

# A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 9

9.113 Cumulative effects of Greenhouse Gas emissions from the  
Proposed Development

Planning Act 2008

Rule 8(1)(k)

Infrastructure Planning (Examination Procedure) Rules  
2010

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Planning Act 2008

**The Infrastructure Planning (Examination Procedure)  
Rules 2010**

**A428 Black Cat to Caxton Gibbet  
improvements  
Development Consent Order 202[ ]**

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**9.113 Cumulative effects of Greenhouse Gas emissions  
from the Proposed Development**

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| <b>Author</b>                                 | A428 Black Cat to Caxton Gibbet improvements<br>Project Team, National Highways |

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# 1 Update to Environmental Information

- 1.1.1 The Examining Authority (ExA) invites the Applicant to provide 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).
- 1.1.2 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.
- 1.1.3 The ExA 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.
- 1.1.4 These matters have been discussed through the Examination, in particular through second Written Questions [PD-009] [REP4-037] [REP4-073] [REP5-025], at Issue Specific Hearing 4 [EV-055] [EV-062] [EV-067] [REP6-036] [REP6-072] [REP6-105] to [REP6-136] and through Third Written Questions [REP8-014]. However, the Applicant is requested to provide a comprehensive response here, collating where necessary any aspects of the assessment that have already been provided in your other submissions.

## Response

- 1.1.5 National Highways has responded to this request by breaking it down into various constituent parts as follows:
- a. National Highways' assessment (*or updated assessment*) of the cumulative effects of greenhouse gas emissions from the A428 Black Cat to Caxton Gibbet Improvements (the Scheme) with other existing and/or approved projects.
  - b. For the assessment (*or updated assessment*) to be on a consistent geographical scale at a national, regional and local scale accounting for construction and operational contributions.
  - c. How the assessment (*or updated assessment*) which identifies the baseline used at each local, regional and national level compares against any identified relevant local, regional or national carbon targets and/or budgets (including the carbon budgets, the 2050 net zero target under the Climate Change Act 2008 and the UK's Nationally Determined Contribution under the Paris Agreement).

- d. How an assessment was undertaken to evaluate the likely significant effects of the Scheme, and any difficulties encountered in compiling the information.
  - e. How the assessment presented for the Scheme complies with the Environmental Impact Assessment Regulations.
  - f. A confirmation that this response has been prepared by a competent expert.
- 1.1.6 Furthermore, for completeness National Highways has collated the various examination materials listed by the ExA into **Appendix A**. The previous responses support the comprehensive response set out in this document.
- 1.1.7 To assist the ExA, National Highways has set out its response for each of the matters raised in turn.

### **Assessment of Cumulative Effects of Greenhouse Gas Emissions from the Scheme with other Existing and/or Approved Projects**

- 1.1.8 National Highways follows the advice set out in the Design Manual for Roads and Bridges (DMRB) for the design and evaluation of the impact of any of its road schemes. This ensures consistency in how any scheme is progressed and how the outcomes are evaluated.

- 1.1.9 In respect of the assessment of cumulative effects, DMRB Chapter LA 104- Environmental assessment and monitoring provides the following overarching advice on the assessment and evaluation of cumulative impacts on pages 17-18:

*“Paragraph 3.21 Environmental assessments shall assess cumulative effects which include those from:*

- 1) a single project (e.g. numerous different effects impacting a single receptor); and*
- 2) different projects (together with the project being assessed).*

*Paragraph 3.21.2 The assessment of cumulative effects should report on:*

- 1) roads projects which have been confirmed for delivery over a similar timeframe;*
- 2) other development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and*
- 3) proposals in adopted development plans with a clear identified programme for delivery.*

*Paragraph 3.22 The assessment of cumulative effects shall:*

- 1) establish the zone of influence of the project together with other projects;*
- 2) establish a list of projects which have the potential to result in cumulative impacts; and*
- 3) obtain further information and detail on the list of identified projects to support further assessment.”*

- 1.1.10 The DMRB LA 114, Climate<sup>1</sup> describes the approach to be undertaken to assess and evaluate the climate impacts and adaptation for schemes. This is set out in Chapter 14, Climate [APP-083] of the Environmental Statement for the Scheme
- 1.1.11 The assessment of carbon dioxide (CO<sub>2</sub>) undertaken has assessed the construction and operational effects of the Scheme as follows:
- a. Construction – the materials and energy required to construct the Scheme.
  - b. Operational – emissions produced by vehicles using the completed Scheme and associated journeys from the wider road network that incorporate or have a change in their journey following opening of the Scheme; emissions produced by maintenance activities over its design life (i.e. 60 years).
- 1.1.12 The traffic modelling for the Scheme has been undertaken in line with Transport Appraisal Guidance published<sup>2</sup> by the Department for Transport (DfT). The traffic modelling assessment reports for this Scheme have been submitted to the DCO examination. The traffic model used for the Scheme has been developed in line with DfT requirements and are **inherently cumulative**. This is because, in brief, traffic models used to support Scheme assessment contain data about the following:
- a. The proposed Scheme and adjoining Strategic Road Network and local road network.
  - b. Other schemes promoted by National Highways in the near vicinity of the proposed Scheme with high certainty they are to be progressed i.e. progressed beyond preferred route announcement stage.
  - c. They are based on discussions with the relevant planning authority, of foreseeable developments promoted by third parties as likely to be developed in a similar timeline to the proposed National Highways' Scheme. Knowing where the proposed third party development is to be sited, the extents and types of development, and the timescales of when it is to be complete are requirements to ensure that the development can be reasonably described in the traffic model; and
  - d. National government regional growth rates which include a representation of likely growth rates excluding known planning developments already included in the traffic model. This is represented by DfT's NTEM/TEMPro<sup>3</sup> growth factors for car usage, and growth in freight is derived from DfT's National Transport Model<sup>4</sup>.

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<sup>1</sup> <https://www.standardsforhighways.co.uk/prod/attachments/d1ec82f3-834b-4d5f-89c6-d7d7d299dce0?inline=true>

<sup>2</sup> <https://www.gov.uk/guidance/transport-analysis-guidance-tag>

<sup>3</sup> <https://www.gov.uk/government/publications/tempo-downloads>

<sup>4</sup> <https://www.gov.uk/government/publications/national-transport-model-ntmv2r-overview-of-model-structure-and-update>

1.1.13 In terms of operational carbon, when National Highways evaluates the changes in CO<sub>2e</sub> emissions of their proposed schemes they do so by comparing changes in the road traffic on the Strategic Road Network and local road network between the 'without Scheme scenario' with the 'with Scheme scenario'. This takes into account the assessment of the proposed Scheme and all other developments likely to have an influence of the proposed road Scheme and the area the proposed road Scheme is likely to influence.

1.1.14 In essence, as both with and without Scheme scenarios already include all likely developments and traffic growth factors, the assessment is inherently cumulative as regards operational carbon emissions. This is a state of affairs recognised in general terms in paragraph 3.4.4 of the Planning Inspectorate's Advice Note 17 ("Cumulative effects assessment relevant to nationally significant infrastructure projects"), the first two sentences of which state that:

*"Certain assessments, such as transport and associated operational assessments of vehicular emissions (including air and noise) may inherently be cumulative assessments. This is because they may incorporate modelled traffic data growth for future traffic flows. Where these assessments are comprehensive and include a worst case within the defined assessment parameters, no additional cumulative assessment of these aspects is required (separate consideration may be required of the accumulation or inter-relationship of these effects on an individual set of receptors e.g. as part of a socio economic assessment)."*

### **The Appropriate Geographical Scale of Assessment of Greenhouse Gas Emissions,**

1.1.15 In line with the requirements set out in Climate Change Act 2008<sup>5</sup> (CCA 2008), Part 1, Section 4 (see below) parliament has set carbon budgets<sup>6</sup> at the national scale.

