.

6.2.20 For common cranes (National (High) value), it is likely that land take would compromise the birds' nesting location, given its close proximity to the Scheme. Taking mitigation into account, the significance of the effect would be Large/Very Large in the short-term but decline as the mitigation habitat for nesting crane at Caldicot Moor matured and increased in suitability. In the event that the cranes re-locate and nest

successfully in this area the medium to long term impact would be lower, but as the use of the new mitigation nesting habitat cannot be predicted with certainty, a precautionary approach has been taken to the assessment and the habitat loss has been judged as Moderate/Large in the medium to long term.

Other birds

6.2.21 The values of other breeding birds recorded in the study area are judged to be District (Low). In the short term, before mitigation becomes sufficiently fully established, the magnitude of land take impact is Moderate Adverse. The significance of effect would therefore be Slight. In the medium and longer term, once mitigation measures become established, the residual significance of effect would be Neutral or Slight. For all other wintering species, (District (Low) value), the magnitude on land take impacts would be Minor at all timescales and the significance of effect therefore Neutral or Slight.

6.3 Residual effects of construction

Disturbance and displacement

6.3.1 There would be no change on Severn Estuary SPA/Ramsar Site qualifying breeding species from construction disturbance and therefore the significance of effect is Neutral. For wintering qualifying species, the most important area within the study area for wintering birds associated with the Severn Estuary SPA/Ramsar Site is the Ebbw River. As highlighted above, there is a range of mitigation measures, notably the sensitive timing of works that would be implemented to minimise the risk of construction disturbance as far as possible. In light of evidence considered in the March 2016 ES, and given that roosting and feeding habitats for redshank, are over 300 m away from the nearest construction activity, there is considered to be sufficient foraging and roosting habitats accessible down and upstream that birds are still likely to access, to meet their requirements. The magnitude of

potential disturbance impacts is judged to be Minor Adverse for wintering SPA qualifying species. For National (High) Value species (redshank, gadwall and pintail), the significance of disturbance impact would be Slight or Moderate. It would be Slight for species of County (Medium) value (teal, pochard and shoveler), Neutral or Slight for District (Low) value species (shelduck, wigeon, tufted duck, curlew, lapwing and mallard), and Neutral or Slight for the other species that make up part of the Severn Estuary SPA/Ramsar assemblage.

Cetti's warbler

- 6.3.2 Cetti's warbler is assigned National (High) value and was recorded during 2014, 2015 and 2016. Given that it is a songbird, sustained loud noise has the potential to mask its singing and therefore impact pair bonding, territorial displays and possibly its breeding success.
- 6.3.3 The impacts of differing noise and visual disturbance at different distances from sources is not well known for this species. Drawing on information in Chapter 3: Noise and Vibration in the March 2016 ES (Document 2.3.2), moderate impacts may occur at approximately 115 m, dropping to minor at approximately 180 m from the work site. On this basis, the predicted magnitude of construction impacts from noise on breeding birds would be Moderate Adverse. With the National (High) value of Cetti's warbler, this gives the significance of effects as Moderate or Large, without taking mitigation into account. Whilst there would be provision of alternative habitat for Cetti's warbler (through the SSSI and Reen Mitigation Strategies, through sensitive restoration of Industrial Habitats and Open Mosaic Habitats on Previously Developed Land), this would take time to mature and would not therefore be in place to mitigate construction disturbance. Therefore, the magnitude of the impact on Cetti's warbler from construction remains as Moderate Adverse and the residual significance of effects remains Moderate or Large, after mitigation.

Barn owl

6.3.4 For barn owl, the tree which constitutes the potential nest site would not be directly affected by land take but it is sufficiently close to be disturbed during construction. For barn owl (County (Medium) value), the significance of the effect would be Moderate. The provision of alternative nest sites would reduce the magnitude of the impacts of construction to Minor Adverse and the significance of effects to Slight.

Common crane

6.3.5 Common crane is assigned the highest value (National (High) value) for the assessment. As construction activities are likely to prevent cranes from using the current nesting habitat, and whilst the SSSI Mitigation Strategy habitats become fully established, the short to medium term disturbance during construction has been assessed as Slight/Moderate.

