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**DEADLINE D2 SUBMISSION
(Holding statement for WRITTEN REPRESENTATION)**

I am an independent scientist and environmental consultant, working at the intersection of science, policy, and law, particularly relating to ecology and climate change. I work as a consultancy called Climate Emergency Policy and Planning (CEPP).

In so far as the facts in this statement are within my knowledge, they are true. In so far as the facts in this statement are not within my direct knowledge, they are true to the best of my knowledge and belief.

RESUME

I realised recently that my life-scientific goes back over 50 years to when aged 14 I became passionate by the mystery of quantum mechanics. As an undergraduate, I studied for BSc 1977, 1st class honours in Chemistry at Imperial College London. My doctoral work¹, at Oxford University was supervised by Professor R J P Williams, FRS, and was in structural biology, protein binding sites and dynamics (DPhil², 1981). I later did an MSc in the then emerging area of “Parallel Computing Systems” at the University of the West of England (1994).

Most of my career has been in scientific computation and modelling. Between 1985 and 1993, I engaged in the software engineering, and testing, of modelling and simulation systems for the high-level design and logic synthesis of Very Large Scale Integrated (VLSI) circuits. These simulation systems were state of the art UK software³, and in the 1980s and 1990s were at the forefront of formal, mathematical based, methods in the verification of computer systems, both hardware and

¹ My doctoral supervisor was the prolific, much loved and highly missed, British chemist, Napier Royal Society Research Professor R J P Williams, FRS, MBE, see [REDACTED]

² DPhil title: “Nuclear Magnetic Resonance Studies of Modified Eukaryotic Cytochrome c”

³ See references to Electronic Logic Language (ELLA), one of the systems on which I worked, in “The development and deployment of formal methods in the UK”, (2020)

[REDACTED], Cliff Jones and Martyn Thomas, Professor at Gresham College. Professor Thomas was one of my mentors in computing and a superior colleague of mine from 1985-1992 when we both worked at Praxis Systems plc where he was a founding Director.

software, used in applications such as fly-by-wire commercial aircraft. Commercial customers of our products were running software models of microprocessors and Application Specific Integrated Circuits (ASICs), at that time⁴, of up to one million transistors.

Between 1995 and 2006, I ran the high-performance computer service at the University of East Anglia (UEA), and I supported the university's scientific research community in running models, across a range of sciences, on a small supercomputer which I developed and managed. I have a wide understanding of the principles and practice of modelling complex systems which I bring to my current work.

I provided consultancy across the science faculties at UEA on computer modelling. This ranged from advising several generations of PhD and post-doctoral research students on modelling issues including detailed program coding issues; advising professors and research leaders on system and architectural issues of modelling, and in many cases programming solutions for them; testing and debugging extremely complex modelling systems for scientists who did not have the relevant IT skills in forensic fault finding; systems administration of servers and several iterations of high-performance computers; and running training courses of parallel computing and scientific computing languages across the campus. Supporting scientists running climate models in UEA's esteemed Environmental Science department was a significant part of my work too.

Due to the climate crisis, from 2005 I have been involved in campaigning and politics, and have also been a Green Party Councillor on Norfolk County Council for 12 years. The severity of the climate emergency is clear through science and has been for several decades, and my work through CEPP now is to promote the necessary rapid response to the Climate Emergency in mainstream institutions, such as local authorities and government, through the lenses of science, policy, and law. I am an Expert contributor to the proposed UK Climate and Ecological Emergency Bill⁵, drafted by scientists, legal experts, ecological economists, and environmentalists, and designed specifically to reverse the climate and ecological breakdown that we are facing. The Bill recently had a second reading in the House of Commons.

I have been awarded a fellowship for 2022 from the Foundation for Integrated Transport⁶ to study "*Exposing the flaws in carbon assessment and transport modelling for road schemes*".

⁴ One million was cutting edge at the time! Transistor counts now exceed two trillion on a single chip

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SUMMARY

Due to a serious illness of close family member, I am unable to submit a full written representation for this deadline. **This submission is a holding submission** which lays out background material to issues which need to be resolved in the Application, and will be elaborated on further in my full WR to be submitted later.

A number of issues are posed immediately which the Applicant should be required to address.

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1 INTRODUCTION

1.1 *Carbon Quantification and Assessment*

- 1 There are two key questions (KQ-1 and KQ-2) that the ExA, and SoS, need to consider on carbon assessment:

(KQ-1) How will the Scheme's emissions be quantified?

(KQ-2) Against which "target(s)" or "budget(s)" should the Scheme's emissions be contextualised for assessment?

- 2 The answers to these questions need to comply with the legislative and policy frameworks involved. In this submission, I will lay out some pointers to the relevant issues to be resolved, and on which I will provide more detailed evidence when I can submit a full WR.

1.2 *Recent changes to relevant policy*

- (a) The Government's Transport Decarbonisation Plan⁷ (TDP) and Net Zero Strategy⁸ (NZS) were released last year. **The A57 scheme should be assessed against the NZS** which is discussed in more detail in later section.
- (b) New carbon pricing data from the HM Treasury Green Book supplement on quantifying and valuing emissions of GHGs⁹, as transposed into an updated version of the DfT's WebTAG guidance¹⁰ and TAG data book (TAG Data Book November 2021 v1.17 (Table A3.4)). **The BCR for the A57 scheme needs to be recalculated**, not just on the basis of new carbon price data, but on to correct problems with the existing BCR calculation which I outline <https://integratedtransport.co.uk/work-we-fund>.