#### **"Carbon budgets**

1) *It is the duty of the Secretary of State—*

*(a) to set for each succeeding period of five years beginning with the period 2008-2012 ("budgetary periods") an amount for the net UK carbon account (the "carbon budget"), and*

*(b) to ensure that the **net UK carbon** account for a budgetary period does not exceed the carbon budget" [our emphasis].*

1.1.16 Carbon budgets cover the following 11 sectors:

- a. Surface Transport
- b. Buildings
- c. Manufacture and Construction
- d. Electricity Generation

<sup>5</sup> [https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf)

<sup>6</sup> <https://www.gov.uk/guidance/carbon-budgets>

- e. Fuel Supply
  - f. Agriculture and land use, land use change and forestry
  - g. Aviation
  - h. Shipping
  - i. Waste
  - j. Fluorinated gases (F-gases)
  - k. Greenhouse gas removals
- 1.1.17 The national carbon budgets are themselves cumulative i.e., the sum of carbon emissions from a range of sectors between now and the end of the 6<sup>th</sup> carbon budget (2037).
- 1.1.18 The CCA 2008 does not impose a legal duty to set carbon budgets at a smaller scale than national i.e. regional or local. Specifically:
- a. In setting carbon budgets parliament has not imposed any legal duty upon local authorities to attain any particular targets whether carbon budgets or for net zero 2050. i.e. there are no legal duties which require particular geographical areas within the UK to achieve particular reductions in carbon emissions by particular dates.
  - b. Neither Parliament nor Government has identified any sectoral targets for carbon reductions related to transport, or any other sector. There is no requirement in the CCA 2008, or in government policy, for carbon emissions for all road transport to become net zero. This was explained in the ***R(Transport Action Network) v Secretary of State for Transport*** [2021] EWHC 2095 (Admin) (“the TAN case”) in which Holgate J held that:  
*“...there is no sectoral target for transport, or any other sector, and that emissions in one sector, or in part of one sector, may be balanced against better performance in others. A net increase in emissions from a particular policy or project is managed within the government's overall strategy for meeting carbon budgets and the net zero target as part of "an economy-wide transition.”*
  - c. A net increase in emissions from a particular policy or project is thus managed within the government's overall strategy for meeting carbon budgets and the net zero target as part of an economy-wide transition.
- 1.1.19 There is, therefore, no legal requirement to assess the impact of an individual project against the total carbon emissions from RIS 1 and RIS 2.
- 1.1.20 To conduct an impact assessment at a local or regional scale some form of baseline would need to be identified, and that baseline would need to comprise:
- a. A forecast of carbon emissions from all cumulative sources relevant to the geographic/sectoral scale being adopted.
  - b. A forecast which addresses the time frame relevant to the proposed road Scheme.

- c. A forecast which reflects existing government policy to attain the 6th carbon budget and net zero 2050.
  - d. A forecast which does not include carbon emissions from the proposed road Scheme (to avoid double counting).
- 1.1.21 The Government sets carbon budgets at a national level in accordance with the CCA 2008. Carbon budgets are not produced at a local or regional level.
- 1.1.22 National Highways is therefore unable to produce a baseline at a local or regional scale itself. Such a baseline would have to be consistent with the Government's understanding of the likely implications of its policies over time in a particular geographic area. In relation to carbon reductions, those policies are myriad and extend to matters beyond the planning system and into issues relating to the use of fiscal incentives / disincentives to manage carbon emissions across the country as a whole.
- 1.1.23 Relevant to this request for information is that an environmental statement is required to include such information as is reasonably required to assess the environmental effects of the development and which the applicant can reasonably be required to compile having regard to current knowledge (see *R. (Khan) v London Borough of Sutton* [2014] EWHC 3663 (Admin) and *Preston New Road Action Group v Secretary of State for Communities and Local Government* [2018] Env. L.R. 18).
- 1.1.24 There is no reasonable basis upon which National Highways can assess the carbon emissions impact of the Scheme at a local or regional level and it is not required to do by law or by the National Policy Statement for National Networks (NPS NN).
- 1.1.25 Accordingly, National Highways is not in a position to provide an assessment of the cumulative effects of the greenhouse gas emissions for the Scheme for anything other than at the national level carbon budgets.

### **How the Assessment Complies with Various Carbon Budgets and Wider Carbon Policies**

- 1.1.26 Overall compliance with, or attainment of, 'carbon budgets', 'the 2050 zero target' under the Climate Change Act 2008, and the 'UK's Nationally Determined Contribution' under the Paris Agreement are the responsibility of Government to manage as they are matters of national policy and not policies set at an individual scheme level.
- 1.1.27 The NPS NN sets the national policy framework against which decision makers can evaluate the outcomes of proposed road infrastructure project. The NPS NN sets policy advice across a range of topics such as air quality, noise, biodiversity and carbon (see paragraphs 5.16 to 5.29 pages 49 and 50).
- 1.1.28 The specific advice on the evaluation of carbon impacts from a proposed scheme and decision making considerations is set out in paragraphs 5.17 and 5.18 respectively.

### **“Applicant’s assessment**

**5.17** Carbon impacts will be considered as part of the appraisal of scheme options (in the business case), prior to the submission of an application for DCO. Where the development is subject to EIA, any Environmental Statement will need to describe an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets. However, **for road projects applicants should provide evidence of the carbon impact of the project and an assessment against the Government’s carbon budgets.** [our emphasis].

### **“Decision making**

**5.18** The Government has an overarching national carbon reduction strategy (as set out in the Carbon Plan 2011) which is a credible plan for meeting carbon budgets. It includes a range of non-planning policies which will, subject to the occurrence of the very unlikely event described above, ensure that any carbon increases from road development do not compromise its overall carbon reduction commitments. The Government is legally required to meet this plan. Therefore, any increase in carbon emissions is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets.” [our emphasis].

- 1.1.29 NPS NN requires assessment against the Government’s climate reduction targets i.e. the carbon budgets which are set at a national geographical scale. It does not require assessment against any local or regional targets. This is because the Government has not identified or adopted any carbon reduction targets at a scale smaller than the UK as a whole i.e. National Carbon Budgets.

### **How an Assessment was Undertaken to Evaluate the Impacts of the the Scheme Including Consideration of Likely Significance Effects**

- 1.1.30 National Highways’ approach to assessing and evaluating the CO<sub>2</sub>e impacts associated with proposed Schemes is set out in DMRB LA 114 Climate, Section 3 Methodology. Within Section 3 of LA 114, paragraphs 3.18 to 3.20 defines the reporting requirements for comparison against the relevant carbon budgets (*in existence at the time of the assessment*) and the evaluation criteria for significance, which is consistent with the decision making requirements set out in paragraphs 5.17 and 5.18 of the NPS NN.
- 1.1.31 Chapter 14: Climate [APP-083] of the environmental statement for the Scheme sets out the climate assessment completed for this scheme and conclusion. It concluded that it did not cause a significant effect for changes in CO<sub>2</sub>e emissions when compared to carbon budgets.