Other birds

6.3.6 For other breeding species recorded within the study area of District (Low) value, the magnitude of residual impact during construction is judged to be Moderate Adverse. The significance of the effect would therefore be Slight.

Pollution

6.3.7 A range of pollution prevention measures would be put in place during construction, and overseen by the ECOW team working with the contractors. In order to reduce the likelihood and extent of any water course pollution, construction would be undertaken in accordance with the CEMP, following the principles set out in the Pre-CEMP (March 2016 ES Appendix 3.2) (Document 2.3.2) and in the Pre-CEMP (December 2016 ES Supplement (Document 2.4.14) Appendix SR3.2).

6.3.8 With stringent implementation of pollution prevention measures, and adherence to the guidance provided by the ECOW team, and on the basis that contractors fully implement good practice, working in adherence to guidance from the ECOW team, there would be a minimal risk of pollution.

6.4 Residual effects of operation

Disturbance, displacement and severance

6.4.1 For the wintering birds that are qualifying species of the Severn Estuary SPA/Ramsar Site, no additional impacts are anticipated from operation of the new river crossings along the new section of motorway. The March 2016 ES (Document 2.3.2) indicates that with noise mitigation, noise levels during operation would be 50-60 dBA(A)_{L10(18h)} and 60-65 dBA(A)_{L10(18h)} at ground level for the Usk and Ebbw crossings respectively. Based on information from the Waterbird Disturbance Mitigation Toolkit (Document 11.3.67), tolerance to existing noise levels and the distribution of suitable roosting and foraging habitat in relation to the crossings, operation of the new section of motorway is not likely to have a discernible effect. Added to this, some habituation would be expected in the longer term to the new noise levels. The magnitude of the residual impact is therefore judged to be Negligible Adverse, resulting in the significance on redshank, gadwall and pintail being Slight, with the other SPA/Ramsar Site species lower still.

6.4.2 There would be no direct residual impacts on notified bird features of any SSSIs. The magnitude of residual impact would be No Change and the significance of effect would be Neutral.

6.4.3 Of the thirty eight SINC's within the study area, those with bird interests, are LG Duffryn Site 1 (South Lake Drive), the Afon Ebbw River, Solutia Site, Alpha Steel Site, Elver Pill Reen Grassland and Pond, Greenmoor Pool, Bowkett Field, Barecroft, Barecroft Fields, and Land at Barecroft Common.

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- 6.4.4 As noted by Mr Keith Jones in his evidence (WG 1.18.1), there is the potential for operational noise to have some effect on SINC's that would be closer to the new motorway. The prediction of impacts from traffic on breeding birds is complex, combining physical factors affecting noise attenuation and species' reproductive strategies and mating behaviour. The ways in which noise disturbance can cause adverse effects are therefore relatively subtle, and may operate through influences on nest productivity, the survival rates of young birds, and the density distribution of breeding territories (Document 11.3.60 and Document 11.3.61),
- 6.4.5 The assessment of operational disturbance on SINC's also recognises that birds are only one facet of these non-statutory designated interests.
- 6.4.6 For LG Duffryn Site 1 (South Lake Drive) SINC, there is some 600 m separating it and the new section of motorway. At this distance, its Cetti's warbler population is unlikely to be affected by operational noise.
- 6.4.7 For the Afon Ebbw River SINC two of the three wintering species (green sandpiper, greenshank) listed in its citation are either absent or recorded in such low numbers that there would be no significant residual impact from disturbance, displacement or severance. Teal may be displaced but the implications of this have already been discussed above with the residual significance of effect assessed as Slight.
- 6.4.8 The Solutia SINC is designated for a variety of habitats and species, including nesting birds (the most important of which in conservation terms is Cetti's warbler). As a result of the new motorway section, the SINC would be severed in two. The residual 6.03 ha section isolated to the south of the new motorway would be long and narrow, and this may result in it becoming unsuitable or sub-optimal for breeding Cetti's warbler, due to noise impacts. Taking into account the habitats created

and improved through the SSSI and Reen Mitigation Strategies, the magnitude of operational impacts on this SINC is assessed as Minor Adverse and the significance of effects as Slight.