1.3 *Relevant documents from other DCO schemes*

- 3 I draw the ExA's attention to these recent new consultations by the SoS on the following schemes:

A. A1 in Northumberland – Morpeth to Ellingham [TR010059] (Secretary of State Consultation 3, 22nd December 2021 requiring response by January 19th 2022)

⁹ "Valuation of energy use and greenhouse gas: Supplementary guidance to the HM Treasury Green Book on Appraisal and Evaluation in Central Government"

¹⁰

- B. M25 junction 10/A3 Wisley interchange improvement [TR010030] (Secretary of State Consultation 8, 22nd December 2021 requiring response by January 19th 2022)
 - C. M25 junction 28 improvements [TR010029] (Secretary of State Consultation 3, 22nd December 2021 requiring response by January 19th 2022)
 - D. A38 Derby Junctions [TR010022] (Secretary of State Consultation 3, 22nd December 2021 requiring response by February 4th 2022)
- 4 Each of these consultations requires additional information from the Applicant on the cumulative assessment of climate impacts, and specifically asks for:

*“The Secretary of State invites the Applicant to update its response of [date] to provide (or, to the extent that it has already been provided, identify) **its assessment of the cumulative effects of Greenhouse Gas emissions from the scheme with other existing and/or approved projects on a local, regional and national level** on a consistent geographical scale (for example an assessment of the cumulative effects of the Roads Investment Strategy RIS 1 and RIS 2 at a national level).*

*This should: take account of both construction and operational effects; identify the baseline used at **each local, regional and national level**; and identify **any relevant local, regional or national targets/budgets** where they exist and how the assessment complies with these (including the carbon budgets, the 2050 zero target under the Climate Change Act 2008, and the UK’s Nationally Determined Contribution under the Paris Agreement). It should be accompanied by reasoning to explain the methodology adopted, any likely significant effects identified, any difficulties encountered in compiling the information, and how the assessment complies with the Environmental Impact Assessment Regulations.*

The Secretary of State would also welcome confirmation that the response to all parts of this question has been prepared by a competent expert. Please can links be provided to any documents referenced and their relevance fully explained.”

(my emphasis)

- 5 It is clear that the SoS is required to have significant regard, in decision making on road infrastructure, to:
- cumulative carbon emissions assessment
 - local, regional and national assessment
 - UK’s national and international obligations on Climate Change
 - EIA Regulations compliance

- 6 This is clearly relevant to the current DCO examination for the A57.

7 There is no assessment in the Environmental Statement of carbon emissions in cumulation with other existing and/or approved projects on a local, regional and national level.

1.4 Definitions

8 For scientific precision, I use the following additional definitions:

- **Absolute emissions** – carbon emissions which are expressed in terms of *an absolute quantity of emissions*. The value of the absolute emissions, as released into the atmosphere, quantifies the real measure of the impact of greenhouse gases as an environmental factor (or receptor).
- **Differential emissions** – carbon emissions, with an associated value which has been *derived by differentiation of absolute emissions*. The differentiation is usually performed by the difference between two traffic scenarios, one with a transport intervention and one without. Differential values derived this way do not quantify the real impact of atmospheric greenhouse gases by the transport intervention within its transport system, and therefore do not represent the real global heating impact.

9 The implication of these definitions will be discussed in my full WR.

2 CHANGES IN LOCAL AND NATIONAL POLICY

10 Section 1.3 notes that the SoS is required to have significant regard, in decision making on road infrastructure, to a number of issues including the UK's national and international obligations on Climate Change. The section provides more detail on the TDP, the NZS and also a report from Chatham House, which all relate to this issue.

2.1 Transport Decarbonisation Plan

11 On the 14th July 2021, the Government released its Transport Decarbonisation Plan¹¹ (TDP).

12 The Rt Hon Grant Shapps MP, Secretary of State for Transport states in the foreword:

“But we cannot, of course, simply rely on the electrification of road transport, or believe that zero emission cars and lorries will solve all our problems, particularly for meeting our medium-term carbon reduction targets to 2035. Road traffic, even on pre-pandemic trends, was predicted to grow by 22 percent from 2015 to 2035 much of it in cities, where new roadbuilding is physically difficult and disadvantages communities. We cannot pile ever more cars, delivery vans and taxis on to the same congested urban roads. That would be difficult for the roads, let alone the planet, to



tolerate. As we build back better from the pandemic, it will be essential to avoid a car-led recovery.”

(my emphasis)

13 On local transport challenges, the TDP states:

“We will drive decarbonisation and transport improvements at a local level by making quantifiable carbon reductions a fundamental part of local transport planning and funding. Local Transport Plans (LTPs) are existing statutory requirements that set out holistic place-based strategies for improving transport networks, proposed projects for investment and, ultimately, lay out how key objectives will be achieved. Going forward, LTPs will also need to set out how local areas will deliver ambitious quantifiable carbon reductions in transport, taking into account the differing transport requirements of different areas. This will need to be in line with carbon budgets and net zero.”

14 This indicates that the Government consider it essential to avoid car-led delivery, and are aware that electrification of road transport is not sufficient to tackle road-use emissions.