- 1.1.32 However, since the submission of the environment statement, the Department for Environment, Food and Rural Affairs (Defra) has released (on the 19 November 2021) a new version of the Emissions Factors Toolkit (EFT) (version 11). This update is notable because, for the first time, the EFT now includes data relating to the UK vehicle fleet and associated emissions for the period between 2031 and 2050 inclusive. EFT v11 also now includes a greater uptake rates of electric vehicles, aligned to electric vehicle penetration rates described in worksheet labelled 'A1.3.9' of DfT's Databook<sup>7</sup> for all road types (motorways, urban and rural) listed in EFT.
- 1.1.33 Previous versions of EFT, including EFT v9 which informed the DMRB Tool v7 used to calculate CO<sub>2</sub>e emissions from road traffic for the Scheme for the Environmental Statement (ES), stopped at 2030. In the absence of CO<sub>2</sub>e emission factors after 2030 for earlier versions of EFT before EFT v11, 2030 emissions were used as the last available set of factors to represent CO<sub>2</sub>e emissions into the future. This clearly overstated the CO<sub>2</sub>e impacts, not taking into account the higher uptake rates of electric vehicles post 2030 as described by DfT Databook.
- 1.1.34 DfT published their Transport Decarbonisation Plan (TDP)<sup>8</sup> on the 14 July 2021, which sets out Government's aspirations to decarbonisation transport to support the wider approach to achieving Net Zero by 2050. The TDP represents a series of policy and measures Government is considering to decarbonise transport. "Figure 2: Decarbonising Transport domestic transport GHG emission projections, versus the baseline", page 45 of the TDP, illustrates the anticipated reduction in CO<sub>2</sub>e emissions from transport, including road traffic between 2020 and 2050.
- 1.1.35 DfT have advised National Highways that a sensitivity test based on the impact of the policy measures set out in TDP can now be undertaken for schemes. DfT have approved a sensitivity test based on the rate of improvement shown in Figure 2 of the TDP can be applied to CO<sub>2</sub>e emissions calculated for the Scheme assessment.
- 1.1.36 **Table 1-1** presents the change in CO<sub>2</sub>e emissions between the 'with Scheme scenario' (also referred to as the **Do-something scenario**) and 'without Scheme scenario' (also referred to as the **Do-minimum scenario**), split by carbon budgets, for the CO<sub>2</sub>e emissions previous reported in the environmental statement, the updated CO<sub>2</sub>e emissions based on EFTv11 and TDP sensitivity test (upper and lower bounds).

<sup>7</sup> <https://www.gov.uk/government/publications/tag-data-book>

<sup>8</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009448/decarbonising-g-transport-a-better-greener-britain.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-g-transport-a-better-greener-britain.pdf)

**Table 1-1: Change in CO<sub>2</sub>e Emissions (With Scheme Scenario – Without Scheme Scenario)**

|   | CO <sub>2</sub> e (Millions of tonnes) |                  |                   |                  |
|---|--|------------------|-------------------|------------------|
| Carbon Budget Period  | 3 (2018-2022)<br>(e)                   | 4 (2023-2027)    | 5 (2028-2032)     | 6 (2033-2037)    |
| <b>Carbon Budget</b>  | 2,544Mt                                | 1,950 Mt         | 1,725 Mt          | 965 Mt           |
| <b>Previously Reported in the Environmental Statement</b>   |  |                  |                   |                  |
| <b>Construction (a)</b>   | 0.0521                                 | 0.1563           | 0                 | 0                |
| <b>Operation (b)</b>  | 0                                      | 0.0736(f)        | 0.2015            | -(g)             |
| <b>Total</b>  | <b>0.0521</b>                          | <b>0.2299</b>    | <b>0.2015</b>     | <b>-</b>         |
| <b>Updated Government Guidance Since the Publication of the Environmental Statement</b>   |  |                  |                   |                  |
| <b>Construction (c)</b>   | 0.0515                                 | 0.1555           |                   |                  |
| <b>Operation (d)</b>  | 0                                      | 0.0702           | 0.1730            | 0.1695           |
| <b>Total</b>  | <b>0.0515</b>                          | <b>0.2257</b>    | <b>0.1730</b>     | <b>0.1695</b>    |
| <b>Sensitivity Test for Operational Emissions</b>   |  |                  |                   |                  |
| <b>TDP (upper bound)</b>  |  | 0.0 <u>99692</u> | 0.1 <u>360595</u> | 0.0 <u>90309</u> |
| <b>TDP (lower bound)</b>  |  | 0.0 <u>73530</u> | 0.0 <u>790346</u> | 0.0 <u>40139</u> |
| <b>Notes:</b>   |  |                  |                   |                  |
| Mt – Millions of Tonnes   |  |                  |                   |                  |
| (a) National Highways Carbon Emissions Calculation Tool v.2.2 (2020)  |  |                  |                   |                  |
| (b) Road user emissions (DMRB v7 based on EFT v.9)  |  |                  |                   |                  |
| (c) National Highways Carbon Emissions Calculation Tool v2.4 (2021)   |  |                  |                   |                  |
| (d) Road user emissions (DMRB v9 based on EFT v11)  |  |                  |                   |                  |
| (e) The assessment undertaken for the Environmental Statement assumed a start of construction works date in 2022, resulting in one year of a 4 year construction period falling within the 3rd carbon budget period. For the purposes of comparison with the EFT v11 toolkit, the same construction period has been assumed for both assessments (i.e. 2022 to 2025). |  |                  |                   |                  |
| (f) The first year of operation will be 2026.   |  |                  |                   |                  |
| (g) The 6 <sup>th</sup> Carbon Budget was not published at the time the ES was produced therefore emissions were not presented against the 6 <sup>th</sup> carbon budget.   |  |                  |                   |                  |