6.4.9 The Alpha Steel Site SINC, which also has Cetti's warbler as a bird interest, would be some 100 m south of the new section of the motorway. Disturbance from traffic noise has the potential to reduce habitat suitability for this species at the northern part of the SINC, but overall the magnitude of operational impacts on this SINC is assessed as Minor Adverse and the significance of effects as Slight.

6.4.10 Elver Pill Reen Grassland and Pond SINC and Greenmoor Pool SINC are approximately 200 m and 850 m north of the line of the new section of motorway. The Cetti's warbler population at Greenmoor Pool is not expected to be affected by operational noise disturbance, given this distance. There may be an effect on Cetti's warbler extending into Elver Phil Reen Grassland and Pond, although as the nearest Cetti's warbler record was some 450 m from the new section of motorway, the magnitude of operational impacts on this SINC is assessed as Minor Adverse and the significance of effects as Slight.

6.4.11 Bowkett Field, Barecroft SINC is described as hosting many bird species around the field margins. Land at the nearby Barecroft Common SINC has also supported nesting birds such as lapwing and curlew. Both SINC's form part of the Redwick and Llandeenny SSSI, and therefore the SSSI and Reen Mitigations Strategies will include measures to mitigate the losses of field margin and grassland habitats that support these respective breeding birds. Taking into account the habitats created and improved through the SSSI and Reen Mitigation Strategies, the magnitude of operational impacts on these two SINC's is assessed as Minor Adverse and the significance of effects as Slight.

6.4.12 Consideration of construction noise impacts on Cetti's warbler has been given above. The key difference with operational noise from the

new motorway section is that it will be permanent and sustained, and would occur day and night. It is, however, less variable, and does not reach the levels that can be generated during construction. As reported in the March 2016 ES (Document 2.3.2), noise levels in the vicinity of the Scheme, including where the bulk of Cetti's warbler records were located are currently approximately 45-50 dBA(A)_{L10(18h)}. Noise levels expected during the motorway's operation are likely to be in the region of 60-70 dBA(A)_{L10(18h)} (WG 1.14.1).

6.4.13 Whilst alternative habitat for Cetti's warbler would be established as part of the Scheme, to mitigate for land take and disturbance effects, where these areas are in proximity to the new section of motorway the consequence of noise disturbance may limit the birds' breeding success by interfering with territory establishment (Document 11.3.60 and Document 11.3.61). Therefore, for the purposes of the assessment in the March 2016 ES (Document 2.3.2), it has been assumed that the magnitude of impact on the Cetti's warbler population would remain Moderate Adverse, and the residual significance of effect would remain Moderate or Large.

6.4.14 Whilst it is possible that other song birds may also suffer a degree of reduced breeding success in proximity to the operational new section of motorway, no further change to the magnitude of impacts is predicted as a result of disturbance. The residual impact for all other breeding species identified in the study area is therefore Moderate Adverse with the significance of effect being Slight.

Common crane

6.4.15 The magnitude of impact on common crane could potentially remain Minor Adverse. This is because the level of operational disturbance that would occur to the current nesting location means it would not be likely to continue to be used. If the alternative nesting habitat created

as part of the SSSI Mitigation Strategy was not used for nesting, the residual significance of effect could therefore be Slight/Moderate.

Road traffic casualties

6.4.16 As considered above, barn owl are known to hunt at low flight heights, flying from roadside buildings, posts or bushes for their prey, which they hunt in habitats that include grasslands of roadside verges. By provision of nest boxes away from the road corridor and through habitat mitigation, the magnitude of impact on barn owl is predicted to be Minor Adverse and the significance of the residual effect to be Slight.

6.4.17 Other bird species are not considered to be particularly susceptible to traffic collisions so No Change is predicted.

Disruption of hydrology

6.4.18 As explained by Mr Ben Sibert (WG 1.5.1), 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. With appropriate design, construction, implementation and maintenance there would be no significant adverse effects on birds from disruption of hydrology during operation of the Scheme.

Pollution runoff

6.4.19 As explained by Mr Ben Sibert in his evidence (WG 1.5.1), runoff from the new motorway would be intercepted and treated by various means, including grassed channels, water treatment areas, oil separators and storage lagoons. Providing the measures proposed to prevent runoff of pollution are implemented and maintained, watercourses would therefore be protected. The water quality, vegetation, fish, amphibians and other food sources on which many bird species depend would therefore be maintained. In my opinion, with these measures in place,

no significant adverse effect on birds would result from pollution runoff during operation of the Scheme.