2.2 Net Zero Strategy

15 Published later in 2021, the Government’s Net Zero Strategy (NZS) backed the urgent need for ambitious quantifiable carbon reductions in transport, at the local level, with this statement:

“We are driving decarbonisation and transport improvements at a local level by making quantifiable carbon reductions a fundamental part of local transport planning and funding. Local Transport Plans (LTPs) – statutory requirements that set out holistic place-based strategies for improving transport networks and proposed projects for investment – will need to set out how local areas will deliver ambitious carbon reductions in line with carbon budgets and net zero.”

16 Critically, the NZS also sets out delivery pathways which link to existing carbon budgets and targets, and define indicative targets based on the pathways for each sector. For example, as far as the Paris Agreement and International Emissions Targets, the NZS Technical Annex states at page 307:

“International emissions targets

7. The 2015 Paris Agreement under the UN established the goal of keeping the global mean temperature rise to well below 2°C, whilst pursuing efforts to limit the rise to under 1.5°C. Under the Kigali amendment to the Montreal Protocol, the UK has also committed to reducing F-gas emissions by 85% on 2011-2013 levels by 2036.

8. *Under the Paris Agreement, the UK announced its Nationally Determined Contribution (NDC) in December 2020, which commits the UK to reduce net greenhouse gas (GHG) emissions by at least 68% by 2030 compared to 1990 reference year levels. This represents an increase of ambition on the fifth carbon budget, which covers the years 2028-2032.*

9. *The UK will therefore need to overachieve on the fifth carbon budget to meet its international climate targets and stay on track for the sixth carbon budget. Accordingly, the policies and proposals, delivery pathway, deployment assumptions and any other analysis presented in the Net Zero Strategy for the fifth carbon budget period are consistent with the action required to meet the UK’s 2030 NDC.”*

(my emphasis)

17 And for UK carbon budgets:

“Climate Change Act

... In 2019, on advice of the CCC, the UK committed to reaching net zero emissions by 2050 and consequently the target reduction in the Act was increased to at least 100%.

3. *To keep the UK on a pathway to achieving the 2050 target, the Government is obliged to set legally binding, five-year caps on emissions – carbon budgets – twelve years in advance and then to publish a report setting out policies and proposals for meeting that budget and those budgets previously set.*

4. *The Net Zero Strategy is the means by which we satisfy the requirements of the Act in relation to policies and proposals for meeting the current carbon budgets.*

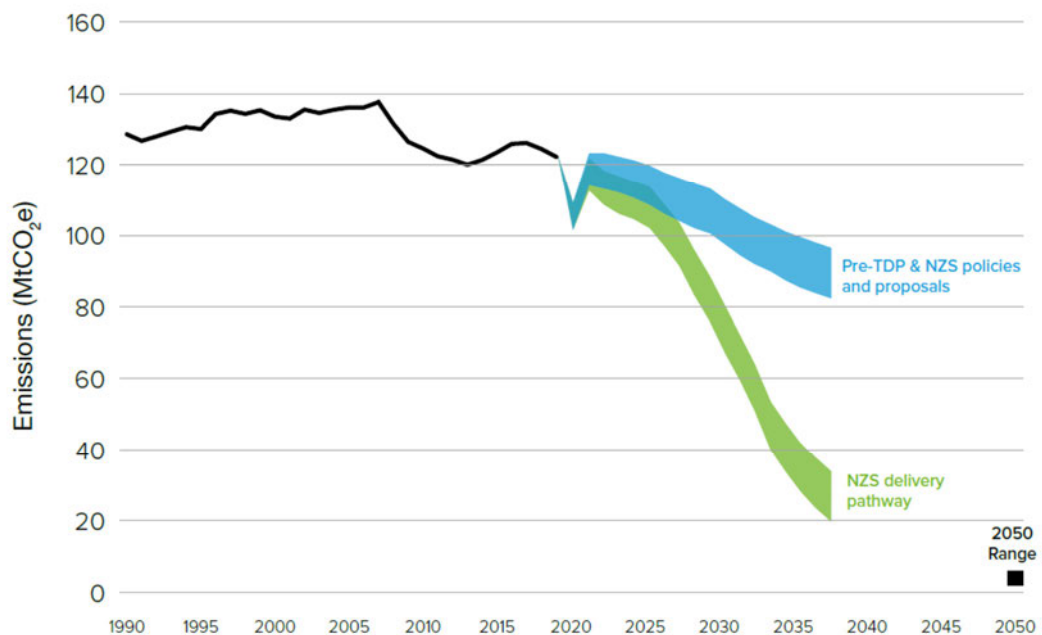
...

6. *To show how we will meet our climate targets, including legislated carbon budgets up to and including the sixth carbon budget, the Net Zero Strategy contains both an indicative delivery pathway and illustrative 2050 net zero scenarios. The pathway, which stretches to the end of the Sixth Carbon Budget period in 2037, provides an indicative trajectory of emissions reductions which we aim to achieve through the Strategy and through delivery of the policies and proposals outlined. It therefore indicates the timescales over which we expect those policies and proposals to take effect to deliver our targets. The pathway is designed to be broadly consistent with all three of the illustrative 2050 scenarios set out in the Journey to Net Zero chapter of the Net Zero Strategy. There is uncertainty associated with our decarbonisation pathway through to 2037 and the 2050 scenarios – the exact path we take to meet our climate targets is likely to differ and must respond flexibly to changes that arise over time.”*

(my emphasis)

- 18 The NZS delivery pathway, related to road transport, in the Figure below corresponds to a fall in residual emissions from domestic transport emissions (excluding aviation and shipping) by around 34-45% by 2030 and 65-76% by 2035, **relative to 2019 levels** (see Figure 21 from the NZS reproduced below).