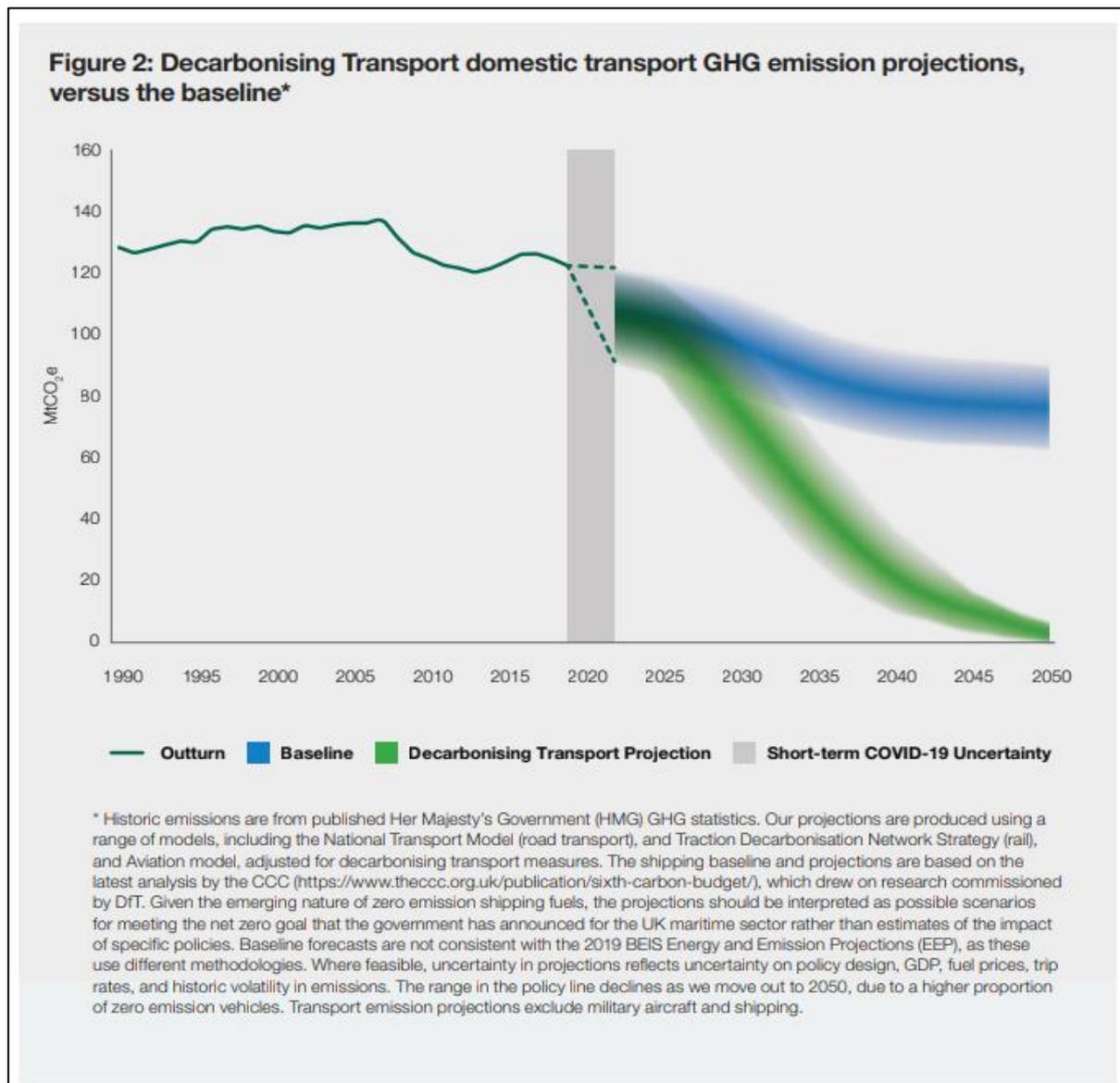


Figure copied verbatim from Transport Decarbonisation Plan

### How the Assessment Presented for the Scheme Complies with the Environmental Impact Assessment Regulations

1.1.37 An environmental statement is required to describe the likely significant effects of a proposed development on the environment (Regulation 14 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017<sup>9</sup>. This includes a description of the likely significant effects on the environment from, inter alia, the impact of the project of climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change. An environmental statement is also required to describe the likely significant cumulative impacts of the development proposed together with those from other

<sup>9</sup> <https://www.legislation.gov.uk/ukxi/2017/572/contents/made>

“existing and/or approved projects” (see paragraph 5 (e) of Schedule 4 to the 2017 Regulations).

- 1.1.38 To undertake this work and come to an informed judgement an environmental statement is required to include such information as is reasonably required to describe the environmental effects of the development and which the applicant can **reasonably be required to compile having regard to current knowledge**<sup>10</sup>. In the context of assessing cumulative carbon impacts, the only assessment National Highways can be reasonably required to undertake is one having regard to current knowledge.
- 1.1.39 Accordingly, the environmental statement produced for the Scheme complies with the 2017 Regulations.
- 1.1.40 However, there is no reasonable basis upon which National Highways can assess the carbon emissions impact of the Scheme at a local or regional level and it is not required to do so by law or pursuant to the NPS NN.
- 1.1.41 National Highways can only assess the change in CO<sub>2</sub>e emissions from the Scheme in absolute terms and against the national carbon budgets.
- 1.1.42 The procedures and evaluation criteria set out in DMRB LA 114 Climate, are appropriate and sufficient to ensure that the cumulative effects of proposed road schemes upon climate change are assessed in accordance with the 2017 Regulations and to provide sufficient evidence for the decision making requirements set out in paragraph 5.18 of the NPS NN.

### **The Assessment was Prepared by a Competent Expert**

- 1.1.43 This response to the issues questions raised by the Examining Authority on climate have been prepared by competent experts with relevant and appropriate experience.
- 1.1.44 The technical lead for air quality and vehicle emissions is the Principal Air Quality Advisor for National Highways with more than 25 years of relevant experience with appropriate professional qualifications. The technical lead for carbon from construction activities is the Senior Technical Advisor for Sustainable Development and Climate Change for National Highways with more than 16 years of relevant experience with appropriate professional qualifications.
- 1.1.45 National Highways confirm that the assessment work set out in **Table 1-1** has been carried out by a suitably competent expert from AECOM Ltd. Ian Davies has a BA Hons in Environmental Studies and his CV is set out at Appendix B of this document. He has over 20 years of knowledge and experience in climate assessment and used that knowledge and professional judgement to undertake this assessment.

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<sup>10</sup> (see R. (Khan) v London Borough of Sutton [2014] EWHC 3663 (Admin) and Preston New Road Action Group v Secretary of State for Communities and Local Government [2018] Env. L.R. 18)

## Appendix A – Compilation of Responses from Previous Submissions

| Question   | Applicant Response  |
|--|---|
| <p><b>[PD-009] ExA Written Questions (WQ2)</b></p>   |   |
| <p><b>Q2.4. Climate Change and Carbon Emissions – Emissions – Assessment of effects</b></p> <p>The ES states that the Proposed Development will produce 208,380 tCO<sub>2</sub>e during construction [APP-083, Table 14-9] with an increase of approximately 3,313,499 tonnes in emissions of CO<sub>2</sub> associated with the affected road network over the 60 year appraisal period [APP-254, Paragraph 4.4.7]. The ES concludes that this will have no significant effects on Climate either during construction or operation [APP-083] [APP-085].</p> <p>a) Applicant, indicate what level of emissions would be considered significant in this context, for the Proposed Development alone and for cumulative and in-combination effects.</p> <p>b) Applicant, how do the forecast levels of CO<sub>2</sub> emissions compare to other RIS1 or RIS2 road schemes?</p> <p>c) Applicant, provide a comparison between the Proposed Development and other road scheme(s) where the carbon emissions have been assessed to have significant effects.</p> <p>d) Applicant, how would the expected CO<sub>2</sub> emissions from the Proposed Development be mitigated from 2050 when the UK is committed to becoming carbon neutral [APP-083, Paragraph 14.2.4]? Explain how any uncertainties in terms of national mitigation measures linked to carbon budgets are assessed.</p> <p>e) TAN, at ISH3 [EV-047] you drew a parallel between the assessment and significance of effect of the Proposed Development on the historic environment, and the effect of</p> | <p>The Applicant has provided responses to Q2.4 parts ‘a’ to ‘g’ in a number of subsequent responses including: Q3.4.1.1 [REP8-014], Q2.4.1.1 [REP0-37]</p> <p><b>Applicant response deadline 8, [REP8-014].</b></p> <p>a) Climate assessment guidance provides no specific guidance on what levels of emissions would be considered significant.</p> <p>DMRB LA114, paragraph 3.20, states that the assessment of projects on climate shall only report significant effects where increases in GHG emissions will have a material impact on the ability of Government to meet its carbon reduction targets.</p> <p>NPSNN, paragraph 5.17, states that "It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets."</p> <p>To test this, emissions from the Scheme have been put in the context of the UK carbon budgets, including the 6<sup>th</sup> carbon budget which is in line with the UK's 2050 net zero carbon emissions target. The results of this assessment are presented in Chapter 14, Climate [APP-083] of the Environmental Statement and conclude that as emissions from the Scheme only contribute 0.012% to the 4<sup>th</sup> carbon budget, 0.011% of the 5<sup>th</sup> carbon and 0.024% of the 6<sup>th</sup> carbon budget they are not so significant as to affect the ability of the government meeting its carbon reduction plan targets. Furthermore, it has been noted in Q1.1.1.1 [REP1-22] that the carbon emissions presented in Chapter 14, Climate [APP-083] of the Environmental Statement are a conservative estimate as do not take into account the impact of the government's Transport Decarbonisation Plan. In addition, at the time the road user emissions</p> |