Road lighting

6.4.20 The extent of lighting for the new motorway section is described by Mr Ben Sibert (WG 1.5.1). The new section of motorway would be unlit apart from the River Usk Crossing and the junctions and their approaches at the Castleton Interchange, Docks Way Junction, the Glan Llyn Junction and the new link road connecting the new section of motorway with the A4810 and the A4810 junction and approaches. As noted above, the careful design of lighting to avoid unnecessary light spill would minimise the potential effect on birds. Light fixtures would be directed towards the new road and away from surrounding habitats of potential value to birds (notably scrub, and in the case of the River Usk crossing, mudflats and saltmarsh). In my opinion, the magnitude of the residual impact of road lighting on birds would be Negligible Adverse and therefore the significance of effect would be Slight or less.

7. Consultees' Response and Objections to the M4can Scheme

7.1.1 The consultation responses to the Draft Orders for the M4CaN Scheme which are relevant to birds have been submitted by:-

- a) Newport City Council (SU0192)
- b) Monmouthshire County Council (ISU0002)

7.1.2 Consultation objections to the Draft Orders for the M4CaN Scheme which are relevant to birds have been submitted by the following organisations:-

- a) Natural Resources Wales (OBJ0268)
- b) RSPB (OBJ0245)
- c) Gwent Wildlife Trust (OBJ0270)
- d) Wildlife Trusts Wales (OBJ0260)
- e) Friends of the Earth Cymru (OBJ0125)

7.1.3 Issues relating to sustainable development, planning policy and non-avian designated sites are responded to by Mr Keith Jones in his evidence (WG 1.18.1).

7.1.4 In this section I respond to the comments regarding birds by these organisations.

7.2 Newport City Council (SU0192)

7.2.1 Newport City Council (NCC) submitted a consultation response to the Draft Side Road Orders and Environmental Impact assessment in April 2016. Clarifications were requested in relation to previous bird surveys, relating mainly to survey coverage limits due to restricted access.

- 7.2.2 Further surveys have been undertaken since the initial consultation and the results of these were submitted as part of the September 2016 ES Supplement (DOC. 2.4.4). As noted above, in light of the additional surveys, NRW now considers winter survey coverage to provide a sufficiently robust baseline from which to assess impacts and inform mitigation. In relation to breeding birds, additional surveys have been undertaken in 2016 (including targeted surveys for common crane, barn owl and Cetti's warbler). Continuing breeding bird surveys are being carried out in 2017. There is also the commitment to undertake breeding bird checks in the construction area if the Scheme is approved, so that the combined results would be used to finalise mitigation measures for key bird species.
- 7.2.3 The benefit of accumulating bird data over this longer time span is that it gives an insight into variability in species present, distribution and relative abundance in areas where repeat coverage is achieved. Had a poor breeding season or severe winter therefore reduced bird numbers in a particular year, or there be some more transitory influence that had affected the numbers of birds recorded during any particular visit (such as the presence of a predator, for example, or disturbance from dog walkers or agricultural activity), then the longer sequence of surveys is helpful and contributes to a more robust data set.
- 7.2.4 NCC also requested that nesting birds should be monitored post construction to ascertain whether or not the new section of road itself has impacted upon their behaviour and whether the 'mitigation' habitats are proving to be effective for bird species. As noted above, monitoring would be carried out for specific species, to assess the effectiveness of mitigation and to inform any modifications to mitigation implementation that need to be made (Document 2.4.14).