Figure 21: Indicative domestic transport emissions pathway to 2037



Source: BEIS analysis

- 19 **The Applicant should make an assessment of the absolute carbon emissions associated with the study area for the scheme against the delivery pathway, lower and upper bounds, for both 2030, indicative of meeting the UK NDC under the Paris agreement, and 2035, indicative of meeting the 6th carbon budget, and therefore net zero by 2050.**
- 20 The policy interventions on the NZS and TDP, such as electric vehicles and modal shift, only effect operational road-user emissions, and do not address construction emissions which have a large impact in the period to 2030. Construction emissions are absolute emissions generated on top of the usual road-user emissions, and therefore add emissions to the transport sector whilst it already has the extremely challenging targets as above for 2030 and 2035. I also note that the economic cost of construction emissions has not been factored into the BCR calculations, and should be at the new carbon price data from the Treasury.

2.3 Chatham House Report

- 21 In September 2021, Chatham House, The Royal Institute of International Affairs,¹² published its “Climate change risk assessment 2021” with the strapline “the risks are compounding, and without immediate action the impacts will be devastating. The summary report is attached at Appendix D, and the lead’s author biography is in footnote¹³. The summary report intended for heads of government is based on research from Professor Nigel Arnell and team at the University of Reading.
- 22 Some of the headline points of carbon emissions, carbon budgets and emissions reductions are reproduced below:

“Current emissions and temperature pathways

Central estimate 2.7°C, plausibly higher

Global efforts to reduce CO2 emissions are dangerously off track. Current nationally determined contributions (NDCs) indicate a 1 per cent reduction in emissions by 2030, compared with 2010. If policy ambition, low-carbon technology deployment and investment follow current trends, 2.7°C of warming by the end of the century is the central estimate, relative to preindustrial levels, but there is a 10 per cent chance of warming of 3.5°C. These projections assume that countries will meet their NDCs; if they fail to do so, the probability of extreme temperature increases is non-negligible. A global temperature increase greater than 5°C should not be ruled out.

Net zero pledges

Many countries are currently focusing on net zero pledges, with an implicit assumption that these targets will avert climate change. However, net zero pledges lack policy detail and delivery mechanisms, and the gap between targets and the global carbon budget is widening every year. Unless NDCs are dramatically increased, and policy and delivery mechanisms are commensurately revised, many of the impacts described in this summary report will be locked in by 2040, and become so severe they go beyond the limits of what nations can adapt to.

Consequences for reaching the Paris Agreement goals

¹² Chatham House is a world-leading policy institute with a mission to help governments and societies build a sustainably secure, prosperous and just world.

¹³ Dr Daniel Quiggin is a senior research fellow with the Environment and Society Programme at Chatham House. He has expertise in the modelling, analysis and forecasting of national and global energy systems, having modelled various UK and global energy scenarios. As a senior policy adviser at the UK Department for Business, Energy & Industrial Strategy in 2018–20, Daniel led work on the post-Brexit policy implications for the energy sector’s trade of goods and services, and helped shape effective strategies for the energy and climate package of the UK–EU FTA negotiations. He also previously worked as an analyst at Investec Asset Management within a commodities and resources investment team. Daniel holds master’s degrees in particle physics and climate science, and a PhD in energy system modelling.

*If emissions follow the trajectory set by current NDCs, there **is a less than 5 per cent chance of keeping temperatures well below 2°C**, relative to preindustrial levels, and **a less than 1 per cent chance of reaching the 1.5°C Paris Agreement target.**”*

(my emphasis)

- 23 The report covers much more on heat, productivity and health; food security; water security; flooding; and tipping points and cascading risks. Whilst all of these are of extreme important to the future of sustaining wellbeing of this planet, I do not reproduce further clips on these topics, given the concerns here are about carbon emissions.
- 24 This report highlights that there is a huge gulf between extremely credible scientific assessments, such as the one providing the foundation of the Chatham House report, and the Applicant’s ES and response. Transition to net-zero requires a heavy investment, and no credible pathway to mobilising that level of investment has been demonstrated. The NZS sets out target-compliant “indicative delivery pathways” for each sector until 2037, such as the Figure 5.2 reproduced above, but Carbon Brief have pointed out that the NZS¹⁴ fails to quantify the impact of the new plans and policies it contains, meaning it is not possible to say if the government is now doing – or spending – enough to meet its legally binding goals.
- 25 Whilst the Chatham House report is not policy, it is important research that should underwrite policy and should be at the forefront of the minds of policy makers and decision makers. I include it here as relevant as it shows that the TDP and NZS are totally inadequate to the scale of the problem that is faced in the Climate Emergency. **The scheme has significant carbon emissions associated with it which will severely impact the TDP and NZS targets. The Applicant should be required to make a fully quantified assessment against the TDP and NZS.**
- 26 In this context, the Chatham House report, provides an alarming risk assessment on how these targets in the more global context of net-zero targets around the globe and the chances of staying below 1.5°C and 2°C is already extremely unlikely. Therefore, the Precautionary Principle must be considered. Any scheme which increases emissions, then impacts the TDP and NZS targets, and when these policies are unlikely to deliver anyway, must be tested against the precaution of not creating additional harm to the existing catastrophic situation.
- 27 The history of climate change in the last 30 years is littered with promises which have been broken, or not delivered. The Chatham House report puts this into fine focus. In making planning decisions on carbon-intensive infrastructure, like the A57, no reliance should be placed on unactioned paper plans, such as the NZS.