| Question  | Applicant Response  |
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| <p>carbon emissions from the Proposed Development on climate change. What evidence can you provide to the ExA to demonstrate that there is an accepted and appropriate way of drawing a parallel between the assessment methodology and significance of effects between historic environment (or any other receiving environment) and carbon emissions. Make reference to NPS NN, EIA regulations 2017 or any other Government legislation, policy document, and industry guidance and best practice.</p> <p>f) Applicant, what are the commuting routes that would inform consumer user benefits for the Proposed Development?</p> <p>g) Applicant, what are the implications of the cancellation of the Oxford Cambridge Expressway in March 2021 on the Proposed Development. Is any of the evidence that informed the decision to cancel the Oxford Cambridge Expressway relevant to the evidence supporting the need for the Proposed Development?</p> | <p>were calculated, version 10 of the Emissions Factor Tool was the latest available. This only made minimal provision for the update of electric vehicles on the road network. Version 11 of the EFT release in November 2021 makes a greater allowance for electric vehicle uptake which would result in reduced emissions from the Scheme.</p> <p>As presented in the Applicant's response to Q2.4.1.1 <b>[REP4-037]</b>, this Scheme's contribution to the UK carbon budgets is commensurate with other schemes from RIS 1 and RIS 2 which were found not to have a significant impact, or have a material effect, on the ability of the UK to meet its carbon reduction targets. This included the A1 Morpeth to Ellingham (0.01-0.001% of the relevant carbon budgets), A38 Derby Junctions (less than 0.01% of the relevant carbon budgets), M42 Junction 6 Improvement (less than 0.006% of the relevant carbon budgets) and the A1 Birtley to Coal House (0.001-0.005% of the relevant carbon budgets).</p> <p>In the absence of specific policy-based criteria on what is significant, whether the impact of a scheme is significant is a matter of judgement in individual cases based on the information relating to the scheme in question. In this case the Applicant has assessed the carbon emissions arising from the Scheme and reached a judgment that the effect would not be significant for the reasons set out above. Further, those reasons demonstrate why the policy test in the NPS NN would be met.</p> <p>b) Chapter 14, Climate <b>[APP-083]</b> of the Environmental Statement presents an assessment of the significance of the Scheme in line with the requirements of the NPSNN. NPSNN, paragraph 5.17, states applicants should provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets. NPS NN, paragraph 5.18, goes on to state that any increase in carbon emissions is not a reason to refuse development consent unless the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets. As required by the NPSNN, this is the approach which the Applicant has adopted in</p> |

| Question | Applicant Response  |
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|          | <p>assessing the significance of GHG impacts as a result of the Scheme. There is no national policy requirement to assess the significance of a scheme's GHG impact based on the economic impact of carbon emissions as suggested by the Examining Authority in this question. The Applicant is not aware that any such assessment has ever been undertaken on any other National Highways schemes and indeed there is no agreed methodology on how such an assessment would be undertaken.</p> <p>For these reasons, it is not considered appropriate to assess the significance of GHG impacts by reference to the economic impact of carbon emissions in the way the Examining Authority suggests, and instead the approach set out in the NPSNN should be adopted.</p> <p>c) Changes to the Emission Factor Toolkit (EFT), version 11 was issued by Defra in November 2021, and would result in a reduction in estimated road user emissions as a result of a predicted increase in electric vehicles.</p> <p>As per the Applicant's response to Q3.11.1.1, where the Examining Authority has asked what impact this and other changes to DfT's Transport Assessment Guidance (TAG) and the associated supplementary Green Book Guidance: 'valuation of energy use and greenhouse gas emissions for appraisal' would have on the economics of the Scheme, the Applicant has agreed to carry out a further assessment that will involve running the latest version of the EFT to provide revised forecasts of emissions that will then be used for an updated economic appraisal. This will be submitted at Deadline 9.</p> <p>d) Local carbon budgets produced by the Tyndal Centre<sup>11</sup> have been calculated based on a grandfathering allocation regime for sub-dividing the UK sub-national energy only carbon budget. This energy only carbon budget includes all emissions as a result of energy use in the UK but excludes emissions from international shipping and aviation and</p> |

<sup>11</sup> <https://carbonbudget.manchester.ac.uk/reports/>

| Question | Applicant Response   |
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|          | <p>from the variation in carbon sequestration as a result of changes in land use and forestry.</p> <p>As the UK Government does not publish carbon budgets at a local or regional scale, the Applicant is not in a position to provide an assessment as to whether or not construction or operation emissions are included within these local carbon budgets. The effects of the greenhouse gas emissions for the Scheme cannot be assessed against anything other than the national level carbon budgets. Please see response below for further detail.</p> <p>e &amp; f) (<i>noting part 'e' is specifically directed at TAN, Cambridgeshire councils</i>)</p> <ul style="list-style-type: none"> <li>The national carbon budgets are themselves cumulative i.e. the sum of carbon emissions from a range of sectors between now and the end of the 6th carbon budget (2037).</li> </ul> <p>The CCA 2008 does not impose a legal duty to set carbon budgets at a smaller scale than national i.e. regional or local. Specifically:</p> <p>In setting carbon budgets parliament has not imposed any legal duty upon local authorities to attain any particular targets whether carbon budgets or for net zero 2050. i.e. there are no legal duties which require particular geographical areas within the UK to achieve particular reductions in carbon emissions by particular dates.</p> <p>There are no sectoral targets for transport, or any other sector. There is no requirement in the CCA 2008, or in government policy, for carbon emissions for all road transport to become net zero.</p> <p>Emissions in one sector, or in part of one sector, may be balanced against better performance in others. A net increase in emissions from a particular policy or project is managed within the government's overall strategy for meeting carbon budgets and the net zero target as part of an economy-wide transition.</p> |

| Question | Applicant Response  |
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|          | <p>Accordingly, as the UK Government does not publish carbon budgets at a local or regional scale, National Highways is not in a position to provide an assessment of the cumulative effects of the greenhouse gas emissions for the Scheme for anything other than at the national level carbon budgets.</p> <p>[1]<br/> <a href="https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf">https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf</a></p> <p>[2] <a href="https://www.gov.uk/guidance/carbon-budgets">https://www.gov.uk/guidance/carbon-budgets</a></p> <p>The decision to cancel the Oxford to Milton Keynes section of the Oxford to Cambridge Expressway was taken on the basis of the cost benefit appraisal which demonstrated that it did not represent a cost-effective option for the taxpayer.</p> <p>The main difference between the Scheme and the Oxford to Cambridge Expressway is that the Scheme is targeted to solving local traffic congestion and capacity problems at Black Cat and along the A428 corridor. By contrast one of the main objectives of the Expressway was to support new housing development and possible land value uplift.</p> <p>Unlike the Oxford to Cambridge Expressway, the A428 Scheme represents value for money. The outturn costs of the Scheme is £812.5M (in 2019 Q1 prices). The adjusted Net Present Value (benefits minus cost) is £420M with a Benefit to Cost Ratio of 1.9. (Reported in Chapter 5 of the Combined Modelling and Appraisal Report <b>[APP-250]</b>).</p> <p>The cancellation of the proposed Expressway has no bearing on the need, or the economic case, for the Scheme. The two schemes have separate business cases and there is no assumption within the Scheme's DCO application that the Expressway will be delivered.</p> <p>For traffic modelling and economic assessment purposes, other proposed transport schemes require a specified degree of certainty in proceeding to be included within the forecasting process. As the Expressway did not meet that certainty criteria it was not included in the Scheme forecasting that underpinned the economic appraisal.</p> |