7.3 Monmouthshire County Council (ISU0002)

- 7.3.1 In the response received from Monmouthshire County Council (MCC) it was noted that the proposed SSSI Mitigation area at Caldicot Moor was subject to a planning application, over part of the site, for two wind turbines (DC/2012/00931). The area was identified as being important for over-wintering lapwing (flocks of up to 200 birds) and breeding lapwing (7 pairs). It was raised that any changes to this site would need to consider its current use by lapwing and should be incorporated into the HRA as these birds are linked to the Severn Estuary European Marine Site. Breeding wader surveys were carried out for the Scheme in 2015 identified a comparable number of breeding lapwing.
- 7.3.2 Proposals for Caldicot Moor, presented in the SSSI Mitigation Strategy (Appendix SR10.35 of the December 2016 ES Supplement (Document 2.4.14)) include the improvement of grassland habitats and conversion of arable land which would provide for the needs of lapwing. As such, there will be no net loss and no impacts on lapwings,
- 7.3.3 MCC note that monitoring of mitigation will be vital and must extend beyond the commitments in any European Protected Species Licences.
- 7.3.4 The detailed requirements for this and other species-specific bird monitoring will be agreed with NRW (Document 2.4.14).

7.4 Natural Resource Wales (OBJ0268)

- 7.4.1 NRW acknowledged and accepted the additional winter bird survey results submitted as Appendix S10.4 of the September 2016 ES (Document 2.4.4) in its 18th October 2016 response.
- 7.4.2 NRW noted that it could not confirm whether or not an adverse impact on the Severn Estuary SPA/Ramsar Site would be avoided as a result of possible displacement of up to 350 roosting redshank on the River Ebbw, without further details of bridge construction. NRW did, nonetheless, state that avoiding such effects should be possible through the implementation of appropriate scheduling, timescales and

construction methodologies for the bridge construction and adjacent works. An up-dated SIAA Report was requested to take account of the 2015-2016 results and these proposed measures. This SIAA Report will be reviewed, up-dated and finalised during the Public Local Inquiry.

7.4.3 NRW's position in relation to breeding season survey coverage is that a commitment is sought to undertake a *'pre-construction survey, with coverage throughout the construction site, the findings of which trigger action to avoid adverse effects'*. As noted above, there are measures in the Register of Environmental Commitments to prevent damage to nesting birds. (Document 2.4.14).

7.4.4 In addition, NRW stated it is able to advise further on species specific mitigation strategies for Cetti's warbler and barn owl. As noted in Mr Keith Jones' evidence, NRW have agreed that mitigation strategy for barn owl could be prepared in advance of commencement of construction, rather than at this stage (WG 1.18.1).

7.5 RSPB Cymru (OBJ0245)

7.5.1 The points raised by RSPB Cymru are primarily on sustainable development, legislation, conservation and environmental policy, and on the Gwent Levels SSSIs and other non-avian matters. These are covered by Mr Keith Jones (WG 1.18.1).

7.5.2 In the paragraphs below, I have responded to specific ornithological considerations raised by RSPB Cymru, covering the Severn Estuary SPA/Ramsar site, survey coverage, habitat mitigation and impacts on breeding Cetti's warbler and barn owl.

7.5.3 RSPB state that construction works to create the new crossings of the Ebbw and the Usk Rivers may cause a likely significant effect on qualifying interests of the Severn Estuary SPA/Ramsar Site (redshank, gadwall and pintail) and that as a result an appropriate assessment under the Habitats Regulations was required. This had already been

acknowledged in that, as reported in the SIAA under the Conservation of Habitats and Species Regulations 2010 (DOC. 2.3.4) the M4CaN AIES Stage 1: Screening had already concluded that likely significant effects could not be ruled out on qualifying features of several European sites including the bird interest of the Severn Estuary SPA and Ramsar Site.

- 7.5.4 The SIAA report was prepared for Welsh Ministers (“the Competent Authority”) to Inform the Appropriate Assessment of the implications of the M4 Corridor around Newport on European Sites as required by Regulation 61 of the Habitats Regulations. The conclusion of the report was that the implementation of the mitigation measures outlined within the SIAA would ensure that the Scheme would not adversely affect the integrity of the Severn Estuary SPA, alone or in combination.
- 7.5.5 As noted above, NRW have stated that avoiding adverse effects on the SPA should be possible through the implementation of appropriate scheduling, timescales and construction methodologies for the Ebbw bridge construction and adjacent works.
- 7.5.6 There would be no adverse effect on the integrity of the European sites considered either alone or in-combination with other plans and projects (Document 2.3.4).
- 7.5.7 The second matter raised by RSPB concerns the bird information collected.
- 7.5.8 There is a long history of bird observation and recording in the UK and as a result birds are a well-known group of species in terms of populations, distribution, behaviour and ecology. Indeed partly as a result of the work of the RSPB, there are orders of magnitude more experienced observers collecting information on birds than any other taxa. In comparison to other species groups, such as rare flies or fungi, bird species are also generally easily visible, and even those that are not easy to see can be clearly audible at certain times of year. Many