¹⁴ [REDACTED], 21st October 2021

28 The findings within Chatham House report and other reports such as the IPCC 6th Assessment report¹⁵ (Code Red), provide a clear context for decision making. And the TDP and NZS, by requiring local transport carbon budgets and targets, insist that regard must be given of the full extent of the carbon impacts on any transport project. That can only be fulfilled, by a detailed, and scientifically congruent, consideration of the carbon impacts involved. On the basis of the NPS NN, the EIA Regs and guidance, and the DMRB, this requires both a solus and cumulative assessment across all sub-types of carbon emissions and against local, regional and national carbon budgets is required.

3 LOCAL AND REGIONAL ASSESSMENT OF CARBON EMISSIONS

29 Section 1.3 notes that the SoS is required to have significant regard, in decision making on road infrastructure, to a number of issues including local, regional and national assessment of carbon impacts. This section lays out guidance relating to the EIA Regulations on this.

3.1 EIA Guidance documents

30 The EU Commission website hosts an official webpage for the EIA Directive¹⁶, which lists a number of Guidance documents.

31 Following the enactment of the reviewed EU EIA Directive “DIRECTIVE 2014/52/EU” in 2014, three guidance documents were published in 2017 on the screening¹⁷, scoping¹⁸ and EIA report writing¹⁹ stages.

32 Each of these 2017 guidance documents state that they “*aim[s] to help Developers and consultants alike prepare good quality Environmental Impact Assessment Reports and to guide competent authorities and other interested parties as they review the Reports. It focuses on ensuring that the best possible information is made available during decision-making*”.

33 Under “Climate change mitigation: Project impacts on climate change” on page 39 of the EIA report writing guidance (as supplied at Appendix B), it states:

“The assessment should take relevant greenhouse gas reduction targets at the national, regional, and local levels into account, where available. The EIA may also assess the extent to which Projects contribute to these targets through

¹⁵ Summary for Policymakers (SPM), AR6 Climate Change 2021: The Physical Science Basis, [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

reductions, as well as identify opportunities to reduce emissions through alternative measures.”

34 Whilst for cumulative effects²⁰ at page 50:

“[They] can arise from ... the interaction between all of the different Projects in the same area;”

*“... can occur at different temporal and spatial scales. The spatial scale can **be local, regional or global**, while the frequency or temporal scale includes past, present and future impacts on a specific environment or region.”* (our emphasis)

35 The guidance is promoted by the EU and identifies that Competent Authorities reviewing the EIA Report and using the information for decision-making, as one of its target audiences.²¹

36 From the same official webpage for the EIA Directive, further 2013 guidance is provided on “*Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*”. This guidance predates the 2014 Directive and was produced during the time of the 2011 EIA Directive “DIRECTIVE 2011/92/EU”. The guidance was implemented for the European Commission under Study Contract No 07.0307/2010/580136/ETU/A3 with Members of the Commission Group of EIA/SEA National Experts and staff from three Directorate-General of the Commission²². It reflects the view of the Commission services of the best EIA practice, including those with transposed national regulations like the UK. This guidance is provided at Appendix C.

37 Section 4.4.2 of this guidance states:

*“Judging an impact’s magnitude and significance must be context-specific. For an individual project — e.g. a road project — **the contribution to GHGs may be insignificant on the global scale, but may well be significant on the local/regional scale, in terms of its contribution to set GHG-reduction targets.**”* (my emphasis)

²⁰ [REDACTED] PDF page 52

²¹ See “HOW TO USE THIS GUIDANCE DOCUMENT” section

²² [REDACTED] pdf. The front-page states “This document benefited from Study Contract No 07.0307/2010/580136/ETU/A3, implemented for the European Commission by

Milieu Ltd, Collingwood Environmental Planning Ltd and Integra Consulting Ltd. The main authors were Jennifer McGuinn and Guillermo Hernandez from Milieu Ltd; Ric Eales, William Sheate and Jonathan Baker from Collingwood Environmental Planning; and Jiri Dusik from Integra Consulting. Maria Partidario of the Technical University of Lisbon and Helen Byron of the Royal Society for the Protection of Birds/Birdlife UK provided advice. Additional contributions about climate change were collected during the JASPERS workshops (March–April 2012). The text was also revised by Jiri Dusik. Members of the Commission Group of EIA/SEA National Experts (in particular, Paolo Boccardi, Susanna Eberhartinger-Tafill, Paul Fortuin, Aurora Hernando Garcinuno, Anna Kieniewicz, Gabrielle McKeown, Koen Maertens, Tadhg O’Mahony, Martine Moris, Kees Van Muiswinkel, Rainer Persidski, Claire Piens, Matthias Sauer, Roel Teeuwen, Adrian Vecino Varela) and staff of the European Commission’s Directorate-General for Climate Action (Vaidotas Kuodys, Sami Zeidan), Directorate-General for Humanitarian Aid and Civil Protection (Yordanka Mincheva, Thomas de Lannoy) and Directorate-General for Environment (Stephanos Ampatzis, Szilvia Bosze, Marco Fritz, Milena Novakova and Przemyslaw Oginski) also Contributed”