| Question   | Applicant Response  |
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|  | <p>The economic benefits calculated for the Scheme are therefore not dependent upon completion of the Oxford to Cambridge Expressway and are unaffected by cancellation of the project.</p>   |
| <p><b>[REP4-037] National Highways, Deadline 4 Submission - 9.47 Applicant Response to the Examining Authority's Second Round of Written Questions</b></p>   |   |
| <p>18.2 The Councils support the wide range of climate change mitigation measures (as set out in the Environmental Statement, APP-083) embedded in the construction programme for the A428 to provide resilience for the Scheme against anticipated conditions as well as to minimise the direct impact of construction works. It is noted that many of the construction stage impacts will be short-term but nevertheless emissions will occur. However, every effort should be made to avoid detrimental impacts, particularly those likely to increase greenhouse gas emissions, before emphasis is placed on then mitigating those remaining. With this in mind the Councils would welcome greater detail on how the assessment of construction stage emissions has been reached. Table 14-9 (Environment Statement, <b>APP-083</b>, page 24) includes a breakdown of emissions by construction activity. At 11,600 tCO<sub>2</sub>e per km of road, it is noted that the calculation of emissions associated with the Scheme fall below the average benchmark of 19,090 t CO<sub>2</sub>e to 35,900 tCO<sub>2</sub>e per km of road (<b>APP-083</b>, paragraphs 14.7-8), which is to be welcomed. However, in the absence of any further detail as to how this has been achieved it is difficult to verify the figures included in the ES. The Councils recognise that this is a level of detail that is yet to be included in the first iteration of the EMP (APP-234) and would recommend that the next iteration includes further detail and commitments to the measures that will be taken to reduce the embodied carbon associated with materials used for the construction of the Scheme in order that the figures referenced in the ES can be achieved. In addition, it is imperative that the</p> | <p>The Applicant notes the notes the comments from the Cambridgeshire Authorities with regard to providing further details on construction GHG mitigation measures and will include this information in the next iteration of the EMP.</p> <p>It would not be appropriate to provide a detailed carbon footprint in the next iteration of the EMP. The Applicant can commit to providing a Technical Note providing a detailed breakdown of construction carbon emissions for Deadline 4.</p> |

| Question  | Applicant Response  |
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| <p>quality of construction materials used is not diminished for short-term cost savings and that the materials selected have demonstrable suitability for tolerance to higher and rapidly fluctuating temperatures. Notwithstanding, the request for further information, the Councils would like to voice their support for the re-use of materials arising from demolition of the existing infrastructure and maximisation of sourcing construction materials from local borrow pits to minimise the emissions from lorry movements transporting materials in the construction phase.</p> |   |
| <p><b>[REP4-073] Transport Action, Network Deadline 4 Submission - Response to the Examining Authority's request for views on the RIS2 High Court Judgement and other issues</b></p>  |   |
| <p><i>Document with multiple points raised by from Transport Action Network in response Second WQ 2.4 (see [PD-009] )</i></p>   | <p>The Applicant provided a lengthy respond to comments made by Transport Action Network in <b>[REP5-014]</b>.</p> <p>The response covered a range of topic areas including the implications of the RIS judgement, significance of carbon emissions, cumulative emissions, scope of the assessment, local and regional context and other significant assessments.</p> |
| <p><b>[REP5-025] Transport Action Network, Deadline 5 Submission - Responses to the Examining Authority's Second Written Questions (WQ2) and comments on the Proposed Development</b></p>   |   |
| <p><i>Document with multiple points raised by from Transport Action Network in response Second WQ [PD-009]</i></p>  | <p>The Applicant provided a lengthy respond to comments made by Transport Action Network in <b>[REP035]</b>.</p> <p>The response covered a range of topic areas including cumulative impacts the greenhouse gas targets, climate assessment requirements for EIA, impact of construction emissions.</p>   |

| Question   | Applicant Response  |
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| <b>[EV-055] Agenda for Issue Specific Hearing 4 (ISH 4) - 30 November 2021</b>   |   |
| <p><b>Agenda item 7. Sustainability effects, including climate change</b></p> <p>a. Understanding the significance of effects of the greenhouse gas emissions (GHG) of the Proposed Development by making like for like comparisons at a local, regional, national and international level</p> <p>b. Relative significance of the lifetime GHG emissions of the Proposed Development in comparison with other RIS2 schemes</p> <p>c. Assessment of the effects of the national RIS2 programme against UK Carbon Budgets</p> <p>d. Calculated emissions of the Proposed Development, given disagreements amongst the parties in this regard, and including with reference to paragraph 5.19 of the NPS NN which seeks to ensure that the carbon footprint of the Proposed Development is “not unnecessarily high”</p> <p>e. R (Transport Action Network Limited) v SoST [2021] EWHC 2095 (Admin) (Appendix A <b>[REP3-020]</b>), including the interpretation of de minimis in the judgement <b>[REP4-073] [REP5-014]</b></p> <p>f. Implications of the Proposed Development for UK net zero carbon emissions by 2050, given its measured 60-year lifespan would extend beyond 2050, and given the current uncertainties surrounding how the net zero figure will be achieved</p> <p>g. Implications of the lifetime greenhouse gas emissions of the Proposed Development on the available global carbon budget to avoid dangerous climate change, including in light of the declared Climate Emergencies locally, regionally, nationally and internationally</p> | <p>The Applicant’s response to these agenda items is set out in the transcript for the hearing <b>[EV-067]</b>.</p> |

| Question   | Applicant Response  |
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| <p>h. With reference to S104(4) of PA2008, the assessment of the Proposed Development</p> <p>i. Cancellation of the Oxford Cambridge Expressway, including the specific differences with the Proposed Development, such as respective costs and benefits</p> |   |
| <p><b>[EV-062] Recording of Issue Specific Hearing 4 - Session 4 - 30 November 2021</b></p>  |   |
| <p>Hearing recording</p>   | <p>A summary of the Applicant's response at this hearing is provided below under <b>[EV-067]</b>.</p>   |
| <p><b>[EV-067]</b><br/> <b>Issue Specific Hearing 4 (Session 4) - Transcript - 30 November 2021</b></p>  |   |
| <p>Hearing transcript</p>  | <p>Information provided by the Applicant during the examination hearing covered a range of topics including: Tyndell Centre local carbon budgets, UK carbon budgets and the test required in the NPS NN, greenhouse gas significance levels, The impact in the context of the 5<sup>th</sup> carbon budget, and the Paris Agreement.</p>  |
| <p><b>[REP6-036] National Highways Deadline 6 Submission - 9.76 Written submission of oral case Issue Specific Hearing 4 on 30 November 2021</b></p>   |   |
| <p>The ExA asked what would be a significant level of GHG emissions?</p>   | <p>The guidance asks for an assessment to be carried out a Scheme level. The Applicant wouldn't want to go further on what would be considered significant in an abstract sense. So far as RIS2 schemes are concerned it is not required as under the NPS for there to be a comparison of relative significance of emissions of this scheme with other RIS2 schemes. Further information has been provided at earlier stages but it is not necessary for the effects of these schemes or their significance to be compared with emissions of other schemes to accord with policy.</p> |