different birds also leave evidence of their presence, even if birds are not seen or heard, and this helps inform what species are present and the behaviours they undertake in particular areas. Such features include nests, droppings, foraging signs and feathers. Whilst not universally the case, for a number of birds this also assists in recording their location and activities. As a result of all the above features, there is readily accessible quality information on widely occurring species.

7.5.9 In addition, there are also numerous amateur and professional ornithologists dedicated to finding and monitoring rarer species.

7.5.10 Alongside the collection of these data on common and rarer birds, there are numerous mechanisms, voluntary groups and monitoring schemes involved in the systematic collation, validation, analysis and dissemination of the resulting records (for example <http://www.gwentbirds.org.uk/>).

7.5.11 Furthermore, in the UK, there are only a relatively limited number of species breeding and wintering. Based on decades of accumulated knowledge on their habitat preferences and distribution, it can therefore be established to a reasonable degree of accuracy what species are likely to occur in particular habitats in particular locations.

7.5.12 It is the case that there remain important information gaps for some species and circumstances, which is why monitoring and dissemination of results is important so that impacts can be properly investigated and mitigation adjusted accordingly. However, the result of all the above facets of bird monitoring over decades of widespread bird monitoring is an extensive pre-existing knowledge-base on birds that can be drawn from, on species abundance, distribution, ecology and effects of development to inform baseline studies and impact assessment.

7.5.13 None of the above precludes the need for formal surveys as part of information gathering to determine baseline bird interests for particular developments. However, to the extent that there were restrictions over

access in the study area, this has not resulted in significant omissions in baseline understanding of breeding or wintering birds. RSPB itself acknowledges that there is a long history of studies of a potential road route across the Gwent Levels, dating as far back as 1990. Data on bird interests in the study area have been accumulated for many years, and have been taken account of, developing an informative time series of data that includes surveys completed in 1997 – 1998 by the British Trust for Ornithology, and the breeding and wintering bird surveys carried out by Arup ecologists in 2006 and 2007 for the previous iteration of the M4 improvements. Informed by this background, the 2014, 2015 and 2016 surveys were undertaken in liaison with NRW. Data from other surveys for certain other proposals (such as for renewable energy developments generating supplementary wintering and breeding bird data, for example) have also been considered, where available and relevant. Consequently, the body of baseline information is sufficient to determine the baseline bird interests, and to inform the impact assessment and mitigation design.

7.5.14 Additional surveys would be carried out prior to construction to up-date data on distribution of particular species, so that these interests can be taken into account during the finalisation of mitigation and bird protection measures. As requested by RSPB, these surveys can be made available, following completion and approval by Welsh Government, as have the 2014, 2015 and 2016 surveys.

7.5.15 The third issue raised by RSPB concerns the effectiveness of the habitat mitigation specifically in relation to coastal grazing marsh BAP habitat and its ability to support breeding redshank. The complexities of balancing the needs of different mitigation requirements is acknowledged. Indeed, reconciling differing management needs of species is an issue RSPB often faces on its own nature reserves. For the Scheme, enhancement for breeding waders would be

accommodated wherever possible, but would most notably be targeted at the SSSI mitigation land at Caldicot Moor.

7.5.16 In its final bird-related matter, RSPB raised the need to ensure there is adequate habitat mitigation for losses of important reedbed/swamp with scrub habitat that supports significant numbers of breeding Cetti's warbler. Prescriptions have been set out in the SSSI and Reen Mitigation Strategy in ES March 2016 (DOC.2.3.2) Appendix 2.3 and ES Supplement September 2016 (Document 2.4.4). These would be developed in further detail, and RSPB Cymru would be further consulted to assist in this process, given its significant experience in habitat creation, enhancement and management.