I am concerned that the Applicant claims that the results of its appraisal of differential emissions against national budgets reveals an insignificant effect against national carbon budgets. The guidance rightly suggests that carbon emissions assessed at a local/regional scale may well be significant, and I will bring forward evidence in my full WR that appraisal of absolute emissions against both national budgets and local budgets does demonstrate significant carbon impacts.

- 38 I have not been able to find any UK specific guidance relating to the EIA Regs that would provide different advice to the existing guidance on the official EU Commission webpage for the EIA Regs. It is therefore rational to apply guidance which was written to *“focus[es] on ensuring that the best possible information is made available during decision-making”* under the EIA Directive within the UK. Failure to even consider such guidance, as is the case in the Environmental Statement, would be irrational.

4 THE EIA REGULATIONS

- 39 Section 1.3 notes that the SoS is required to have significant regard, in decision making on road infrastructure, to a number of issues including EIA Regulation compliance in relation to all matters, including carbon impacts, and cumulative carbon emissions assessment. This section lays out the relationship between the EIA Regulations and the NPS NN, and particularly in relation to cumulative carbon emissions assessment.

- 40 The NPS NN section 4.15 invokes the EIA Regs and states that the Directive as transposed into UK law *“specifically requires an environmental impact assessment to identify, describe and assess effects on ... climate ...”*. The EIA Regs Schedule 4 is invoked which requires *“the likely significant effects of the proposed project on the environment, covering the **direct effects** and any indirect, secondary, **cumulative, short, medium and long-term**, permanent and temporary, positive and negative effects of the project”* to be described in the EIA.

The second highlighted section from NPS NN 4.15 above is directly “cut and paste” from the wording in the EIA Regs themselves, indicating it was the DfT’s intention in the NPS NN that significant effects, impacts or benefits as described are included in the Environmental Statement.

- 41 Again the EIA Regs are invoked for the assessment of carbon emissions at NPS NN 5.17 which states *“any Environmental Statement will need to describe an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive.”*

I am concerned that the Applicant’s assessment in the Environmental Statement has not met these requirements of the NPS NN, and not demonstrated assessment **cumulative impacts**.

4.1 *The EIA Regulations and the NPS NN*

42 In considering compliance with the EIA Regulations, the Applicant’s standard response at other recent DCO applications and examinations is to pitch the NPS NN as somehow legally eclipsing the EIA Regulations, and ignore the very clear requirement **in the EIA Regulations** for cumulative assessment which the NPS NN cannot remove.

43 The matter here is not about **either** the EIA Regulations “winning over” the NPS NN, **or** the reverse of the NPS NN winning over the EIA Regulations. The ExA and SoS are required to take account of, and apply, both pieces of legislation (ie it is an **and-and** situation).

44 The NPS NN **directly invokes** the EIA Regulations at NPS NN 4.15 and 4.16 (see Appendix A). The NPSNN, therefore, fully accepts that the EIA process must be followed in full. The NPSNN cannot, as a matter of law²³, in any way limit or constrain what is required by the EIA process; a full assessment of a proposed DCO’s environmental effects and their significance must be undertaken through the EIA process. This point is, in fact, recognised in the NPSNN at para 4.15 et seq. That section of the NPSNN even states, in relation to cumulative assessments that (at 4.17):

“The Examining Authority should consider how significant cumulative effects and the interrelationship between effects might as a whole affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place.”

45 Moreover, irrespective of what NPSNN policy might say as to how certain environmental effects should be considered, or weighed, in the decision-making process, the independent application of the EIA regime to the DCO process is designed to ensure that all significant environmental effects are both identified and assessed. Following this process, it is entirely permissible for the SoS to weigh a project’s significant environmental effects (as part of the adverse impact of the project) into his assessment of the balancing exercise required under section 104(7) of the Planning Act 2008 (see **R (oao ClientEarth) v SSBEIS [2021] EWCA Civ 43** at [95]).

46 Further, for the EIA Regulations, it is necessary to clearly distinguish solus and cumulative assessment. Solus²⁴ being the impacts of the scheme in isolation. Solus and cumulative impacts in the context of EIA assessment are clarified in *Pearce v BEIS [2021] EWHC 326 (Admin)*.

²³ I am grateful to the recent legal submission to A38 Derby Junctions scheme [TR010022], of 27th October 2021, here,

²⁴ Solus means, here, “alone; separate” as in the first definition in the Collins on-line dictionary

47 We have already described the two fundamental questions (KQ-1 and KQ-2) which the ExA and SoS need to consider, **through the lenses of both** the EIA Regulations and the NPS NN:

(KQ-1) How will the Scheme's emissions be quantified?

(KQ-2) Against which "target(s)" or "budget(s)" should the Scheme's emissions be contextualised for assessment?