| Question   | Applicant Response  |
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| <p>Relative significance of the lifetime GHG emissions of the Proposed Development in comparison with other RIS2 schemes. Present value of -£127m, which in the case for the scheme is identified as not a significant effect. Has there been any assessment of lifetime of GHG RIS2 schemes.</p> <p>Paris aims to restrict emission, in terms of climate GHGs should also be considered globally, countries are working at different rates, many climate emergencies have been declared, what are the implications of the GHG on global carbon budgets including in light of climate emergencies and what further measures could be embedded to limit or mitigate lifetime GHG emissions.</p> <p>The ExA is trying to understand more on regional policies/carbon budgets, which the specific proposed development could be compared to, and the significance of these on different scales.</p> | <p>The guidance asks for an assessment to be carried out a Scheme level. The Applicant wouldn't want to go further on what would be considered significant in an abstract sense. So far as RIS2 schemes are concerned it is not required as under the NPS for there to be a comparison of relative significance of emissions of this scheme with other RIS2 schemes. Further information has been provided at earlier stages but it is not necessary for the effects of these schemes or their significance to be compared with emissions of other schemes to accord with policy.</p> <p>Assessment has been undertaken in line with NPS (including 6th carbon budget) and the results from testing the significance of the scheme's impact showed it was of low impact and so the Applicant would conclude that it is not significant in terms of the UK meeting its climate change targets.</p> <p>It is important to recall that the Paris Agreement has been translated into the Climate Change Act 2008 (CCA 2008) and following through from that into Carbon Budgets. The Applicant does not see the Paris Agreement as having effect as far as national budgets are concerned. The Paris Agreement has an environmental objective but it does not impose obligations to limit global temperatures in any particular way. That is left to each individual party in terms of how this will be achieved. It is really a matter for national government. The UK has chosen to implement the Paris Agreement through national legislation in way looked at already. The Applicant does not consider these questions in the context of a global carbon budget. The Applicant regards the more important factor as being national carbon measures. The assessment the Applicant included in the ES is already a worst case scenario as the DEFRA toolkit does not build in the full extent of electric vehicles (EV)/or decarbonising transport measures which are likely to increase. Reference made by TAN to new development will made – those are straying into wider policy matters beyond the scope of this hearing.</p> <p>The Applicant completed the assessment of the scheme in alignment with paragraph 5.17 of the NPS, giving specific guidance on the scheme and national carbon budgets as well as Paragraph 5.18 and the DMRB LA114 climate guidance, requiring Scheme emissions to be put into the context of</p> |

| Question  | Applicant Response  |
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|   | <p>their impact on national carbon budgets. The Applicant does not say there are any requirements for like for like comparisons at local, regional or national levels. EIA Regulations don't define significance, nothing in NPS requires local or regional assessment. National targets are the yardstick by which the emissions are to be assessed. Only Government can determine what is significant, cumulative or otherwise at a national level. The approach to carbon reduction is set on an economywide basis, emissions in sectors need to be seen in that sense. There is no basis on which policy suggests approaching a local approach. In any event, conceptually emissions do not arise or have effect locally which means there is difficulty in how this would be fed into assessments given emission will arise and impact beyond a Scheme's locality. Additionally, the Applicant has looked at Tyndall Centre targets and how this could be applied, there is no method of doing this in a meaningful or robust way which is why it has been discounted.</p> <p>The Applicant has carried out assessment at national level because this is what is required and where the legally binding targets sit.</p> |
| <b>[REP6-072] Cambridgeshire County Council, Huntingdonshire District Council and South Cambridgeshire District Council</b>   |   |
| <p>Ultimately staying within a global temperature threshold (e.g. "well below 2°C") requires limiting cumulative CO emissions over the coming decades. Carbon budgets can be an effective way to understand the amount of CO emissions that can be released into the atmosphere in order to do this. End point targets such as 'net zero' by 2050, with very clear assumptions, can be useful indicators of ambition, but it is ultimately the cumulative CO released on the way to that target that is of primary significance to achieving climate change goals.</p> <p>Based on our analysis, for Huntingdonshire to make its 'fair' contribution towards the Paris Climate Change Agreement, the following recommendations should be adopted:</p> | <p>The Applicant noted the comments provided by the combined Cambridgeshire Authorities</p>   |

| Question  | Applicant Response   |
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| <p>1. Stay within a maximum cumulative carbon dioxide emissions budget of 7.6 million tonnes (MtCO<sub>2</sub>) for the period of 2020 to 2100. At 2017 CO emission levels, Huntingdonshire would use this entire budget within 6 years from 2020.</p> <p>2. Initiate an immediate programme of CO mitigation to deliver cuts in emissions averaging a minimum of 14.1% per year to deliver a Paris aligned carbon budget. These annual reductions in emissions require national and local action and could be part of a wider collaboration with other local authorities.</p> <p>3. Reach zero or near zero carbon no later than 2040. This report provides an indicative CO reduction pathway that stays within the recommended maximum carbon budget of 7.6 MtCO<sub>2</sub>. At 2040 5% of the budget remains. This represents very low levels of residual CO emissions by this time, or the Authority may opt to forgo these residual emissions and cut emissions to zero at this point. Earlier years for reaching zero CO emissions are also within the recommended budget, provided that interim budgets with lower cumulative CO emissions are also adopted.</p> |  |
| <p><b>[REP6-105] Transport Action Network Deadline 6 Submission – Cover Letter</b></p>  |  |
| <p>List of documents submitted to Examination in association with TAN’s submissions</p>   | <p>The Applicant noted the reference documentation submitted by Transport Action Network</p> |
| <p><b>[REP6-136] Transport Action Network Deadline 6 Submission - Greener Journeys - Not the Journey but the Destination: How Our Whole Economy Needs to Change</b></p>   |  |
| <p>Webinar submitted by Transport Action Network</p>  | <p>The Applicant noted the Webinar submitted by Transport Action Network</p>                 |

| Question  | Applicant Response                                |
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| <b>[REP8-014] National Highways Deadline 8 Submission - 9.97 Applicant's Response to the Examining Authority's Third Round of Written Questions</b> |   |
| Further responses from Transport Action Network   | See Applicants response to <b>[PD-009]</b> above. |

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## Appendix B – Competent Expert CV

Ian Davies, BA (Hons)  
Technical Director

## Ian Davies, BA (Hons) Technical Director



### Key skills

Project management  
Climate change impact assessment  
Carbon management  
Life Cycle Assessment  
Carbon footprinting

### Years of experience

20

### Years with AECOM

15

### Education

BA (Hons) Environmental Studies

### Registrations/Certifications

Certified Project Manager

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Ian is a Technical Director in AECOM's Business Sustainability team, with over 20 years of experience in the provision of environmental sustainability assessment and strategic, pragmatic advice for robust decision making.

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### Professional history

Ian specialises in greenhouse gas (GHG) and climate change resilience assessments as well as strategy development and reporting for major, clients, projects and products across the UK and abroad. He has also led climate impact and mitigation strategy assessments for inclusion in EIA and ESIA on a range of high-profile climate impact assessments including masterplanning, urban regeneration, transport and other large-scale infrastructure projects. Ian is fully conversant on UK legislation and policy with regard to climate change including greenhouse gas emissions, transitioning towards net zero emissions targets and climate change resilience assessment. He is experienced and confident working with clients, legal teams and technical specialists to provide climate change advice and with engaging multiple stakeholders and third parties to reach agreeable outcomes. Through the delivery of his work he regularly works with technical specialists, designers, engineers and architects to ensure that projects align with the policy and legislative requirements for climate change.

### Selected project experience

#### **A428 Black Cat to Caxton Gibbet, National Highways (Highways England), Climate Lead**

Ian is AECOM's lead subject matter expert for the delivery of a climate change impact assessment, including LCA of GHG emissions, for the A428 Black Cat highways improvement scheme DCO application. The CCIA project includes assessment of the construction, operation and maintenance of a new dual carriage way in Cambridgeshire. Ian is currently representing National Highways on climate matters at the Planning Inspectorate Examination Hearing.