7.5.17 RSPB requested that mitigation for Cetti's warbler and barn owl should be in place prior to construction. Whilst barn owl boxes could be put up in this time period, the habitat creation and enhancement for Cetti's warbler would not be in place prior to construction. This is because, if approved, the mitigation for Cetti's would commence in 2018 but the would take a number of years to develop, whilst pool, reedbed and scrub habitats matured.

7.6 Gwent Wildlife Trust (OBJ0270)

7.6.1 GWT stated that the evidence from the winter bird surveys demonstrate that the area around the River Ebbw crossing is a very important area for wildlife and that this area should be protected in relation to its wildlife corridor position. As is highlighted in the March 2016 ES (DOC. 2.3.2) the principal wintering bird species of note recorded at the River Ebbw in the 2013/14 and 2014/15 surveys were redshank, teal, lapwing, dunlin, curlew, wigeon and mallard. Similar species were recorded in the winter survey of 2015/2016. As stated in paragraphs 10.4.421 to 10.4.426 of the March 2016 ES, the redshank population was valued as National (High) importance, the teal population as County (Medium) importance, and the wigeon, curlew, lapwing and

mallard populations as District (Low) importance. Other wintering bird species using the Ebbw were valued as District (Low) importance.

7.6.2 The proposed Ebbw crossing area is some 450 m upstream of the Severn Estuary SPA/Ramsar Site. At the time of designation, the area up-stream of the designation boundary was deemed of sufficiently lower importance to birds than localities downstream. If the higher reaches of the Ebbw had been deemed to be equally or more important, these areas too would have fallen within the designation boundary, but this was not the case. As such the reaches adjacent to the proposed Ebbw crossing fall outside the Severn Estuary SPA/Ramsar Site.

7.6.3 GWT sought clarification as to why all Schedule 1 birds were not assessed. Schedule 1 refers and applies to breeding birds during the breeding season, and thereby only affords special protection at this time, so is not relevant to wintering populations. These wintering populations in some instances are part of the Severn Estuary SPA/Ramsar Site, and these species are discussed and assessed in the March 2016 ES (DOC. 2.3.2) and SIAA (Document 2.3.4). Schedule 1 birds identified in the breeding season were notably Cetti's warbler and barn owl.

GWT queried the approach to the assessment of wintering bird impacts stating that an assumption that there is ample alternative habitat is not acceptable. GWT is mistaken in their assertion of our approach. We do not attempt to downplay the impacts. It is accepted that as SPA/Ramsar Site-qualifying species, these are important populations of birds. The impact of the new river crossings on qualifying species has therefore been given careful consideration (including through key aspects covered in the evidence of Mr Ben Sibert (WG 1.5.1), Mr Peter Ireland (WG 1.7.1), Mr Philip Evans (WG 1.14.1), Mr Richard Graham (WG 1.15.1) and Mr Keith Jones (WG 1.18.1)), The assessment of predicted effects has also considered the existing environment and

habitat distribution in the vicinity of the Ebbw River and River Usk crossings, baseline survey results, and wider population and distribution trends for the relevant species within the Severn Estuary/Ramsar Site SPA and at the wider UK and flyway scale (as these latter changes can have major implications for population trends at the individual estuary level). Consideration has also been given to findings on bird responses to other infrastructure developments, including the Cardiff Bay Barrage (impacting 167 ha of SSSI and (at the time, proposed) SPA intertidal mudflats and channels that supported the highest density of waders in the Severn Estuary) and road crossings over the Firth of Forth at Kincardine (across the Inner Forth SPA). The assessment carried out of the Scheme's impacts on the Severn Estuary SPA/Ramsar Site has concluded, in light of such considerations, that there would be no adverse effect on site integrity alone or in combination from other plans or projects.

7.6.4 GWT also stated that it is deeply concerned that no noise mitigation for wildlife is proposed. This statement relates to March 2016 ES para 10.9.317 in the context of wintering birds. The noise impacts on various components of the wildlife along the new section of motorway corridor are assessed in the ES and in some instances it is the case that significant noise effects are predicted, e.g. in relation to Cetti's warbler. No specific measures are proposed in relation to reducing noise in relation to birds other than overall measures to reduce the noise generated by the road. Whilst not specifically intended as mitigation for noise effects on wildlife, noise mitigation is proposed during operation (as explained in ES Chapter 13: Noise and Vibration of the March 2016 ES) including the provision of a thin road surface system, which provides a reduction in traffic noise.