48 The EIA Regulations are clear that two types of assessments (KQ-2), are required: solus and cumulative. A pre-requisite of this is that two types of quantifications (KQ-1), solus and cumulative, are also required. **I am concerned that the Applicant's traffic model configurations do not provide for the full extent of traffic model configurations to meet the full range of solus, and cumulative quantification and assessment of carbon impacts required.**

5 QUANTIFICATION OF ECONOMIC COSTS OF CARBON

5.1 *Background to carbon pricing for appraisal*

49 This section gives a very brief overview of the relevant methodology. I have noted above in section 1.2 that new guidance and carbon pricing values for appraisal were published by the Government in September and October 2021, followed by an update of the DfT WebTAG guidance and TAG data book. The BEIS Carbon Pricing Policy Paper "Valuation of greenhouse gas emissions: for policy appraisal and evaluation" (published 2 September 2021) is given in Appendix A.

50 In 2011, the previous approach (before the policy changes outlined above and reflected in the Application) of working towards a fully working carbon market was outlined by BEIS' predecessor department DECC²⁵.

"In the short term (up to 2030), different targets in the Traded (ETS) and Non-Traded (non-ETS) sectors imply that emissions in the two sectors are essentially different commodities and the approach to valuing carbon needs to reflect this reality. Therefore, traded and non-traded carbon values will be used over the 2008-2030 period (Chart 1). Beyond 2030, a fully working global carbon market is assumed implying a single carbon value for economic appraisal over the 2031-2050 period ...

²⁵ DECC publication, 2011, "Guidance on estimating carbon values beyond 2050: an interim approach",

Chart 1: Traded and Non Traded carbon values (2008-2050)



51 The latest Green Book supplement updates the method to recent Government policy on climate change, and the UK Emissions Trading Scheme, and “to give equal weight to emissions from the traded and non-traded sectors”²⁶. This means that from 2020 traded and non-traded emissions are equally valued, as shown in the graph below, in the latest carbon pricing figures are shown below graphically as clipped from the policy paper guidance (reproduced in Appendix A).

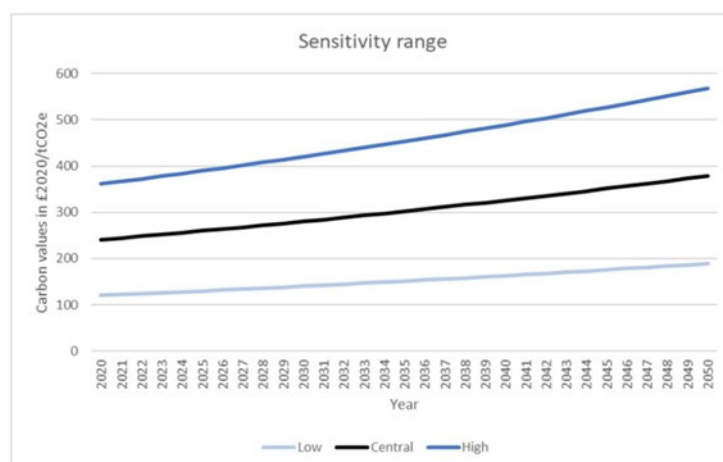


Figure 3: Sensitivity range of the updated carbon values.

52 Note that previously 60-year appraisals of road schemes have split the carbon emissions into the traded and non-traded sectors, with fossil fuel vehicles being non-traded and electric vehicles being traded. The fossil fuel vehicle / non-traded sector has been the numerically predominant sector in the appraisal data.

²⁶ See “Traded and non-traded carbon” under “Valuation of greenhouse gas emissions: for policy appraisal and evaluation”, September 2nd 2021 at

- 53 It can be seen that the new carbon prices are significantly greater than the previous ones. For example, for the predominant non-traded sector, the 2020 carbon price in the new policy data is c. £240/tCO₂e compared to of c. £60/tCO₂e on the previous data (ie 4 times greater).
- 54 The rationale for the change in carbon price is given in the policy paper, from Department of Business, Energy and Industrial Strategy (BEIS) “*Valuation of greenhouse gas emissions: for policy appraisal and evaluation*”, published 2 September 2021 and provided in Appendix A. BEIS has conducted a review and update of the carbon values because several factors have changed since the last review, the most significant of which are the following:
- i. Changes in international climate change targets, especially the Paris Agreement of 2015 and the new temperature target to limit global overheating to 1.5°C.
 - ii. Changes in national targets including the UK 2050 net-zero target.
 - iii. The introduction of a UK Emissions Trading Scheme (UK ETS) in January 2021 following Brexit.