#### **A38 Derby Junctions, Highways England, Climate Lead**

Ian was AECOM's lead subject matter expert for the delivery of a climate change impact assessment, including LCA of GHG emissions, for the A38 Derby Junctions DCO application. This project included assessment of an upgrade to a series of road junctions and the existing highway around Derby. Ian worked with a series of stakeholders including the highway design team, ecologists and flood and drainage specialists to develop a result that would be satisfactory to the client and meet the requirements of the Planning Inspectorate. Ian represented the client at a series of Examination Hearings with the Planning Inspectorate to provide technical information on climate change impacts associated with the scheme.

#### **A303 Amesbury to Berwick Down (Stonehenge), Wiltshire, Highways England, Climate Lead**

Ian was AECOM's lead subject matter expert for the delivery of a climate change impact assessment, including LCA of GHG emissions, for the A303 Amesbury to Berwick highways scheme DCO application (expected scheme cost £1.5 - 2.4 bn). The CCIA project includes assessment of the construction, operation and maintenance of a new dual carriage way and twin bore tunnel running under the Stonehenge World Heritage Site.

#### **Other highways climate assessment work**

Ian lead on the climate impact assessment work for the M54 to M6 Toll and M42 Junction 6 Highways England Schemes. He lead on a climate assessment for the Melton Mowbray Distributor Road and was an expert witness on behalf of Leicester County Council. Ian has also delivered climate assessment for a number of schemes in Ireland including the N63 Liss to Abbey Realignment Scheme.

#### **Climate impact assessment guidance, Transport Infrastructure Ireland, Project Manager**

Ian is currently leading a team to develop guidance on undertaking climate assessment on road, light rail and greenway schemes in Ireland. The guidance will provide EIA Practitioners with the necessary information to assess the impact and significance of a scheme on the climate as a result of lifetime greenhouse gas emissions. The guidance also providing advice on how to assess and mitigate the impact of future climate change on a scheme.

#### **Carbon Accounting Tool for Road and Light Rail Projects, Transport Infrastructure Ireland (TII), Project Manager**

Ian Davies, BA (Hons)  
Technical Director

Ian led the development of a carbon footprinting tool for use on road and light rail projects commissioned by TII. As well as providing a means to allow TII to compare carbon emissions from different project designs and help drive better carbon performance in road and rail projects, the key driver for the tool was to enable the TII supply chain to demonstrate that they are measuring lifecycle project emissions as per the requirements of the 2017 EIA Directive. To develop the tool a range of groups and individuals were consulted including different functions within TII, transport specialists, highways engineers and potential tool users.

#### **Net Zero Carbon Management Planning, Nuclear Decommissioning Authority**

Ian is currently managing a project for the Nuclear Decommissioning Authority to develop carbon management plans for a number of the NDA's businesses. Each plan will provide a prioritised roadmap of carbon reduction opportunities for each business on its journey to net zero. The plans are covering a range of carbon emissions including direct emissions from each business as well as indirect emissions from their supply chains. The scope of this project also includes provision of advice on low carbon procurement and the implementation of PAS 2080.

#### **Cost and Carbon Tool, Environment Agency**

Ian is part of the AECOM project team delivering an integrated Cost and Carbon estimating tool which will calculate whole life cost and carbon for the construction and operation of EA assets, via a web-based platform. The rates within the tool align cost and carbon industry rates libraries, to a common structure (utilising best practice for whole life considerations; PAS2080 and ISO15686-5) and will make carbon more visible in project decision making. The final tool will be instrumental in supporting the Environment Agency's target setting and ambition to achieve Net Zero.

#### **Net Zero Teesside, Various clients**

Ian is currently leading a climate change impact assessment for the cutting-edge Teesside net zero carbon capture project. The assessment includes a lifecycle greenhouse gas assessment to identify the net impact of the scheme and its contribution to the UK achieving net zero carbon emissions by 2050. It also includes an assessment of future climate change impacts on the proposed development.

#### **Carbon assessment for input to the development of the Water Resource Management Plan, Affinity Water, UK**

Project managed the lifecycle carbon assessment for a range of options being considered for inclusion in the clients Water Resource Management Plan (WRMP). Using the clients in house tool, carbon emissions were estimated for a range of capital and operational impacts. Outputs from the carbon assessment were included as part of a wider cost and sustainability feasibility assessment.

#### **Northern Arc Urban Regeneration Scheme, Burgess Hill, Homes England, Climate Lead**

Ian managed the development of the greenhouse gas and climate change resilience assessments for inclusion in a climate ES chapter for the proposed development. The Northern Arc project is a strategic mixed-use allocation within the adopted District-wide Local Plan. The Scheme is set to provide approximately 3,500 new homes (30% of which will be affordable), primary schools, a secondary school, neighbourhood centre leisure, health and employment facilities. Ian's role involved collaborating with a range of subject specialists including flood risk, transport, energy and waste along with the scheme architects and planners to identify and mitigate the GHG impacts of the scheme on the climate and the impact of future climate change on the scheme. The climate assessment contributed to the successful award of planning permission for the scheme.

#### **Climate Change Impact Assessment, Sunnica Ltd, UK. Climate Lead**

Ian is currently leading the development of the climate chapter for a large photovoltaic solar array. The scope of the EIA for this project involves a GHG assessment and climate change resilience review. Understanding the impact of the scheme on the climate and the resilience of the project to climate change has involved engagement with design teams, architects, scheme engineers and the landscape team. Ian also led on the provision of responses to questions on climate impacts of the scheme raised by Statutory Stakeholders and other interested parties. A key part of this project has been to position the project as a key technology in response to the UK's transition to a low carbon future and meeting its net zero targets by 2050. This solar and storage project is set to become the UK's largest solar farm, with a capacity of up to 500MW.

#### **Climate Change Impact Assessment, West Burton Power Station, Climate Lead**

Ian led a greenhouse gas and climate change resilience assessment as part of a DCO application for West Burton Power station. The assessment included a lifecycle greenhouse gas study of the construction and operation of the scheme, a climate change resilience assessment, and a review of sustainability impacts. Ian collaborated with the client, their legal team and the Project design team to resolve a number of technical constraints around scheme delivery meeting policy requirements. The Project was awarded a DCO by the Secretary of State in 2020.

#### **Climate Impact Assessment, Sizewell C, EDF, Climate Lead**

Ian is currently leading AECOM's input on a climate change assessment as part of a DCO application for Sizewell C Power station. The assessment is looking at the greenhouse gas emissions impact of the development on the climate, the impact of future climate change on the development and the combined impacts of climate change and the proposed development on the surrounding environment. Undertaking a climate assessment for this large, complex project has required significant collaboration across a multidisciplinary team of environmental experts and design engineers. A key output of this work has been to demonstrate how the construction and operation of the scheme is compatible with the UK's climate policy on net zero targets. Ian is currently working with Sizewell technical teams to address comments raised through public consultation.

#### **HS2 Carbon Management Strategy, High Speed Two Ltd., Climate Lead**

Following assessment of the carbon footprint for HS2, Ian led the development of a Carbon Management Strategy to define how HS2 would manage carbon across the lifecycle of the project. Ian collaborated closely with the HS2 Climate Change

Ian Davies, BA (Hons)  
Technical Director

Team to deliver a carbon management plan that would embed carbon management into the culture and processes of the organisation.

**Carbon Footprint Key Target Support, Sellafield Limited**

Ian recently project managed an assignment to identify and prioritise strategic opportunities for carbon reduction across the Sellafield estate. Identified opportunities were developed into a strategic carbon management plan providing a route map setting our Sellafield's contribution towards the UK Government's Net Zero target by 2050.