7.6.5 On page 12 of its objection submission GWT stated that "*other species have been excluded from the survey effort for no justifiable reasonand common crane for example*". This species was not recorded

during survey work in 2014 or 2015, but was recorded in 2016. As bespoke surveys were then immediately set up and have been reported in a confidential report, I do not agree with the assertion that surveys ‘*have in some cases cut corners*’. The outcomes from this survey work have been shared with NRW, RSPB and The Great Crane Project, and a co-operative approach would be undertaken to influence mitigation for this species.

7.6.6 The objection then goes on to request further work to be programmed in the coming year. At the time of the objection this work was already underway, and was completed in 2016, and is reported in the September 2016 ES Supplement (DOC. 2.4.4).

7.7 Friends of the Earth Cymru (OBJ0125)

7.7.1 Friends of the Earth in their response stated:

“It is acknowledged that the construction and/or operation of new section of motorway would have a likely significant adverse long-term effect on the series of SSSIs..... Species potentially significantly affected in the long term include ... Cetti's warbler.”

7.7.2 Welsh Government has a legal duty under S28 G of the Wildlife and Countryside Act (Document 3.1.7) to take reasonable steps consistent with the exercise of its functions to further the conservation and enhancement of the flora and fauna by reason of which the Gwent Levels are designated as SSSIs. It recognised that without appropriate mitigation the Scheme could have significant adverse impacts on a number of habitats and protected species found along the route and mitigation was accordingly incorporated within the Scheme.

7.7.3 Cetti’s warbler has been assessed over three years, with a dedicated species survey taking place in 2016 during the breeding season. Mitigation plans relating to SSSI’s and reens would benefit Cetti’s warbler by enhancing habitats and breeding opportunities for them. The

proposals for new reedbeds, hedgerows and replacement of reens and ditches lost to the Scheme at a ratio of slightly greater than 1:1 would therefore benefit this species. All these habitat types are utilised by Cetti's warbler in South Wales, and would continue to be so.

8. Summary and Conclusions

- 8.1.1 My evidence reflects the findings in relation to birds of the March 2016 ES (Document 2.3.2) and SIAA (Document 2.3.4), the September 2016 ES Supplement (Document 2.4.4) and the subsequent December 2016 ES Supplement (Document 2.4.14).
- 8.1.2 In relation to designated sites, the Severn Estuary SPA/Ramsar Site would not be adversely affected by the Scheme, either alone or in combination with other plans or projects.
- 8.1.3 There would be no significant impacts on breeding or wintering bird features of SSSIs. In relation to birds therefore, the Welsh Government's duty under Section 28G of the Wildlife and Countryside Act would be met. A suite of SSSI mitigation measures are proposed and many would benefit a range of bird species, reducing residual impacts.
- 8.1.4 In relation to SINC's, the short term effect of land take on the Solutia Site SINC and Bowkett Field Barecroft SINC would be Moderate or Large. This would reduce to a magnitude of impact of Moderate Adverse and a significance of Moderate in the medium to long term, as mitigation areas matured.
- 8.1.5 There would be no significant residual operational impacts on these or other SINC's bird interests in the medium to long term, due to the Reen and SSSI Mitigation Strategies.
- 8.1.6 The Scheme would result in significant impacts for three breeding birds, namely Cetti's warbler, barn owl and common crane from land

take. Barn owl impacts would however, be mitigated by the provision of nest boxes at appropriate locations as sufficient distance from the new motorway, in one or more of the Mitigation Areas. As a result, there would be no long term significant impact on this species. During operation of the motorway, significant impact may remain in the long term on Cetti's warbler and common crane.

8.1.7 In the short to medium term, significant impacts are predicted for three wintering birds, namely redshank, gadwall and pintail as a result of disturbance during construction activity. No significant impact on wintering birds is predicted in the long term.

8.1.8 My 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.

8.1.9 I believe the facts which I have stated in my evidence are true and that the opinions expressed are correct.

8.1.10 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.

Appendix A

Graphic of River Ebbw Road Crossing