5.2 Further issues with the economic valuation of carbon

- 55 The changes in carbon pricing outlined above require a revision of the BCR and the case for the Scheme. However, there are further issues which also need addressing in the recalculation as follows.
- 56 **Construction emissions** should be included on the cost side of the BCR.
- 57 Whether the **solus differential quantity of carbon emissions** used is the correct one. This will be explained in my full WR.
- 58 For the full economic cost of the greenhouse gases associated with the road requires that a quantification of **cumulative carbon emissions** is also taken forward into the calculations.
- 59 I respectfully request the ExA to require the Applicant to recalculate the BCR on this basis and update the case for the scheme.**

6 CONCLUSIONS

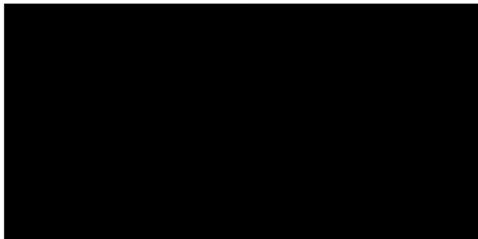
60 This holding submission has laid out some background to key issues which the SoS is required to have significant regard, in decision making on road infrastructure. These are

- cumulative carbon emissions assessment
- local, regional and national assessment
- UK's national and international obligations on Climate Change
- EIA Regulations compliance

61 These issues need to be addressed by the Applicant:

- The A57 scheme should be assessed against the “domestic transport emissions” delivery pathway in the Net-zero Strategy.
- The BCR for the A57 scheme needs to be recalculated against new carbon prices from the Government, and the three other issues which I have outlined.
- The Applicant must indicate how they have quantified and assessed cumulative carbon impacts with other developments and schemes, as distinguished from the carbon impacts of the scheme in solus, and consistent with the EIA Regulations.
- The Applicant must indicate how they have address local, regional and national carbon impact assessment.

62 Further elaboration will follow in my full WR.



Dr Andrew Boswell,
Climate Emergency Policy and Planning, January 14th, 2022

7 APPENDIX A: BEIS CARBON PRICING POLICY PAPER

Policy paper, Department of Business, Energy and Industrial Strategy (BEIS)
“Valuation of greenhouse gas emissions: for policy appraisal and evaluation”
Published 2 September 2021

Supplied as separate document

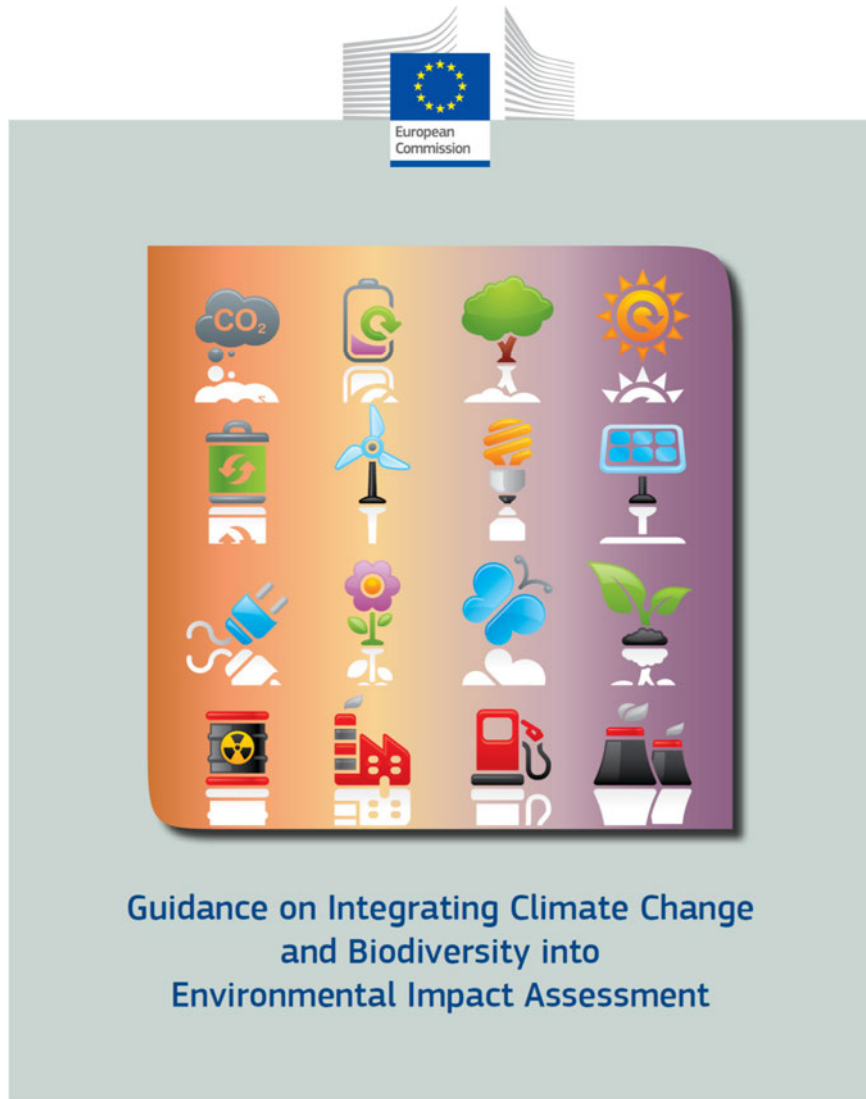
8 APPENDIX B: GUIDANCE ON THE PREPARATION OF THE ENVIRONMENTAL
IMPACT ASSESSMENT REPORT

Supplied as separate document



9 APPENDIX C: GUIDANCE ON INTEGRATING CLIMATE CHANGE AND BIODIVERSITY INTO ENVIRONMENTAL IMPACT ASSESSMENT

Supplied as separate document



10 APPENDIX D: CHATHAM HOUSE, CLIMATE CHANGE RISK ASSESSMENT 2021

Supplied as separate document